ASSESSING DISPARITIES IN FOODS AND BEVERAGES SERVED IN CHILD CARE PROGRAMS SERVING 1-5 YEAR-OLDS ACROSS GEORGIA

by

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(Under the Direction of Caree J. Cotwright)

ABSTRACT

Health disparities exist in the United States and the varying obesity rates observed in pediatric populations is proof of this. Because food preferences form at a young age and many children spend significant time in the child care setting, it has been recognized as an important environment for childhood obesity research. This secondary data analysis of the statewide Georgia Child Care Wellness Survey aimed to identify the presence or absence of disparities in foods and beverages served in child care programs across Georgia. Results indicated that disparity exists between programs serving families of different income levels as well as those serving predominantly black populations. Inconsistency in results from this study indicate the need for further research using a comprehensive approach to determine if these disparities are the result of a complex interaction of socioeconomic and demographic determinants. Findings indicate the importance of better understanding socioeconomic determinants of health.

INDEX WORDS: health disparity, child care, early care and education, nutrition, sugar sweetened beverages, Georgia, nutrition policy, health demographics, socioeconomic determinants of health

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DEDICATION

I dedicate this labor of love to the inspiring women that have raised me, encouraged me, and pushed me to excel beyond what I ever imagined possible. First, I could not have gotten this far without the support of my "friend fam". You girls have made me who I am today. Thank you for studying with me, letting me stress-cook for you, and for being a source of constant solace as we endured some of the hardest times of our lives. You truly are my family.

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CHAPTER 1

INTRODUCTION

Healthy People 2020, objectives to improve the health of Americans, defines a health disparity as "a particular type of health difference that is closely linked to social, economic, and/or environmental disadvantages"[1]. Health disparities present themselves in a number of ways, however, prevalent disparity is in observed childhood obesity rates. Nationally 20% of children are overweight or obese by the time they enter kindergarten[2], and approximately 18.5% of children in Georgia are overweight[3]. Although these rates are high in all American children, disparities exist in the prevalence of obesity in children of different socioeconomic statuses, different racial/ethnic groups, and those living in specific geographic locations. As a result, group-specific obesity prevention and management are at the forefront of nutrition research.

In order to better understand and combat the American childhood obesity epidemic, it is essential to better understand underlying factors, such as socioeconomic status, environmental stressors, and geographic influences, that may contribute to childhood obesity. Children spend a great deal of time outside of the home in the child care setting, where many also consume two-thirds or more of their meals[4]. Considering the great variation in size, location, and type of child care programs offered in the state of Georgia as well as the socioeconomic and racial/ethnic diversity of the children they serve, there is reason to speculate that the quality and variety of foods and beverages offered in these centers differs as well. By understanding whether or not disparities exist in the quality of foods and beverages served in child care programs across Georgia, we may be able to identify possible causes for the disproportionate rates of childhood obesity.

Additionally, there is extensive research that suggests that food preferences and eating behaviors form at a young age[5,6]. Although there is a basic understanding that children form food habits within the first years of life and that many spend long periods of time in out-of-home child care programs, there is a gap in knowledge and a critical need for research on assessing disparities in the quality and variety of foods and beverages served in these child care programs as a basic understanding of these trends may lend an explanation about the range in childhood obesity rates in American children.

This study evaluated the disparities in foods and beverages served in child care programs across Georgia based on three demographic variables: income level of families enrolled in child care programs, race/ethnicity percentages of students enrolled in child care programs, and the geographic location of child care programs. Chapter 2 of this study will specifically describe the background and rationale for examining disparities in foods and beverages in child care programs. This will include an introduction to health disparities, a summary of demographic variables that may influence obesity rates, and the influence of early life practices on food preferences and health outcomes later in life. Chapter 2 will also summarize the methodology of conducting a statewide survey to assess foods and beverages served in the child care setting. Chapter 3 will describe the methods chosen for data collection and statistical analysis of disparities in foods and beverages served in child care programs.

The overall goal of this study was to identify the presence or absence of disparities in foods and beverages served in child care programs across the state of Georgia. The specific aims of this study are: (1) to determine if there are disparities in the quality and variety of foods and beverages offered to children enrolled in child care programs based on the average income level of participant families; (2) to determine if there are disparities in the quality and variety of foods and beverages offered to children in child care programs based on race/ethnicity of children

enrolled; and (3) to determine if there are disparities in the quality and variety of foods and beverages offered to children in child care programs based on the geographic location of child care programs. We hypothesized (1) disparities exist in the variety and quality of foods and beverages served in child care programs based on the income level of families; and that child care programs serving higher income families will serve healthy options more often. Additionally, we hypothesized (2) facilities with a higher percentage of minority children enrolled will serve less variety and lower quality foods and beverages than those with a higher percentage of Non-Hispanic White children enrolled. We further hypothesized (3) programs rurally located would serve less variety and lower quality foods and beverages than those located in urban or suburban settings.

To determine the existence and magnitude of disparities in foods and beverages served in child care programs across Georgia, a large statewide survey containing a detailed food and beverage frequency questionnaire was distributed to a randomized, stratified sample of child care programs throughout the state of GA. Results of this comprehensive survey were evaluated using numerous descriptive statistical measures. Chapter 4 will describe current disparities in foods and beverages served in child care programs across GA. Chapter 5 will discuss key findings of this study, potential policy implications, and future research needs in this area.

CHAPTER 2

LITERATURE REVIEW

Introduction to Health Disparities in Obesity

Healthy People 2020, the federal government's prevention agenda for building a healthier nation, describes a health disparity as "a particular type of health difference that is closely linked to social, economic, or environmental disadvantages"[1]. One example of the presence of health disparities in America is the variability in observed childhood obesity rates between different populations. Although the prevalence of obesity is startlingly high in all pediatric populations[2], these rates are even higher among children from low-income families[7] and those who are African American (21.9%)[2] or Hispanic (29.8%)[2]. In order to prevent childhood obesity, it is imperative that we understand the root causes and etiology of this disease. Over 60% of children under the age of six are enrolled in some type of out-of-the-home child care each week[8]. Many of these children consume two-thirds or more of their meals while in care[4]. Therefore, a better understanding of the foods and beverages served in child care programs may help in identifying factors related to the disparities in childhood obesity rates.

The following sections review the current literature on health disparities, childhood obesity, and foods and beverages served in child care programs. More specifically, topics discussed include observed differences in health outcomes in different populations, health equity, current childhood obesity rates, and disparities in obesity rates based on race/ethnicity, income level, and geographic location. Additionally, this review of literature will include the early development of food and beverage preferences, current child care food and beverage regulation as well as a review of methods of dietary survey.

Health Disparities in the United States

The Office of Disease Prevention and Health Promotion identifies that the attainment of optimal health may be influenced by a person's race or ethnicity, sex, sexual identity, age, disability, socioeconomic status, and geographic location[1]. Disparities can be recognized in many aspects of health care, including health outcomes. The following section will detail current health disparities in the United States based on race/ethnicity, income level, and geographic location. When stratified by race/ethnicity, for example, 13% of African Americans of all ages report they are in fair or poor health[9]. African Americans also have higher rates of chronic diseases such as diabetes, hypertension, and heart disease than do other groups[9]. Additionally, this group experiences higher incidence and mortality rates from many cancers that are amenable to early diagnosis and treatment[9].

Such health outcomes are mirrored in the Latino population. When considering health insurance coverage, only 68% of Hispanics reported current coverage in 2009, compared to 88% of white Americans reporting coverage[9]. Moreover, a total of 37.9% of Latinos age 20 and over were obese in 2008[9]. Although clearly present, health disparities do not just exist among different racial/ethnic groups. Braveman et al. examined patterns in health indicators and found that the most adverse health outcomes in children were observed in those with parents with the least education and lowest incomes[10]. When examining results of the health outcomes of adults, Braveman et al. also found that gradients relating income and health were present in every racial/ethnic subgroup[10]. Lastly, health outcomes can be greatly influenced by geographic location. The National Center for Health Statistics found that residents of counties on the immediate border of a large metropolitan area, such as large cities, generally ranked highest on health indicators[11]. Additionally, residents living in the most rural counties have the highest death rates for children and young adults[11]. In reviewing three of the different types of disparity

determinants (race/ethnicity, income level, and geographic location), it is evident that health disparities exist in America. Evidently, as an antithesis to health disparity, the attainment of health equity is a goal of many public health organizations.

In contrast to health disparity, Healthy People 2020 defines health equity as "the attainment of the highest level of health for all people"[1]. In a similar light, the Robert Wood Johnson Foundation (RWJF) notes that health equity only exists when obstacles, such as poverty and discrimination, are removed[12]. RWJF also indicates that "for the purpose of measurement, health equity means reducing and ultimately eliminating disparities in health and its determinants that adversely affect excluded or marginalized groups"[12].

Prevalence of Obesity

Approximately 13 million American children and adolescents are classified as obese, with a body mass index (BMI) at or above the 95th percentile for their age[3]. This number has rapidly increased in the last four decades[3] as obesity rates for children aged 6-11 have nearly tripled[9] and the prevalence of childhood obesity increases with age[13]. This is of great concern as obese adolescents have an estimated 80% chance of becoming obese adults[3]. When specifically looking at National Health and Nutrition Examination Survey (NHANES) data, Odgen et al. reported that 20% of American children are overweight or obese by the time they enter kindergarten[2]. Despite the generally high rates of childhood obesity in America, these percentages have been found to vary among different demographics of children.

Disparities in Childhood Obesity Rates

In addition to historically high rates of obesity in America, communities of color often experience troubling disparities[2]. After analyzing the 2011-2012 National Health and Nutrition Examination Survey, Odgen et al. found that the prevalence of obesity was lower among non-Hispanic white youth compared to non-Hispanic black youth and Hispanic youth[2]. Although

20.9% of non-Hispanic whites aged 2-5 were classified as overweight or obese, respective rates of non-Hispanic black children and Hispanic children were 21.9% and 29.8%[2]. The National Conference of State Legislatures found similar trends in childhood obesity and reported that when considering overall childhood obesity rates in white, African American, and Hispanic children, African American and Hispanic children had a respective six and eight percent higher obesity rate than their white counterparts[3]. The State of Obesity reports consistent findings; 20.2% of Black children age 2-19 are obese, 22.4% of Latino children age 2-19 are obese, and 14.3% of white children age 2-19 are obese[14].

In addition to racial/ethnic disparities in obesity rates, childhood obesity prevalence disproportionately affects children from low-income families[15]. Overall, 54% of young children live in households that are classified as low income[15]. These homes include those that make less than 100% of the federal poverty level and those that make between 100 and 200% of the federal poverty level[15]. Additionally, in 2013, 12% of children in the United States lacked health insurance, and 16% of children in Georgia were not enrolled in any type of health insurance program or policy[15]. In tandem, observed obesity rates are seen to be higher in this pediatric population[15]. The Centers for Disease Control (CDC) reports that obesity rates among young low-income children vary by state and range from 8.2% in Utah to approximately 20% in Virginia[7]. In the state of Georgia, approximately 18.5% of children are overweight (85th to 94th percentile for age) and 16.5% of children are obese (≥95th percentile for age)[3]. Of children classified as low-income, racial/ethnic differences were also noted[2]. The prevalence of obesity among young, low-income children (including non-Hispanic whites, non-Hispanic blacks, Hispanics, and American/Indians/Alaska natives) increased significantly during 2000-2004[7]. After surveying 54 Supplemental Nutrition Assistance Program for Women, Infants and Children (WIC) centers, the CDC found that the prevalence of obesity increased in 89% of US states and

that 70% of these obesity rate increases were statistically significiant[7] during those years. Food insecurity is a commonly-used predictor of obesity rates. Kuar et al. examined the association between food insecurity and obesity in children using data from NHANES[16]. They found that obesity was significantly associated with personal food insecurity for children 6-11, but was not associated with personal food insecurity in children aged 2-5[16]. They speculated a parental protection effect that shielded younger children from personal food insecurity[16].

Thirdly, there is disparity in obesity rates related to geographic location. A review of the Behavioral Risk Factor Surveillance System, a CDC sponsored national telephone survey that aims to provide state-level prevalence estimates for health-related behaviors, revealed that self-reported adult obesity rates were highest in the following states: Louisiana, Arkansas, Mississippi, and Alabama[17]. Each of the aforementioned states had an obesity prevalence of 35% or greater at the time of survey in 2011[17]. When stratified into regions such as the Midwest, Northeast, and the West, the South had the highest prevalence of obesity (32%)[17]. Additionally, NHANES data was analyzed with regards to rural and urban living areas and revealed that the obesity prevalence was 39.6% among rural adults compared to 33.4% among urban adults[18]. When these results were controlled for demographic, dietary, and physical activity variables, these findings remained the same[18]. Kramer et al. reviewed data from the 2007 and 2011-2012 National Survey for Children's Health and found disparaging rates of obesity with areas of high prevalence in the Deep South, in states such as Alabama and Georgia, as well as the Appalachian regions of the United States[19]. Evidently, research consistently indicates the greater incidence of obesity in rural areas and suggests the importance of prevention in such regions.

It is evident that obesity rates vary greatly depending on racial/ethnic identifiers, socioeconomic status, and geographic location. A better understanding of the impact of these

three variables may lead researchers to identifying the causes and better understanding the etiology of obesity, specifically in pediatric populations.

Development of and Influences on Food Preferences at Young Age

Eating behaviors develop and evolve during the first years of life[5,6]. The traditional feeding practices of providing young children with large quantities of palatable foods and encouraging children to eat, are still common practice in many cultures, despite the development of expansive and exorbitant food availability[5]. The Feeding Infants and Toddlers Study (FITS), which detailed the common dietary patterns of 3022 infants and toddlers, indicated that 4 to 24-month-old children usually consumed significant amounts of energy-dense, nutrient poor foods that were also developmentally inappropriate[5,20]. Additional findings revealed that many children's energy intake exceeded requirements by 10 to 30%[5,20]. Such feeding practices are positively associated with higher body weights[5,20].

Moreover, many overweight and obesity patterns may be a result of a child's experiences during the first year of life[5]. During this time, children learn about food through direct exposure, as well as through observing others' eating behaviors[5,21]. Furthermore, data indicate that modeling during the toddler years may play a significant role in establishing a child's eating behaviors[5,21]. Research reveals that children's consumption of fruits, vegetables, and milk increased after observing a parent or adult consuming these foods[5,21]. Similar findings were consistent when children observed their peers eating vegetables[21]. Conversely, it has been observed that over-restriction of nutrient poor foods and beverages may lead to an increased preference of, and over-consumption of, these foods when they are readily available[5]. Many of these observations are not only applicable in the home, but were also found in the child care setting. Although childcare programs should provide appropriate options to meet half or up to two-thirds of children's daily dietary needs, an evaluation of the actual food intake at child care

centers revealed that children were often failing to consume recommended intakes of energy, iron, zinc, and magnesium[5]. As a result, it is clear that the child care environment inevitably influences food habits formed in young children and that "the child care environment can also help to teach children about dietary patterns and eating behaviors"[5].

Childhood Obesity Prevention Guidelines

It is commonly known that young children in America are generally not consuming nutritious diets[22]. Many of their diets are too high in added sugar and fat and too low in fruits, vegetables, whole grains, and low- and non-fat dairy products[22]. The Institute of Medicine outlined a guidance document called the Early Childhood Obesity Prevention Policies to provide health care professionals as well as other paraprofessionals nutrition information to prevent childhood obesity[22]. Top priorities and guidelines include the following: 1) to promote the consumption of a variety of nutritious food; 2) to create a healthful eating environment that is responsive to children's hunger and fullness cues; 3) to ensure access to affordable healthy foods for all children; and 4) to help adults increase children's healthy eating[22]. Specific suggestions such as promoting only breastfeeding for the first six months, encouraging enrollment in government-funded supplementary food assistance programs, and requiring health and education professionals to provide guidance to parents of young children are three examples of the many suggestions provided in this comprehensive report[22].

The Child Care Setting

Considering the high percentage of mothers entering or returning to the workforce, it goes without saying that their children are being fed by a third party[23]. Consequently, over 60% of children under the age of 6 are enrolled in some type of out-of-the-home child care each week[8], and some receive up to two-thirds of their daily dietary intake while in out-of-home child care[4]. Plus, more than 11 million children spend an average of 30 hours per week in the child

care setting[8]. Therefore, the child care setting often acts as a "home away from home" for enrolled children. This presents the opportunity for child care providers to positively influence the aforementioned developing eating habits of young children[8].

Obesity Prevention in the Child Care Setting

Long-term evaluation studies of childhood obesity prevention programs in the child care setting indicate that high-quality child care programs including nutrition education and healthy life skills components impacted later health outcomes[24]. A stratified random sample of child care programs, including licensed center-based and family home-based programs, in Minnesota and Wisconsin aimed to evaluate the nutrition and physical activity practices in programs serving children ages 2 to 5[4]. Results showed that approximately a third of providers attended nutrition training at least one time per year, and about 35% of child care providers reported offering nutrition education[4]. Additional results of this survey indicate, however, that only about one-third of programs have written and implemented nutrition policies[4]. This examination of child care programs in Minnesota and Wisconsin indicated the large gap in nutrition education implementation within the child care setting[4]. The Institute of Medicine's Early Childhood Obesity Prevention Policies also note the importance of incorporating the child care setting into comprehensive obesity prevention efforts[22]. They suggest that "collaboration between pediatricians and early care and education professionals has the potential to improve the breadth and effectiveness of such health promotion education"[22]. Best practices such as allowing children to serve themselves as well as regular education of child care program staff are suggested to reach obesity prevention goals[22]. Finally, compliance with established federal and state regulations may lead to more healthful feeding practices within the child care setting[22].

Current Child Care Program Food Regulations

Despite this opportune environment for nutrition education, the CDC notes that nutrition and physical activity regulations for child care programs are not consistent within states or when comparing one to another[24]. Both federal and state regulations exist in an effort to provide the highest quality child care with the most healthful outcomes for enrolled children. The first example of child care program state regulation is Licensing and Administrative Regulations[8]. All programs and child care providers, with minor exceptions, are required by the state to be licensed as well as to provide state-specified minimum standards of care[8]. This qualification may or may not include nutrition or physical activity guidelines, but provides the ideal structure to do so.

In contrast, the federally funded Child and Adult Care Food Program (CACFP) does require participant programs to follow a set of nutrition-related guidelines. CACFP reimburses programs for offering nutritious food and beverage options, and on average serves 3.3 million children daily[8]. Child care programs enrolled in CACFP are required to follow evidence-based meal patterns and portion size guidelines published in the Dietary Guidelines for Americans[25]. Revised in 2016 for implementation in 2017, requirements such as regular inclusion of fruits and vegetables and consistent provision of water are cornerstone concepts of this program[25]. The Institute of Medicine notes that, according to recent evidence, "children attending child care programs that participate in the CACFP consume diets of better nutritional quality than children not attending such programs"[22].

Another regulatory system that exists is called Quality Rating and Improvement Systems (QRIS)[8]. QRIS is a systemic approach to assess, communicate, and improve the quality of care offered in child care programs[8]. Through this process, individual states determine what makes a child care program of higher quality in terms of care provided[8]. Using a recognizable and easy-to-understand rating system, QRIS indicates to the public how well a child care program is

performing relative to the established standards[8]. QRIS is often associated with advanced training, professional development, qualifications, and program accreditation[8]. Another great opportunity for nutrition intervention, the QRIS program aims to streamline child care program evaluation[8].

Assessing Regulatory Compliance

The Robert Wood Johnson Foundation has funded a number of investigations on CACFP compliance in the state of California[26]. In 2008 and 2012, survey findings indicated that sites that participating in the USDA CACFP served more nutritious options than those not participating in the reimbursement program[26,27]. In 2016, a third survey was conducted to assess the compliance of CACFP-participant programs with the revised 2017 standards for 1-5 year olds[26]. When responses from 680 respondents were analyzed, it was evident that compliance varied[26]. For example, yogurt low in sugar was only served in 66% of CACFP-participating programs, whereas 85% of participating programs provided breakfast cereals low in sugar[26]. When assessing overall compliance, 67% of programs reported adherence to 6 of 8 CACFP standards and only 14% of programs reported complying to all eight standards[26]. On average, 75% of programs (including: Head Start, State Preschools, CACFP Centers, Non-CACFP Centers, CACFP Homes, and Non-CACFP Homes) were complaint with CACFP standards, and there was no significant difference between CACFP participants and non-participants[26]. Ritchie et al. noted similar trends when they compared the foods and beverages served in CACFP-participant and non-participant programs serving children 2-5 years old[27]. Their results indicated that CACFP programs, including Head Start centers, "served more fruits, vegetables, milk, and meat/meat alternatives, and fewer sweetened beverages and other sweets and snack-type items"[27]. Their analysis also indicated that barriers to providing nutritious options include high food costs and lack of nutritional training[27].

This comprehensive literature review summarized the current available literature on health disparities, childhood obesity, and foods and beverages served in child care programs. Key findings include the increase in childhood obesity prevalence[2] as well as the evident racial/ethnic, socioeconomic, and geographic disparity in these rates[2,7,17]. In an effort to better understand where children spend their time and consume their meals during early years of development, the child care center was identified as an influential environment[8]. Finally, in assessing programs' regulatory compliance, it became apparent that programs have room for improvement in nutrition education[26]. The information obtained in this literature review indicates a critical need to better understand the foods and beverages served in child care programs across Georgia in hopes of better understanding evident disparity in childhood obesity rates.

CHAPTER 3

METHODOLOGY

Research Design

The research design of this study was a secondary data analysis of the data from the previously conducted cross-sectional, mixed methods 18-month Georgia Child Care Wellness Survey (GCCWS)[28]. Although the initial data collection focused on the current status of beverage policy implementation in child care programs in Georgia, this secondary analysis aimed to identify potential disparities in the quality of foods and beverages served in child care programs when stratified by program location, race/ethnicity of enrolled students, and income level of participant families. While the initial data collected was comprised of both quantitative data from the statewide survey and qualitative data from focus groups and semi-structured interviews, due to the high volume of survey responses, only quantitative data was considered in this analysis.

Georgia Child Care Wellness Survey Distribution

In order to work towards ensuring that *all* children are at a healthy weight before they enter kindergarten, the target population for this study included licensed and license-exempt child care programs in Georgia that serve children ages 1-5 years of age. In collaboration with the Georgia Department of Early Care and Learning (DECAL), a stratified, random sample of facilities was selected from over 10,000 programs in Georgia. In terms of licensed facilities, there were 3,112 child care learning centers and 1,869 family child care homes, at the time of sample selection. Additionally, the state's database indicates the registration of 5,239 license-

exempt programs. All of these programs were eligible for selection. These programs were also separated by geographic location and fell into six categories (North, Metro, Central, Southwest, Southeast, and East), as depicted in Figure 1. An equal number of child care programs were randomly selected from each region to obtain a representative sample of Georgia child care programs for this study.

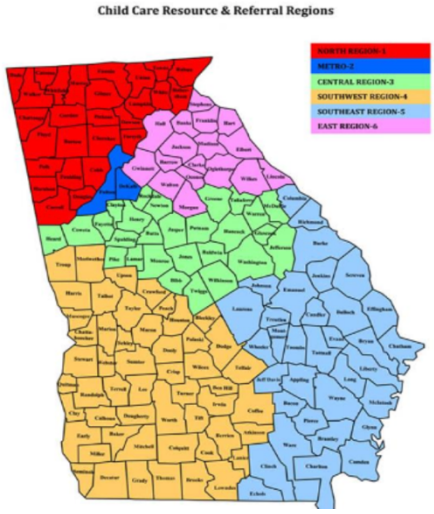

Figure 1: DECAL Child Care Regions

A sample size analysis completed in G*Power 3.1 revealed that if there is a difference of 10% between centers and homes in terms of a yes/no question, 80% power would be achieved with a sample size of 404 each from center and home-based facilities. Therefore, a sample of 68 of each type of facility is needed from each of the established regions of the state. Because response rates for similar studies[27] have been around 30%, the sample size of 68 was multiplied by 1/.3 for an initial random sample of 227 of each of the three types of facilities from each of the six regions. A comparable sample was drawn from license-exempt programs in each region, resulting in an initial sample size of 3054, distributed evenly across the regions. Figure 2 below depicts each sample category.

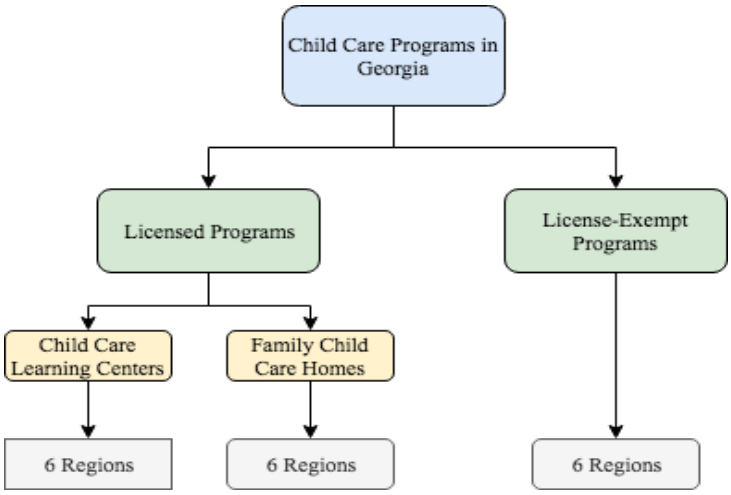

Figure 2: Sample Selection Schematic

The Georgia Child Care Wellness Survey is a statewide survey, initially based on the California (CA) Survey of Child Care Providers of 0-5 Year Old Children[27]. First developed in 2008 and later revised in 2012 by Ritchie et al., this survey aimed to assess foods and beverages served in licensed child care programs in California[27]. Specifically, the survey measured Child and Adult Care Food Program participation, food and beverage practices, and barriers to implementing healthy beverage practices. Respondents were asked about the provision of 21 specific foods and beverages in the prior day during breakfast, lunch, dinner, and snack times. Additional prompts inquire about barriers and facilitators to serving specific foods or beverages. This instrument is based on the child care environment evaluation tool, the *Nutrition and* Physical Activity Self-Assessment for Child Care (NAPSACC) by Benjamin et al[29]. The NAPSACC investigates the level of implementation of food, beverage, and physical activity best practices[30]. An adapted version of the California Survey of Child Care Providers of 0-5 Year Old Children was used in this study. A sample question from the survey is in the figure below.

*Which were provided **YESTERDAY to 1-5 year olds**?*

1. **Fruit canned in syrup** (heavy or lite) or **sweetened applesauce**

Not Provided	Provided at Breakfast	Provided at Lunch	Provided at Dinner	Provided at Snack-time
☐ 1	☐ 2	☐ 3	☐ 4	☐ 5

Figure 3: GCCWS Sample Question

In March 2017, a letter from DECAL was emailed to the selected study sample to promote the statewide survey and request online participation. Program directors and administrators were prompted to complete an online version of the *Georgia Child Care Wellness Survey* using the Qualtrics™ survey platform. After a response period of approximately four weeks, non-respondents were mailed a paper survey with a stamped and addressed return envelope as well as a pencil for form completion. Child care program directors or a designated appointee were asked to complete the survey. The survey took approximately 20-30 minutes to

complete. In order to encourage study participation, the first 34 respondents to fully complete the survey (either electronically or on paper) in each region in GA (204 in total) were mailed a *Healthy Beverage Resource Kit*. This kit included various resources to implement beverage best practices, such as a child sized pitcher to provide water for self-serve throughout the day, a healthy beverage poster, a MyPlate poster, and a Potter the Otter Drinks Water book. Additionally, the entire study sample was eligible to enter a drawing for a $250 local grocery store gift card.

Analysis of Disparities in Statewide Survey

The three independent variables assessed in this analysis were income level, race/ethnicity, and geographic location. To evaluate the percentage of child care programs serving certain foods and beverages based on income level of families enrolled in the child care programs, a logistic regression was completed comparing income level categorically. Spearman's rho was also reported, and largely used in the data analysis process, because income can also be viewed as an ordinal variable. In context, a negative Spearman's rho value would indicate that the percent serving a particular food or beverage decreases as income level increases; a positive value is indicative of the opposite trend. For the purposes of this analysis, Spearman's rho was used to draw conclusions regarding the relationship between income and the percent of programs serving a particular food or beverage.

To evaluate the relationship between race/ethnicity and the percentage of childcare programs serving certain foods and beverages, logistic regression was performed; Wald chi-square value and odds ratios were also reported. It is imperative to note that each race percentage was considered a separate continuous variable and analyzed separately from other race percentages. The odds ratio indicates how much the odds of serving a particular food changes as the percentage of children of a particular race served goes up by one. Odds ratios were used to

assess the impact of race/ethnicity on the foods and beverages served in child care programs across Georgia.

To assess the potential impact of geographic location on the percentage of childcare programs serving certain foods and beverages, a logistic regression was performed. The results of this test indicate whether or not there is a significant (at an alpha value of 0.05) difference in whether or not a food was provided based on the geographic location (rural, suburban, or urban) of the child care program. We did not report whether or not programs were more or less likely to serve a certain food or beverage depending on its location in the state.

CHAPTER 4

RESULTS

Preliminary Findings from the Georgia Child Care Wellness Survey

Initial data analyses of the Georgia Childcare Wellness Survey concerned program's participation in the Child and Adult Care Food Program. Findings regarding program participation and compliance are detailed in a prior publication[28].

Survey Sample Characteristics

A total of 974 surveys were returned. Of those returned, 63% were completed online and four were submitted in Spanish. The sample of survey respondents included ECE centers (46%), other center based care (6%) and Military facilities (1%), Family Care homes (35%), Georgia Pre-K programs (15%), and License-Exempt Programs (14%). Respondents could identify as more than one category for program type, therefore, percentage total exceeds 100%. Each of the geographic regions (see Figure 1) were represented: North (17%); Metro (14%); Central (18%); Southwest (16%); Southeast (14%); and east (21%). On average, each facility served the following percentages of each race/ethnicity: Black (48%), Hispanic (5.9%), White (41%), Asian (2.5%), and Other (1.9%). Ninety percent of providers reported serving children ages 1-5 years, and for the purpose of this analysis, only responses for children 1-5 years will be analyzed. The income level of the majority of participant families was below $35K, and the majority (90%) of survey respondents were site directors or program owners. A large majority of programs participated in CACFP (64%), while 61% of programs reported that they were following the new 2017 CACFP meal pattern guidelines.

Disparities in Foods and Beverages Served

The three different independent variables were considered separately during data analysis, so for the purpose of this study, all results must be considered separately. The following sections detail the observed disparities in foods and beverages served in child care programs in Georgia when income, race/ethnicity, and geographic location were considered.

Income

Table 1 summarizes the food and beverage responses when programs serving children 1-5 years old were separated by income levels. Median income level was assessed categorically. Programs were asked to identify the income level, ranging from <20K to >60K, of most families served. From that information, as shown in Table 1, the percent of programs of each income level serving each particular food/beverage category was calculated. For example, exactly 50% of programs primarily serving families making less than 20 thousand dollars a year reported providing fruit canned in syrup or sweetened applesauce. Similarly, 56.5% of programs with families making between 20 and 35 thousand dollars served fruit canned in syrup or sweetened applesauce. For this analysis, each of the income brackets was assessed independently of the others.

Wald chi-square values were reported for income, but only indicated whether or not there was a difference in whether or not a food/beverage was provided based on income level. Alternatively, Spearman's rho values represented whether or not a food/beverage was more likely to be served as the income level increased. For the purpose of this analysis, Spearman's rho p-values were analyzed at an alpha value of 0.05. Referring to the Spearman's rho p-values, statistically significant relationships were noted for the following food/beverage categories: fruit canned in syrup, sweetened applesauce, fried potatoes, beans, other vegetables, eggs, baked or broiled chicken/turkey/fish, processed meats, other meats, processed cheese, frozen treats, sweet

pastries, other salty snacks [besides potato chips], white bread/rice/pasta/etc., 100% fruit or vegetable juice, and milk. One significant finding indicates that as income level increased, the percent of child care programs serving fruit canned in syrup and/or sweetened applesauce significantly decreased ($p<0.001$). Additionally, as income increased the likelihood of serving fried potatoes ($p<0.001$), processed meats ($p=0.005$), processed cheese ($p=0.007$), as well as frozen treats ($p<0.001$) each respectively decreased. Interestingly, although many of these unhealthy foods' provision decreased as income goes up, the provision of healthier foods, such as other vegetables ($p=0.012$), eggs ($p=0.003$), and milk ($p=0.002$) also decreased. The only food category that was more likely to be provided as the median income increased was the salty snacks other than potato chips ($p<0.001$).

A few particularly healthful foods and beverages did not yield significant results when stratified based on income level. The provision of water (bottled, tap or any) did not significantly change depending on income level. Additionally, other fruit ($p=0.662$) and peanut butter/nut spreads, nuts, seeds ($p=0.097$) did not vary significantly between centers reporting different income levels.

Race/Ethnicity

Table 2 summarizes the foods and beverage responses based on the percentage of children of each race/ethnicity as a continuous variable. Programs were asked the total number of children enrolled in their program as well as the number of white children, black children, Asian children, Hispanic children, and the number of children who identified as a race/ethnicity other than those four. These values were used to calculate the percent population of each race/ethnicity.

For each race/ethnicity category, a separate odds ratio value was calculated. A value greater than 1.0 indicates a program is more likely to serve the food/beverage as the percent of

children of that particular race/ethnicity increases. When considering the percent of black children enrolled, the odds ratio changed significantly for the majority of food and beverage categories. For example, the likelihood of providing fruit canned in syrup ($p=0.002$), other fruit ($p=0.005$), fried potatoes ($p=0.001$) and processed meats ($p=0.015$) increased as the percentage of black children increased. Similar trends were found for beans, other vegetables, and eggs. Interestingly, the odds of providing vegetarian meat substitutes increased by 0.7% as the percentage of black children increased by one percent ($p=0.005$). It is imperative to note that due to the extent of statistical analysis, up to five percent of significance could be attributed to chance. Additionally, one notable finding suggests the odds of providing other salty snacks other than potato chips decreased by 0.07% as the percentage of black children increased ($p=0.001$). When considering beverages, programs reported that they were more likely to serve bottled water ($p<0.001$) and less likely to serve tap water ($p<0.001$) as the ratio of black children increased. Overall there was no difference in how often water was served.

As the percent of black children increased, the percent of Hispanic children decreased. As thus, a few significant findings regarding percent Hispanic children were noted. First, the provision of other fruit decreased as the percentage of Hispanic children increased ($p=0.036$). This demonstrated the opposite trend found when analyzing black children enrolled. The only other significant findings related to the ratio of Hispanic children indicate that as the percentage of Hispanic children increased, programs were less likely to serve both other meats ($p=0.004$) as well as peanut butter/nut spreads, nuts, seeds ($p=0.033$).

The analysis of foods and beverages served as related to the percentage of white children enrolled demonstrated a few interesting findings. Perhaps most notable is the trend that as the percent of white children increased in respondent child care centers, the likelihood of providing fruit canned in syrup ($p=0.027$), fried potatoes ($p=0.006$), beans ($p=0.015$), other vegetables

(p=0.011), vegetarian meat substitutes (p=0.002), eggs (p=0.002), other meats (p=0.010), processed cheese (p=0.017), frozen treats (p=0.014), and sweet pastries (p=0.009) all respectively decreased. The only food category that programs responded providing more of as the percentage of white children increased was other salty snacks (p<0.001). As far as beverages go, programs indicated that although they were less likely to provide bottled water (p<0.001) as the percent of white children increased, they were more likely to provide tap water (p<0.001).

Only three percent of the study sample represented Asian children. Therefore, the small percentage of Asian children enrolled in respondent child care programs did not yield many significant findings. One notable finding indicated that programs are less likely to serve fried potatoes as the percent of Asian children enrolled increased (p=0.011). Conversely, programs the odds of serving vegetarian meat substitutes increased by 3.3% as the enrollment of Asian children increases by each one-percent (p=0.005). When considering beverage provision, programs reported being less likely to provide 100% fruit or vegetable juice as the enrollment of Asian children increased (p=0.035). The same trend was observed for the provision of milk (p<0.001).

Lastly, the survey provided an option of *% Other* to represent children enrolled in respondent programs who may identify as a race/ethnicity other than white, black, Asian, or Hispanic. These children only represented two percent of the survey sample. The following food/beverage categories were less likely to be served as the percent of these children increased in respondent programs: other vegetables (p=0.026), baked or broiled chicken/turkey/fish (p=0.005), peanut butter/ nut spreads, nuts, seeds (p=0.026), plain yogurt (p=0.017), whole grain bread/oatmeal/brown rice etc. (p=0.006), and milk (p=0.010). No significant positive correlations were noted for this last category of race/ethnicity.

Geographic Location

Table 3 summarizes the responses of the yes/no food and beverage questionnaire and stratifies the data based on the geographic location of the child care program. Programs were classified as either rural, suburban, or urban, depending on the reported zip code of the program site using the 2010 Census Urban and Rural Classifications and Urban Area Criteria[31].

When looking at the percentage of sites that reported serving each of the foods and beverages, very few significant findings prevailed. Among those, one significant finding indicates that the likelihood of serving fresh cheese is significantly different depending on the location of the program. The same was found for plain yogurt and frozen treats. Other salty snacks, 100% fruit or vegetable juice, and milk were also served at varying rates depending on the location of the child care program

Table 1. Foods and Beverages Served by Child Care Programs Serving 1-5-Year-Olds in Georgia[1] Stratified by Median Household Income of Participant Families

Sites (%) serving at breakfast, lunch, dinner, or snack-time the day before survey[2]	< $20K (out of n)[3]	$20K-$35K (out of n)	$35K-$50K (out of n)	$50K-$60K (out of n)	>60K	Wald $\chi2(4)$[4]	Wald $\chi2(4)$ p-value	Spearman's ρ[5]	Spearman's ρ p-value
Fruit canned in syrup, sweetened applesauce	50.0% (196)	56.5% (184)	45.8% (144)	35.8% (67)	30.3% (109)	22.411	<0.001*	-0.141	<0.001*
Other fruit	86.2% (196)	85.9% (192)	84.5% (148)	87.8% (74)	83.8% (117)	0.852	0.931	-0.016	0.662
Fried potatoes	34.0% (188)	31.7% (186)	21.7% (138)	12.7% (71)	21.8% (110)	16.955	0.002*	-0.139	<0.001*
Beans	49.2% (195)	46.7% (180)	41.0% (139)	43.7% (71)	38.3% (107)	4.446	0.349	-0.076	0.046*
Other vegetables	91.4% (198)	91.8% (195)	85.1% (148)	86.5% (74)	83.9% (118)	7.940	0.094	-0.093	0.012*
Vegetarian meat substitutes	20.1% (179)	14.5% (179)	13.6% (140)	12.7% (71)	16.2% (105)	3.720	0.445	-0.050	0.190
Eggs	43.7% (190)	39.9% (183)	35.3% (139)	27.8% (72)	30.3% (109)	9.090	0.059	-0.111	0.003*
Baked or broiled chicken/turkey/fish	71.8% 195	71.0% (186)	51.0% (143)	52.8% (72)	60.4% (111)	23.477	<0.001*	-0.140	<0.001*
Processed meats	54.1% (194)	50.3% (185)	42.9% (140)	40.3% (72)	41.3% (109)	8.343	0.08	-0.106	0.005*
Other meats	55.5% (191)	59.5% (185)	45.7% (138)	48.6% (72)	33.3% (108)	21.378	<0.001*	-0.145	<0.001*
Peanut butter/nut spreads, nuts, seeds	42.2% (192)	40.8% (184)	27.3% (143)	30.1% (73)	40.5% (111)	11.004	0.027*	-0.063	0.097
Processed cheese	45.8% (190)	48.9% (182)	41.3% (138)	37.5% (72)	30.8% (104)	10.405	0.034*	-0.103	0.007*
Natural cheese	48.7% (189)	55.6% (180)	45.3% (137)	54.8% (73)	61.8% (110)	8.579	0.073	0.057	0.133
Flavored yogurt with fruit flavoring/added sugars	34.9% (186)	28.3% (184)	23.0% (139)	34.2% (73)	37.7% (106)	8.622	0.071	0.000	0.995
Plain yogurt	33.5% (185)	32.8% (180)	29.0% (138)	26.1% (69)	29.1% (103)	2.017	0.733	-0.048	0.214
Frozen treats	27.7% (188)	18.6% (177)	16.7% (138)	11.3% (71)	12.0% (108)	15.306	0.004*	-0.147	<0.001*

Candy	4.8% (186)	4.5% (179)	6.5% (139)	5.6% (71)	5.8% (103)	0.772	0.942	0.023	0.551
Sweet cereals	20.9% (191)	34.1% (185)	24.5% (139)	23.6% (72)	13.8% (109)	16.744	0.002*	-0.051	0.176
Sweet pastries	48.7% (195)	45.9% (183)	38.1% (139)	33.3% (72)	34.0% (106)	10.557	0.032*	-0.120	0.002*
Regular potato or other chips	17.6% (188)	18.1% (182)	12.2% (139)	19.7% (72)	20.8% (106)	3.701	0.448	0.010	0.789
Other salty snacks	42.2% (187)	56.1% (187)	58.5% (142)	56.3% (71)	64.6% (113)	16.856	0.002*	0.143	<0.001*
Whole grain bread/oatmeal/brown rice etc.	79.0% (195)	84.4% (192)	77.8% (144)	77.0% (74)	71.1% (114)	7.736	0.102	-0.066	0.078
White bread/rice/pasta/etc.	68.2% (192)	70.0% (190)	58.9% (141)	50.7% (71)	58.9% (112)	12.492	0.014*	-0.107	0.005*
Sugar-sweetened drinks	5.9% (188)	5.6% (179)	5.7% (140)	4.2% (72)	8.5% (106)	1.649	0.800	0.019	0.628
100% fruit or vegetable juice	72.4% (196)	69.2% (195)	61.8% (144)	56.9% (72)	49.6% (113)	20.081	<0.001*	-0.163	<0.001*
Milk	92.5% (201)	97.0% (198)	89.3% (150)	91.8% (73)	82.6% (121)	18.135	0.001*	-0.114	0.002*
Bottled water	46.3% (175)	44.3% (176)	44.4% (133)	36.1% (72)	37.0% (108)	3.930	0.416	-0.067	0.083
Tap water	66.3% (187)	66.7% (189)	79.0% (141)	75.0% (72)	72.7% (110)	4.052	0.399	0.067	0.077
Any water	86.4% (199)	90.3% (195)	93.2% (148)	90.7% (75)	86.2% (116)	5.431	0.246	0.023	0.527

*p<0.05

[1]Self-reported data from statewide Georgia Child Care Wellness Survey

[2]Indicates percent of programs within each income bracket serving food/beverage item

[3]Each variable was assessed independently and percentages will not add to 100%

[4]Wald chi-square values indicate a difference in food/beverage provision as income level changes

[5]Spearman's rho values indicate the increased (positive) or decreased (negative) likelihood of serving a certain food/beverage as the income level increases from one bracket to the next

Table 2. Foods and Beverages Served by Child Care Programs Serving 1-5-Year-Olds in Georgia[1] Stratified by Race/Ethnicity Percentages

	%Black[2]			% Hispanic			% White			% Asian			% Other[3]		
Sites (%) serving at breakfast, lunch, dinner, or snack-time the day before survey	OR	Wald $\chi2(1)$[4]	p	OR	Wald $\chi2(1)$	p	OR	Wald $\chi2(1)$	p	OR	Wald $\chi2(1)$	p	OR	Wald $\chi2(1)$	p
Fruit canned in syrup, sweetened applesauce	1.005	9.317	0.002*	0.992	1.741	0.187	0.996	4.885	0.027*	0.986	1.564	0.211	0.979	2.415	0.120
Other fruit	1.007	7.906	0.005*	0.987	4.397	0.036*	0.996	2.759	0.097	0.983	1.591	0.207	0.977	3.126	0.077
Fried potatoes	1.006	10.434	0.001*	1.000	0.001	0.974	0.994	7.610	0.006*	0.933	6.467	0.011*	0.990	0.445	0.505
Beans	1.004	5.609	0.018*	1.004	0.525	0.469	0.996	5.921	0.015*	1.004	0.161	0.688	0.973	3.261	0.071
Other vegetables	1.010	12.269	<0.001*	0.992	1.471	0.225	0.993	6.535	0.011*	0.980	2.130	0.144	0.970	4.972	0.026*
Vegetarian meat substitutes	1.007	7.749	0.005*	0.995	0.366	0.545	0.992	9.399	0.002*	1.033	7.856	0.005*	0.992	0.217	0.641
Eggs	1.007	12.812	<0.001*	0.999	0.043	0.836	0.994	9.853	0.002*	0.984	1.253	0.263	0.973	2.974	0.085
Baked or broiled chicken/turkey/fish	1.012	37.073	<0.001*	0.997	0.376	0.540	0.990	27.276	<0.001*	0.978	3.704	0.054	0.961	7.841	0.005*
Processed meats	1.004	5.883	0.015*	0.994	1.183	0.277	0.997	3.297	0.069	0.992	0.445	0.505	0.984	1.598	0.206
Other meats	1.007	16.165	2.056	0.981	8.290	0.004*	0.995	6.667	0.010*	0.980	2.910	0.088	0.981	2.283	0.131
Peanut butter/nut spreads, nuts, seeds	1.001	0.183	0.669	0.985	4.547	0.033*	1.001	0.462	0.492	0.995	0.157	0.692	0.962	4.981	0.026*
Processed cheese	1.004	5.567	0.018*	1.004	0.509	0.475	0.996	5.728	0.017*	0.999	0.008	0.929	0.980	2.099	0.147
Natural cheese	0.999	2.728	0.428	1.001	0.053	0.818	1.001	0.638	0.425	1.018	2.027	0.155	0.976	3.222	0.073
Flavored yogurt with fruit flavoring/added sugars	1.002	1.404	0.236	0.994	0.846	0.358	0.999	0.389	0.533	1.000	0.001	0.971	0.970	2.907	0.088
Plain yogurt	1.004	4.961	0.026*	0.999	0.019	0.891	0.996	3.243	0.072	0.996	0.081	0.775	0.948	5.682	0.017*
Frozen treats	1.007	8.762	0.003*	0.996	0.296	0.586	0.994	6.026	0.014*	0.962	2.747	0.097	0.988	0.506	0.477

Candy	0.999	0.042	0.837	0.988	0.523	0.470	1.002	0.200	0.655	1.011	0.272	0.600	0.980	0.312	0.577
Sweet cereals	1.003	2.579	0.108	0.999	0.027	0.869	0.997	1.785	0.182	0.982	1.387	0.238	0.998	0.074	0.685
Sweet pastries	1.006	11.671	0.001*	0.989	3.267	0.071	0.995	6.819	0.009*	0.990	0.660	0.417	0.989	0.801	0.371
Regular potato or other chips	1.004	3.333	0.068	0.987	1.679	0.195	0.996	2.509	0.113	1.013	1.079	0.299	0.996	0.057	0.811
Other salty snacks	0.993	16.259	<0.001*	1.004	0.386	0.534	1.007	16.202	<0.001*	1.002	0.022	0.883	0.990	0.782	0.377
Whole grain bread/oatmeal/brown rice etc.	1.005	5.063	0.024*	0.994	0.917	0.338	0.997	1.503	0.220	0.981	2.471	0.116	0.963	7.543	0.006*
White bread/rice/pasta/etc.	1.003	3.283	0.070	0.996	0.634	0.426	0.998	1.475	0.224	0.983	2.386	0.122	0.993	0.406	0.524
Sugar-sweetened drinks	1.000	0.005	0.943	0.998	0.038	0.846	1.000	0.000	0.984	0.999	0.003	0.957	1.003	0.017	0.896
100% fruit or vegetable juice	1.003	2.118	0.146	0.994	1.452	0.228	0.999	0.182	0.670	0.976	4.306	0.035*	0.976	3.706	0.054
Milk	1.010	9.628	0.002*	0.989	2.480	0.115	0.995	2.272	0.132	0.958	12.581	<0.001*	0.963	6.658	0.010*
Bottled water	1.009	25.583	<0.001*	0.993	1.286	0.257	0.992	18.861	<0.001*	0.980	2.620	0.106	0.987	1.063	0.302
Tap water	0.991	20.839	<0.001*	0.998	0.099	0.753	1.010	22.621	<0.001*	1.004	0.083	0.771	0.994	0.296	0.586
Any water	0.998	0.677	0.410	0.992	1.124	0.289	1.005	2.478	0.115	0.990	0.455	0.500	0.977	2.985	0.084

*p<0.05

[1]Self-reported data from statewide Georgia Child Care Wellness Survey

[2]Each race/ethnicity was analyzed separately

[3]Represents students who do not identify as one of the four listed race/ethnicities

[4]Wald chi-square values indicate an increased (positive) or decreased (negative) likelihood of serving food/beverage category as the percent of students of that race/ethnicity increases

Table 3. Foods and Beverages Served by Child Care Programs Stratified by Geographic Location of Program[1]

Sites (%) serving at breakfast, lunch, dinner, or snack-time the day before survey	Rural[2] (out of n)	Suburban (out of n)	Urban (out of n)	Wald $\chi 2^3$	p
Fruit canned in syrup, sweetened applesauce	45.1% (257)	45.9% (412)	44.4% (151)	0.109	0.947
Other fruit	85.7% (265)	82.8% (430)	89.9% (159)	4.692	0.096
Fried potatoes	28.9% (256)	26.5% (408)	29.4% (153)	0.713	0.700
Beans	43.6% (257)	45.1% (406)	54.9% (153)	5.511	0.064
Other vegetables	86.9% (268)	87.9% (435)	89.2% (158)	0.495	0.781
Vegetarian meat substitutes	14.6% (246)	16.8% (394)	23.0% (148)	4.586	0.101
Eggs	37.9% (255)	38.0% (408)	39.6% (154)	0.170	0.918
Baked or broiled chicken/turkey/fish	60.9% (261)	63.2% (421)	67.7% (155)	1.951	0.377
Processed meats	49.2% (260)	46.0% (411)	51.9% (156)	1.780	0.411
Other meats	55.2% (261)	46.5% (404)	56.9% (153)	7.109	0.029*
Peanut butter/nut spreads, nuts, seeds	42.0% (264)	34.7% (415)	42.5% (153)	4.949	0.084
Processed cheese	42.5% (252)	41.7% (403)	47.0% (151)	1.305	0.521
Natural cheese	41.1% (253)	55.7% (411)	62.3% (151)	20.323	< 0.001*
Flavored yogurt with fruit flavoring/added sugars	29.0% (255)	31.4% (408)	37.6% (149)	3.227	0.199
Plain yogurt	26.2% (248)	30.8% (399)	38.4% (151)	6.496	0.039*
Frozen treats	25.1% (255)	16.7% (401)	20.3% (148)	6.788	0.034*
Candy	6.3% (252)	4.5% (399)	6.6% (152)	1.431	0.489
Sweet cereals	25.5% (255)	25.3% (411)	25.5% (157)	0.004	0.998
Sweet pastries	41.5% (258)	41.0% (410)	48.1% (154)	2.435	0.296
Regular potato or other chips	16.3% (257)	19.6% (403)	19.7% (152)	1.260	0.533
Other salty snacks	53.1% (262)	57.7% (409)	46.2% (156)	6.180	0.045*
Whole grain bread/oatmeal/brown rice etc.	79.0% (267)	78.4% (426)	82.6% (155)	1.233	0.540
White bread/rice/pasta/etc.	65.4% (266)	63.3% (409)	63.2% (155)	0.351	0.839
Sugar-sweetened drinks	8.2% (255)	5.4% (404)	6.1% (148)	2.033	0.362
100% fruit or vegetable juice	71.5% (267)	58.7% (421)	68.1% (160)	12.837	0.002*
Milk	92.7% (274)	88.4% (440)	95.0% (159)	7.310	0.026*
Bottled water	42.9% (245)	40.2% (393)	51.4% (142)	5.309	0.070
Tap water	69.8% (258)	67.4% (408)	74.3% (148)	2.463	0.292
Any water	89.4% (273)	87.7% (432)	91.9% (160)	2.081	0.353

*$p<0.05$

[1]Self-reported data from statewide Georgia Child Care Wellness Survey

[2]Rurual, suburban, and urban programs were all analyzed separately

[3]Wald chi-square value indicates if there was a difference in rate of provision of food/beverage if program was located in different area

CHAPTER 5

DISCUSSION

We hypothesized that disparities would exist between programs serving different populations and those located in different parts of the state. In general, this secondary data analysis of the Georgia Child Care Wellness Survey provided support for this hypothesis, although findings did not suggest a consistent pattern in the healthfulness of foods and beverages being served to different demographics and in different locations.

The results of this study were stratified based on three separate socioeconomic and demographic variables: income level of participant families, race/ethnicity of children enrolled, and geographic location of the child care program. Each of these variables was assessed independently, therefore, conclusions can only be drawn about each individual characteristic and do not represent interaction factors between two or more variables.

The first variable that was assessed was income level of families participating in the sample child care programs. General findings indicate that as the average income of the families increased, the provision of many unhealthy foods, such as fried potatoes, processed cheese, and frozen treats, decreased. Despite this finding, it was also statistically significant that the provision of healthful options, such as other vegetables, eggs, and milk, decreased. The only food item that programs reported serving more of as income level increased was salty snacks other than potato chips. From these results, we can conclude that although it is evident that disparity exists and child care programs serving families of different income levels are more likely to serve certain foods rather than others, we cannot draw any conclusions regarding the healthfulness of these foods. Due to the observed higher rates of obesity in low-income

Americans[15], we expected that income-based disparity would exist and that programs primarily serving low-income families would consistently serve lower quality foods and beverages. The results confirm that disparity exists but do not specifically indicate that programs serving families of higher incomes serve more healthful foods.

Next, the race/ethnicity of enrolled children was investigated. Foods such as fruit canned in syrup, fried potatoes, and processed meats were more likely to be served as the population of black children increased, and other foods such as beans, vegetables, and eggs were also more likely to be served. Separately considering beverages, as the percentage of black children increased, programs were more likely to serve bottled water but were less likely to serve tap water. Because previous research indicates that black children are disproportionately vulnerable to obesity[2,3,14], we expected that the provision of unhealthful foods, such as candy, sweet cereals, and sweet pastries, may be more available in child care programs serving a higher proportion of black children. According to the results of this study, the percentage of black students had no significant correlation to the provision of any of those foods, and, in fact, programs were less likely to serve salty snacks as the percentage of black children increased. This protective effect could be a response to the disproportionate rate of hypertension and obesity in black Americans[9]. Unfortunately, the food and beverage categories assessed in this analysis were not clearly grouped into "healthy" and "unhealthy" categories. As a result, general conclusions could not be drawn regarding the overall healthfulness of foods and beverages served. Therefore, although statistically significant differences in foods and beverages served was evident, no overarching conclusions can be drawn at this time regarding the quality of foods and beverages being served in child care programs comprised of higher ratios of black children.

The next largest group presented in the study sample was white children; a number of disparities were present as the percent of white children enrolled in respondent programs increased. First, the likelihood of providing certain unhealthy foods such as fruit canned in syrup, fried potatoes, frozen treats, and sweet pastries decreased. Although this may suggest the foods and beverages provided in child care programs largely composed of white children were healthier, the data also showed that these programs were actually more likely to provide other salty snacks. The opposite of the trend of provision of salty snacks as the percent of black children increases, this may represent a perceived protective effect as the rate of hypertension in white adults is comparatively less than in black adults[9]. Because obesity rates are typically lower in white children[2,3,14], we speculated that the foods provided in majority white child care programs may be healthier, but the decreased provision of certain foods and the increased provision of others does not concretely support that prediction. Also, programs reported that they were less likely to provide bottle water but were more likely to provide tap water as the proportion of white children increased.

When the food and beverage data were analyzed based on the percent of Hispanic children, unfortunately, not many significant findings resulted. This could be due to a smaller proportion of Hispanic children enrolled in participant programs (6%). Similarly, very few significant findings were noted as the percent of Asian children and children who identify as a race/ethnicity other than the four explicitly included. Therefore, for the purpose of this data analysis, trends in food and beverage provision focused on enrollment of black and white children in respondent programs.

The last independent variable assessed was the geographic location of respondent programs. Geographic location was evaluated by categorizing each child care program into one of three categories: rural, suburban, or urban[31]. Very few significant findings were reported. Of

those, multiple findings indicated disparity largely in dairy products depending on the location of the child care program. Natural cheese, plain yogurt, and milk were all served at significantly different rates depending on the geographic location of the child care program. This could be, in part, due to lack of access due to location as well as the risk of purchasing highly perishable foods if travel to a grocery store or market is far. The only other notable trends were that programs served 100% fruit or vegetable juice and frozen treats at different rates depending on the geographic location of the child care program.

The most prevalent disparities were noted with regards to the percentage of black children enrolled in a child care program and with regards to the income level of participant families. Very few disparities were noted related to the enrollment of Asian and Hispanic students, as well as related to the enrollment of students who identify as a race/ethnicity not specifically included in this study. It is clear that disparity exists between child care programs, but it is likely that these observed differences are better explained by the complex interaction of program type, location, and student population, not simply the income level of participant families, race/ethnicity of enrolled children, and geographic location of the child care program alone.

Strengths of this Study

There are some clear strengths of this study. No known studies have investigated the presence or absence of disparities in foods and beverages served in child care programs, stratified based on socioeconomic and demographic variables. This study, therefore, contributes to the growing accumulation of knowledge about health disparities and childhood obesity risk factors. Additional strengths of this study include the random sampling process from regions across the state as well as the multiple types of child care programs, the comprehensiveness of the initial survey, as well as the thorough data analysis process. Inter-professional collaboration

as well as cooperation with Georgia's Department of Early Care and Learning helped to make this research comprehensive and consistent with state standards.

Limitations of this Study

The study also had a few limitations. First, survey responses were collected via self-report, which may have led to inaccurate reporting due to unavoidable desirability bias. To address this concern, programs were assigned a unique ID and informed that their answers were completely confidential and would be completely dissociated with their program once the survey was received by the researchers. Additionally, the sample of child care programs only included those in the state of Georgia. Thus, the results of this study may not be generalizable to other populations. Finally, the scope of this study did not extend to include interaction terms between income level, race/ethnicity, and geographic location, so we were not able to draw conclusions regarding the impact of the interaction between these variables on the foods and beverages served in child care programs across Georgia.

Implications for Future Research

This study is the first to assess the presence of disparities in foods and beverages served in child care programs across the state of Georgia, specifically considering socioeconomic and demographic factors. Findings from this study may provide information to researchers and policy makers within the child care field on the need for further research and, in turn, stricter regulation on food and beverages served in child care program in Georgia. Specifically, the presence of disparities between black and white children, low-income children, and those located in different parts of the state indicates the need for increased child care food and beverage regulation. Continuing research regarding factors that may predispose certain pediatric populations in addition to the foods and beverages provided in child care programs is essential to better understand current disparities in obesity rates. The use of multifactorial variables, such as

assessing programs that identify as primarily serving low-income families *and* that serve a higher percentage of black students, may lend a clearer explanation for the disparity observed in this study.

CHAPTER 6

CONCLUSION

In conclusion, there is room for improvement of foods and beverages served in child care programs in the state of Georgia and not all child care programs are serving foods and beverages of the same quality. Child care programs serving families of higher incomes were less likely to serve certain unhealthy foods, such as fried potatoes and frozen treats, but were also less likely to serve healthier options, such as other vegetables and eggs. As income level increased, respondent programs were more likely to provide other salty snacks. Programs serving higher proportions of black children were more likely to serve certain foods, such as fruits canned in syrup and processed meats, as well as beans and vegetables, and there was no pattern in the healthfulness of these food trends. The percentage of white children enrolled yielded mixed results when analyzing foods and beverages served. Certain food items were reportedly served less, such as frozen treats and sweet pastries, but other food items, such as other salty snacks, were reportedly offered more often as the percentage of white children increased. There were minimal significant findings regarding the provision of certain fruits and vegetables with regards to the percentage of Hispanic and Asian children enrolled, likely due to the underrepresentation of these children in the study sample, and increased research pertaining to these race/ethnicity categories is necessary. Very few trends were noted with respect to geographic location, but data did indicate that dairy products were served at different rates depending on the geographic location of the child care program. The inconsistency and lack of clarity in the aforementioned disparities indicates a critical need for further research regarding socio-ecological characteristics that may contribute to the observed varying rates in childhood obesity in America.

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APPENDIX A

GEORGIA CHILDCARE WELLNESS SURVEY

2017 Georgia Child Care Study

INSTRUCTIONS: *Please read each statement or question carefully and mark the box that best fits your child care center or home. It is important to answer each question. Choose only one answer box, unless it says to choose all answers that apply.*

There are ***no right or wrong answers*** *– only what you think. Thank you!*

SECTION A: *About Your Child Care Program*

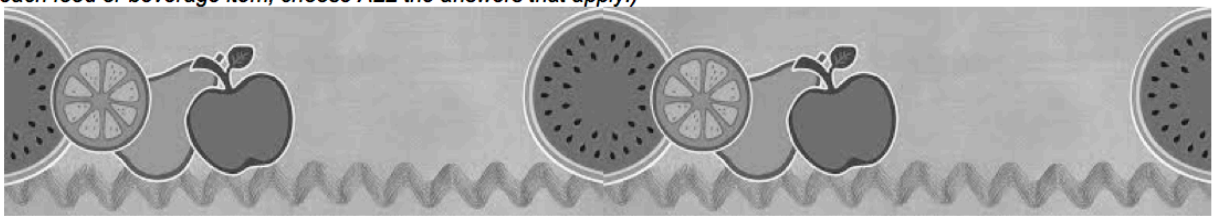
1. **Zip code** of child care program	_____				
2. Total **number of staff** (counting yourself)	_____				
3. Total **number of children** enrolled in your program	_____				
4. Total number of children enrolled **by race/ethnicity**	Black _____	Hispanic_____	White_____	Asian/Pacific Islander__	Other (write in)_____
5. Number of children enrolled **by age**	0-5 months_____	6-11 months _____	12-23 months _____	24-35 months _____	3-5 years _____
6. Income level of majority families served by program	__< $20K	__$20K-$35K	__$35-$50K	__$50K-$60K	__>$60K
7. Child care offered	☐ 1 Full-day	☐ 2 Half-day	☐ 3 Both full- and half-day		
8. **Type** of child care site ***(choose all that apply)***	☐ 1 Child Care Learning Center __Head Start __Early Head Start __Military	☐ 2 Georgia Pre-K	☐ 3 Family Child Care Home	☐ 4 Exempt Program	
9. What is the job title of person completing survey? ***(choose all that apply)***	☐ 1 Center or home owner	☐ 2 Director or Site Supervisor	☐ 3 Family child care-giver	☐ 4 Teacher	☐ 5 Other (write in) _____
10. Who is responsible for **menu planning?** ***(choose all that apply)***	☐ 1 Center or family child care giver	☐ 2 Director or Site Supervisor	☐ 3 Cook or chef	☐ 4 Dietitian	☐ 5 Other (write in) _____
11. Does your site participate in **CACFP?** (Child and Adult Care **Food Program** is the reimbursement program)	☐ 1 Yes	☐ 2 No	☐ 3 Don't know		
12. How much do you know about the new **2017 CACFP meal patterns**?	☐ 1 Haven't heard of them	☐ 2 Heard of them but don't know much about	☐ 3 Know a little about them	☐ 4 Know somewhat about them	☐ 5 Know a lot about them
13. Is your program following the new 2017 CACFP guidelines?	☐ 1 Yes	☐ 2 No	☐ 3 Don't know		

14. Which meals and snacks are provided? ***(choose at least one answer per line)***	**Not provided**	**Usually provided by child care site**	**Usually brought from home by parents**
a. Breakfast	☐ 1	☐ 2	☐ 3
b. Lunch	☐ 1	☐ 2	☐ 3
c. Dinner	☐ 1	☐ 2	☐ 3
d. Mid-morning snack	☐ 1	☐ 2	☐ 3
e. Mid-afternoon snack	☐ 1	☐ 2	☐ 3
f. Evening snack	☐ 1	☐ 2	☐ 3

15. How is food prepared at your child care program? (do **not** include food brought in by parents) operation?	☐ 1 Prepared on site (at child care center/home)	☐ 2 Prepared at central kitchen operated by child care center(s)	☐ 3 Prepared by school food service	☐ 4 Pre-prepared by and purchased from independent food service company	☐ 5 Other (write in) _____
16. How **long** has your child care program been open for operation?	☐ 1 Less than 6 months	☐ 2 6 months up to 1 year	☐ 3 1 year up to 3 years	☐ 4 3 years up to 5 years	☐ 5 5 or more years

Foods Offered to Children 1 to 5 years old

SECTION B: *Think about the foods and beverages provided to **1-5 year old children** at your child care program **YESTERDAY** (or the most recent day children were in your care). Include all foods and beverages, including those brought in by parents and those used as treats or for parties. All answers should be about **1-5 year old children ONLY**. (For each food or beverage item, choose ALL the answers that apply.)*



*Which were provided **YESTERDAY to 1-5 year olds**?*	Not Provided	Provided at Breakfast	Provided at Lunch	Provided at Dinner	Provided at Snack-time
1. **Fruit canned in syrup** (heavy or lite) or **sweetened applesauce**	☐1	☐2	☐3	☐4	☐5
2. **Other fruit** - fresh, canned in water or own juice, dried or frozen (do **not** include fruit juice)	☐1	☐2	☐3	☐4	☐5
3. **Fried potatoes** like french fries, tater tots, hash browns	☐1	☐2	☐3	☐4	☐5
4. **Beans** like pinto beans, black beans, chili with beans, refried beans	☐1	☐2	☐3	☐4	☐5
5. **Other vegetables** - fresh, frozen or canned (do **not** include fried potatoes or cooked dry beans)	☐1	☐2	☐3	☐4	☐5
6. **Vegetarian** hot dogs or burgers, tofu, tempeh or other meat substitutes	☐1	☐2	☐3	☐4	☐5
7. **Eggs**	☐1	☐2	☐3	☐4	☐5
8. **Baked or broiled chicken, turkey, or fish**	☐1	☐2	☐3	☐4	☐5
9. **Processed meats** like chicken nuggets, fish sticks, hot dogs, corn dogs, bologna or other lunch meat, sausage, bacon, ham	☐1	☐2	☐3	☐4	☐5
10. **Other meats** like beef, hamburger, pork	☐1	☐2	☐3	☐4	☐5
11. **Peanut butter, other nut spreads, nuts, or seeds**	☐1	☐2	☐3	☐4	☐5
12. **Processed cheese** like American cheese slices, cheese spread or dip	☐1	☐2	☐3	☐4	☐5
13. **Natural cheese** like cottage cheese, mozzarella, cheddar cheese, Monterey Jack	☐1	☐2	☐3	☐4	☐5
14. **Yogurt flavored** with fruit flavoring or added sugars (include Gogurt, drinkable yogurt)	☐1	☐2	☐3	☐4	☐5
15. **Yogurt plain** with ***no*** fruit flavoring or added sugars	☐1	☐2	☐3	☐4	☐5
16. **Frozen treats** like ice cream, shake, popsicle, Icee, frozen yogurt	☐1	☐2	☐3	☐4	☐5
17. **Candy** like hard candy, chocolate, gum, fruit roll up, fruit gummies	☐1	☐2	☐3	☐4	☐5
18. **Sweet cereals** like Frosted Flakes, Apple Jacks, Froot Loops, Sugar Smacks, Lucky Charms, Honey Nut Cheerios	☐1	☐2	☐3	☐4	☐5
19. **Sweet pastries** like cupcakes, cookies, animal crackers, graham crackers, brownies, pies, pop tarts, sweet rolls, donuts, muffins and other sweet grains	☐1	☐2	☐3	☐4	☐5
20. **Regular potato chips**, tortilla chips, corn chips, Cheetos, cheese puffs, pork rinds (do not include baked chips)	☐1	☐2	☐3	☐4	☐5
21. Other **salty snacks** like crackers, pretzels, popcorn, baked chips	☐1	☐2	☐3	☐4	☐5

*Which were provided **YESTERDAY to 1-5 year olds**?*	Not Provided	Provided at Breakfast	Provided at Lunch	Provided at Dinner	Provided at Snack-time
22. **Whole grain** bread, oatmeal, brown rice, whole wheat tortillas, corn tortillas, whole grain cereal such as plain Cheerios (do **not** include Honey Nut Cheerios)	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
23. **White bread, white rice, pasta, noodles,** cornbread, biscuits, rolls, bagels, pancakes, waffles and **other grains** (do **not** include whole grains)	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
24. **Sugar-sweetened* drinks** like soda, sports drinks, Kool-aid, Sunny Delight, Capri Sun, Hawaiian Punch, lemonade, fruit drinks, aguas frescas, sweet tea (do **not** include diet drinks)*	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
25. **100% fruit or vegetable juice** (do **not** include fruit-flavored drinks like Kool-Aid, Sunny Delight, Capri Sun, Hawaiian Punch, lemonade, aguas frescas)	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
26. **Milk** (all types, including whole, low fat, nonfat, skim, flavored, rice or soy milk)	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
27. **Bottled water**	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
28. **Water from the tap or faucet**	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5

*Sugar-sweetened drinks are sweetened with sugar, high fructose corn syrup, or other caloric sweeteners.

SECTION C: *Please answer these questions about the children who are **1 up to 5 years of age ONLY**.*

1.	What **type of milk is MOST OFTEN** provided to **1 up to 2 year olds** at your child care program? ***(choose only one)***	☐ 1 Whole or regular	☐ 2 2% fat	☐ 3 1% fat	☐ 4 Non-fat or skim	☐ 5 Rice or soy milk	☐ 6 Flavored or sweetened (like chocolate, vanilla, horchata)
2.	What are **ALL of the types of milk** provided to **1 up to 2 year olds** at your child care program? ***(choose all that apply)***	☐ 1 Whole or regular	☐ 2 2% fat	☐ 3 1% fat	☐ 4 Non-fat or skim	☐ 5 Rice or soy milk	☐ 6 Flavored or sweetened (like chocolate, vanilla, horchata)
3.	What **type of milk is MOST OFTEN** provided to **2 up to 5 year olds** at your child care program? ***(choose only one)***	☐ 1 Whole or regular	☐ 2 2% fat	☐ 3 1% fat	☐ 4 Non-fat or skim	☐ 5 Rice or soy milk	☐ 6 Flavored or sweetened (like chocolate, vanilla, horchata)
4.	What are **ALL of the types of milk** provided to **2 up to 5 year olds** at your child care program? ***(choose all that apply)***	☐ 1 Whole or regular	☐ 2 2% fat	☐ 3 1% fat	☐ 4 Non-fat or skim	☐ 5 Rice or soy milk	☐ 6 Flavored or sweetened (like chocolate, vanilla, horchata)
5.	Is drinking **water** available **outside** for children? ***(choose only one)***	☐ 1 Not easily available	☐ 2 Available **only** during planned water breaks	☐ 3 Given to children on request	☐ 4 Easily and visibly available for self-serve		
6.	Is drinking **water** available **inside** for children? ***(choose only one)***	☐ 1 Not easily available	☐ 2 Available **only** during planned water breaks	☐ 3 Given to children on request	☐ 4 Easily and visibly available for self-serve		
7.	How is drinking **water** made available to children **inside** ***(choose all that apply)***	☐ 1 Non-refrigerated drinking fountain/faucet	☐ 2 Refrigerated drinking fountain/faucet	☐ 3 Filtered drinking fountain/faucet	☐ 4 Unfiltered drinking fountain/faucet		
		☐ 5 Individual sized disposable (single use) water bottles	☐ 6 Individual sized reusable water bottles	☐ 7 Large water bottles coolers, dispensers (like in office buildings)	☐ 8 Serving pitchers		
		☐ 9 Other (write in): _____					

8.	How is drinking **water** made available to children **outside** ***(choose all that apply)***	☐ 1 Non-refrigerated drinking fountain/faucet ☐ 2 Refrigerated drinking fountain/faucet ☐ 3 Filtered drinking fountain/faucet ☐ 4 Unfiltered drinking fountain/faucet ☐ 5 Individual sized disposable (single use) water bottles ☐ 6 Individual sized reusable water bottles ☐ 7 Large water bottles coolers, dispensers (like in office buildings) ☐ 8 Serving pitchers ☐ 9 Other (write in): _____
9.	How is drinking **water** provided **at the table at meals or snacks** (for example, in pitchers, cups, or bottles for children to drink)**?** ***(choose all that apply)***	☐ 1 Not provided at the table at meals or snacks ☐ 2 Provided at the table with meals ☐ 3 Provided at the table with snacks ☐ 4 Provided only after child finishes milk or juice ☐ 5 Provided only after child finishes meal or snack ☐ 6 Children allowed only one serving ☐ 7 Children allowed to self-serve as much as they want ☐ 8 Provided only upon request by child
10.	What makes it hard to limit **fruit juice** served to children to no more than once per day? ***(choose all that apply)***	☐ 1 Children like taste ☐ 2 Parents bring to child care ☐ 3 High cost of whole fruit ☐ 4 Children do not like other drinks ☐ 5 Serving less juice is not a priority ☐ 6 It is not hard ☐ 7 Other (write in): _____
11.	What has or will help you to limit the amount of **fruit juice** served to children? ***(choose all that apply)***	☐ 1 Information for families ☐ 2 Training for providers ☐ 3 Support from parents/families ☐ 4 Written juice guidelines ☐ 5 None of these ☐ 6 Other (write in): _____
12.	What makes it hard to provide only **unflavored whole milk** to **1 year olds**? ***(choose all that apply)***	☐ 1 1 year olds do not like unflavored milk ☐ 2 1 year olds drink less milk if it's not flavored ☐ 3 Parents bring flavored milk to child care ☐ 4 High cost of unflavored whole milk ☐ 5 Unflavored whole milk not available where I shop for food ☐ 6 Serving unflavored whole milk to 1 year olds is not a priority ☐ 7 It is not hard ☐ 8 I don't provide care for 1 year olds ☐ 9 Other (write in): _____
13.	What has or will help you to provide only **unflavored whole milk** to **1 year olds**? ***(choose all that apply)***	☐ 1 Information for families ☐ 2 Training for providers ☐ 3 Support from parents/families ☐ 4 Written milk guidelines ☐ 5 None of these ☐ 6 I don't provide care for 1 year olds ☐ 7 Other (write in): _____
14.	What makes it hard to provide only **unflavored low-fat or fat-free milk** to children **2 to 5 years old**? ***(choose all that apply)***	☐ 1 Children do not like unflavored low-fat or fat-free milk ☐ 2 Children drink less milk if it's not flavored or low-fat/fat-free ☐ 3 Parents bring flavored or whole milk to child care ☐ 4 High cost of unflavored low-fat or fat-free milk ☐ 5 Unflavored low-fat or fat-free milk not available where I shop for food ☐ 6 Serving unflavored low-fat or fat-free milk to children is not a priority ☐ 7 It is not hard ☐ 8 Other (write in): _____
15.	What has or will help you to provide **only unflavored low-fat or fat-free milk** to **2 to 5 year olds**? ***(choose all that apply)***	☐ 1 Information for families ☐ 2 Training for providers ☐ 3 Support from parents/families ☐ 4 Written milk guidelines ☐ 5 None of these ☐ 6 Other (write in): _____

IF YOU DO NOT PROVIDE CHILD CARE TO INFANTS (0-12 MONTHS OLD), PLEASE CHECK BOX HERE ☐
AND DO NOT COMPLETE THE REST OF THE SURVEY

Foods Offered to Infants 0 up to 12 months old

SECTION D: *Think about the foods and beverages provided to **0 up to 12-month-old infants** at your program **YESTERDAY** (or the most recent day infants were in your care). Include all foods and beverages, including those brought in by parents and those used as treats or for parties. Answer for infants up to **12 months of age ONLY**. (For each food or beverage, choose ALL answers that apply.)*

Which were provided YESTERDAY to 0-12 month olds?	Not Provided	Provided at Breakfast	Provided at Lunch	Provided at Dinner	Provided at Snack-time
1. **Baby food fruits in a jar or pouch** like apples, bananas, pears	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
2. **Canned fruit in syrup** (heavy or light) or **sweetened applesauce**	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
3. **Other fruit** like chopped bananas or other pureed fruits – fresh, canned in water or own juice, or frozen (do **not** include fruit juice)	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
4. **Baby food vegetables in a jar or pouch** like sweet potatoes, mixed vegetables, carrots, peas, squash, green beans	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
5. **Fried potatoes** like french fries, tater tots, hash browns	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
6. **Beans** like pinto beans, black beans, chili with beans, refried beans	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
7. **Other vegetables** – fresh, frozen or canned, cooked or pureed (do **not** include fried potatoes or cooked dry beans)	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
8. **Baby food meats in a jar or pouch** like chicken, turkey, beef	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
9. **Baby food dinners** like Gerber Lil' Entrees or other ready-made meals	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
10. **Eggs**	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
11. **Baked or broiled chicken, turkey, fish, tofu**	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
12. **Processed meats** including chicken nuggets, fish sticks, hot dogs, corn dogs, bologna or other lunch meat, sausage, bacon, ham	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
13. **Other meats** like beef, hamburger, pork	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
14. **Peanut butter or other nut spreads**	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
15. **Processed cheese** like American cheese slices, cheese spread or dip	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
16. **Natural cheese** like cottage cheese, mozzarella, cheddar cheese, Monterey Jack	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
17. **Yogurt flavored** with fruit flavoring or added sugars (include Gogurt, drinkable yogurt)	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
18. **Yogurt plain** with ***no*** fruit flavoring or added sugars	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
19. **Frozen treats** like ice cream, shake, popsicle, Icee, frozen yogurt	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
20. **Candy** like chocolate, fruit roll up, fruit gummies	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
21. **Sweet cereals** like Frosted Flakes, Apple Jacks, Fruit Loops, Sugar Smacks, Lucky Charms, Honey Nut Cheerios	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
22. **Infant cereals** like rice, oatmeal	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5

Which were provided YESTERDAY to 0-12 month olds?	Not Provided	Provided at Breakfast	Provided at Lunch	Provided at Dinner	Provided at Snack-time
23. **Sweet pastries** like cupcakes, cookies, animal crackers, graham crackers, brownies, pies, pop tarts, sweet rolls, donuts, muffins and other sweet grains	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
24. **Salty snacks** like crackers, pretzels, popcorn, baked chips	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
25. **Regular potato chips**, tortilla chips, corn chips, Cheetos, cheese puffs, pork rinds	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
26. **Whole grain** bread, whole grain pasta, oatmeal, brown rice, whole wheat tortillas, whole grain cereal such as plain Cheerios (do **not** include Honey Nut Cheerios)	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
27. **White bread, white rice, pasta, noodles,** cornbread, biscuits, rolls, bagels, pita, pancakes, waffles and **other grains** (do **not** include whole grains)	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
28. **Sugar-sweetened drinks** like Kool-aid, Sunny Delight, Capri Sun, Hawaiian Punch, lemonade, fruit drinks, aguas frescas	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
29. **100% fruit or vegetable juice** (do **not** include fruit-flavored drinks like Kool-Aid, Sunny Delight, Capri Sun, Hawaiian Punch, lemonade, aguas frescas)	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
30. **Bottled water**	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
31. **Water from the tap or faucet**	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5

SECTION E: *Please answer these questions about the infants in your care who are **up to 12 months of age ONLY**.*

1.	What **type of milk is MOST OFTEN** provided to infants up to 12 months at your child care program? ***(choose only one)***	☐ 1 Breast milk	☐ 2 Infant formula	☐ 3 Cow's milk	☐ 4 Soy milk
2.	What are **ALL of the types of milk** provided to infants up to 12 months at your child care program? ***(choose all that apply)***	☐ 1 Breast milk	☐ 2 Infant formula	☐ 3 Cow's milk	☐ 4 Soy milk
3.	Which statement best describes how many infants are given **breast milk versus formula** while at your program? ***(choose only one)***	☐ 1 Most infants get breast milk only	☐ 2 Most infants get formula only	☐ 3 About half of infants get breast milk and half get formula	
		☐ 4 Most infants get more breast milk than formula	☐ 5 Most infants get more formula than breast milk		
4.	What are some reasons that infants are not given **breast milk** in your child care? ***(choose all that apply)***	☐ 1 Breast milk is not provided by mothers	☐ 2 Not enough refrigerated storage for breast milk	☐ 3 Not enough private space for mothers to breastfeed or express milk	
		☐ 4 Mothers are unable to take time from work to come breastfeed or express milk	☐ 5 Not enough training for staff members on proper handling of breast milk	☐ 6 None of these because all are given breast milk	
		☐ 5 Other (write in): _____			
5.	What has or will help you to give infants **breast milk**? ***(choose all that apply)***	☐ 1 Telling pregnant mothers/families that this is a breastfeeding friendly center/home	☐ 2 Providing breastfeeding information and support to help mothers continue breastfeeding when working or going to school	☐ 3 Training for providers supporting mothers to breastfeed	
		☐ 4 Support from a local breastfeeding coalition	☐ 5 Written guidelines on breastfeeding in child care	☐ 6 Not applicable because help is not needed	
		☐ 7 Other (write in):_____			

6. What makes it hard to give *only* **breast milk or formula** to **younger infants**? ***(choose all that apply)***

☐ 1 Parents provide other solid food for their infants ☐ 2 Providing only breast milk or formula to infants is not a priority ☐ 3 It is not hard
☐ 4 Other (write in): _____

7. What has or will help you to give *only* **breast milk or formula** to **younger infants**? ***(choose all that apply)***

☐ 1 Training providers on providing only breast milk or formula to infants ☐ 2 Educating parents on the importance of providing only breast milk or formula to infants
☐ 3 Written guidelines on serving only breast milk or formula ☐ 4 None of these
☐ 5 Other (write in): _____

8. What makes it hard to give less **100% fruit juice** to infants? ***(choose all that apply)***

☐ 1 Infants like the taste of fruit juice ☐ 2 Infants do not like other drinks
☐ 3 Parents bring juice to child care ☐ 4 Serving less juice is not a priority ☐ 5 It is not hard
☐ 6 Other (write in): _____

9. What has or will help you to limit **fruit juice** served to infants? ***(choose all that apply)***

☐ 1 Information for families ☐ 2 Training for providers ☐ 3 Support from parents/families
☐ 4 Written juice guidelines ☐ 5 None of these
☐ 6 Other (write in): _____

10. At what age are **solid foods** generally first given to infants in your care? ***(choose all that apply)***

☐ 1 Under 3 months ☐ 2 4-6 months ☐ 3 7-9 months ☐ 4 10-12 months

11. What makes it hard to give **solid foods** to infants when they are 4 – 6 months of age? ***(choose all that apply)***

☐ 1 Parents want their infants eating solid food sooner ☐ 2 Parents want their infants eating solid food later
☐ 3 The timing for introducing solid food is not a priority ☐ 4 It is not hard
☐ 5 Other (write in): _____

12. What has or will help you to give **solid foods** to infants when they are 4 – 6 months of age? ***(choose all that apply)***

☐ 1 Information for families ☐ 2 Training for providers ☐ 3 Support from parents/families
☐ 4 Written guidelines on when and how to give solids to infants ☐ 5 None of these
☐ 6 Other (write in): _____

13. What makes it hard to provide **fruits and vegetables** as a snack to **older infants**? ***(choose all that apply)***

☐ 1 Infants do not like fruits and vegetables as a snack ☐ 2 Not sure what kind of fruits and vegetables to buy ☐ 3 Fruits and vegetables are too difficult to prepare as a snack ☐ 4 Fruits and vegetables are expensive
☐ 5 Fruits and vegetables are hard for me to find ☐ 6 Infants are not served snacks ☐ 7 Serving fruits and vegetables to infants is not a priority ☐ 8 It is not hard
☐ 9 Other (write in): _____

14. What has or will help you to serve **fruits and vegetables** as a snack to **older infants**? ***(choose all that apply)***

☐ 1 Information for families ☐ 2 Training for providers ☐ 3 Recipes or tips for serving fruits and vegetables that infants will eat
☐ 4 Support from parents or families ☐ 5 Written guidelines on snacks for infants ☐ 6 None of these
☐ 7 Other (write in): _____

THANK YOU FOR YOUR TIME!

Survey ID | | | | | |

E-Learning

You have completed the wellness survey. Would you be willing to answer 8 short survey questions about e-learning for child care providers?

1.	Do you have Internet access?	☐ Yes	☐ No				
2.	Where do you use to access the Internet?	☐ Home	☐ Public Wi-Fi (stores, restaurants)	☐ Library	☐ Work	☐ E-reader (Kindle, Nook, etc.)	
3.	What device(s) do you use to access the Internet? ***(Choose all that apply)***	☐ Laptop	☐ Tablet	☐ Smartphone	☐ Desktop computer	☐ E-reader (Kindle, Nook, etc.)	
4.	If you answered more than one to question #3, which do you use the most often? ***(Choose one)***	☐ Laptop	☐ Tablet	☐ Smartphone	☐ Desktop computer	☐ E-reader (Kindle, Nook, etc.)	
5.	Which format for a training program interests you the most? ***(Choose three)***	☐ Podcast: digital audio file available on the Internet	☐ Video-based: static text reinforced by videos	☐ Social-media based: training accessed through Pinterest, Facebook, Twitter, and/or Instagram	☐ Interactive video: click and choose options on a video		
		☐ Phone application: training that is available on a smartphone	☐ Text message: get a daily or weekly tip through text message				
6.	Which social media sites do you use the most?	☐ Facebook	☐ MySpace	☐ Pinterest	☐ Instagram		
		☐ Twitter	☐ Other	☐ I do not use social media			
7.	How likely are you to use the Internet to take a free 15-minute educational session or class on a topic that interests you? ***(choose only one)***	☐ Not at all	☐ Probably not at all	☐ Possibly	☐ Probably		
		☐ Definitely					
8.	Have you ever had beverage policy training?	☐ Yes	☐ No				

8

Please fill out the information below with your completed survey.
We will use your contact information to enter you in a drawing for a $250 gift certificate to your local grocery store.
We will also use this to identify the first 204 programs to submit their surveys.
These programs will receive a resource kit filled with nutrition education materials for child care.
Your contact information and survey responses are completely confidential.
Thank you!

PRIZE ENTRY	
Your Name:	_____
Child Care Program Name:	_____
Program Address:	_____
Work Phone:	_____

APPENDIX B

TABLE 1: FOODS AND BEVERAGES SERVED BY CHILD CARE PROGRAMS SERVING 1-5 YEAR-OLDS IN GEORGIA STRATIFIED BY MEDIAN HOUSEHOLD INCOME OF PARTICIPANT FAMILIES

Table 1. Foods and Beverages Served by Child Care Programs Serving 1-5-Year-Olds in Georgia[1] Stratified by Median Household Income of Participant Families

Sites (%) serving at breakfast, lunch, dinner, or snack-time the day before survey[2]	< $20K (out of n)[3]	$20K-$35K (out of n)	$35K-$50K (out of n)	$50K-$60K (out of n)	>60K	Wald $\chi2(4)$[4]	Wald $\chi2(4)$ p-value	Spearman's ρ[5]	Spearman's ρ p-value
Fruit canned in syrup, sweetened applesauce	50.0% (196)	56.5% (184)	45.8% (144)	35.8% (67)	30.3% (109)	22.411	<0.001*	-0.141	<0.001*
Other fruit	86.2% (196)	85.9% (192)	84.5% (148)	87.8% (74)	83.8% (117)	0.852	0.931	-0.016	0.662
Fried potatoes	34.0% (188)	31.7% (186)	21.7% (138)	12.7% (71)	21.8% (110)	16.955	0.002*	-0.139	<0.001*
Beans	49.2% (195)	46.7% (180)	41.0% (139)	43.7% (71)	38.3% (107)	4.446	0.349	-0.076	0.046*
Other vegetables	91.4% (198)	91.8% (195)	85.1% (148)	86.5% (74)	83.9% (118)	7.940	0.094	-0.093	0.012*
Vegetarian meat substitutes	20.1% (179)	14.5% (179)	13.6% (140)	12.7% (71)	16.2% (105)	3.720	0.445	-0.050	0.190
Eggs	43.7% (190)	39.9% (183)	35.3% (139)	27.8% (72)	30.3% (109)	9.090	0.059	-0.111	0.003*
Baked or broiled chicken/turkey/fish	71.8% 195	71.0% (186)	51.0% (143)	52.8% (72)	60.4% (111)	23.477	<0.001*	-0.140	<0.001*
Processed meats	54.1% (194)	50.3% (185)	42.9% (140)	40.3% (72)	41.3% (109)	8.343	0.08	-0.106	0.005*
Other meats	55.5% (191)	59.5% (185)	45.7% (138)	48.6% (72)	33.3% (108)	21.378	<0.001*	-0.145	<0.001*
Peanut butter/nut spreads, nuts, seeds	42.2% (192)	40.8% (184)	27.3% (143)	30.1% (73)	40.5% (111)	11.004	0.027*	-0.063	0.097
Processed cheese	45.8% (190)	48.9% (182)	41.3% (138)	37.5% (72)	30.8% (104)	10.405	0.034*	-0.103	0.007*
Natural cheese	48.7% (189)	55.6% (180)	45.3% (137)	54.8% (73)	61.8% (110)	8.579	0.073	0.057	0.133
Flavored yogurt with fruit flavoring/added sugars	34.9% (186)	28.3% (184)	23.0% (139)	34.2% (73)	37.7% (106)	8.622	0.071	0.000	0.995
Plain yogurt	33.5% (185)	32.8% (180)	29.0% (138)	26.1% (69)	29.1% (103)	2.017	0.733	-0.048	0.214
Frozen treats	27.7% (188)	18.6% (177)	16.7% (138)	11.3% (71)	12.0% (108)	15.306	0.004*	-0.147	<0.001*

Candy	4.8% (186)	4.5% (179)	6.5% (139)	5.6% (71)	5.8% (103)	0.772	0.942	0.023	0.551
Sweet cereals	20.9% (191)	34.1% (185)	24.5% (139)	23.6% (72)	13.8% (109)	16.744	0.002*	-0.051	0.176
Sweet pastries	48.7% (195)	45.9% (183)	38.1% (139)	33.3% (72)	34.0% (106)	10.557	0.032*	-0.120	0.002*
Regular potato or other chips	17.6% (188)	18.1% (182)	12.2% (139)	19.7% (72)	20.8% (106)	3.701	0.448	0.010	0.789
Other salty snacks	42.2% (187)	56.1% (187)	58.5% (142)	56.3% (71)	64.6% (113)	16.856	0.002*	0.143	<0.001*
Whole grain bread/oatmeal/brown rice etc.	79.0% (195)	84.4% (192)	77.8% (144)	77.0% (74)	71.1% (114)	7.736	0.102	-0.066	0.078
White bread/rice/pasta/etc.	68.2% (192)	70.0% (190)	58.9% (141)	50.7% (71)	58.9% (112)	12.492	0.014*	-0.107	0.005*
Sugar-sweetened drinks	5.9% (188)	5.6% (179)	5.7% (140)	4.2% (72)	8.5% (106)	1.649	0.800	0.019	0.628
100% fruit or vegetable juice	72.4% (196)	69.2% (195)	61.8% (144)	56.9% (72)	49.6% (113)	20.081	<0.001*	-0.163	<0.001*
Milk	92.5% (201)	97.0% (198)	89.3% (150)	91.8% (73)	82.6% (121)	18.135	0.001*	-0.114	0.002*
Bottled water	46.3% (175)	44.3% (176)	44.4% (133)	36.1% (72)	37.0% (108)	3.930	0.416	-0.067	0.083
Tap water	66.3% (187)	66.7% (189)	79.0% (141)	75.0% (72)	72.7% (110)	4.052	0.399	0.067	0.077
Any water	86.4% (199)	90.3% (195)	93.2% (148)	90.7% (75)	86.2% (116)	5.431	0.246	0.023	0.527

*p<0.05

[1]Self-reported data from statewide Georgia Child Care Wellness Survey

[2]Indicates percent of programs within each income bracket serving food/beverage item

[3]Each variable was assessed independently and percentages will not add to 100%

[4]Wald chi-square values indicate a difference in food/beverage provision as income level changes

[5]Spearman's rho values indicate the increased (positive) or decreased (negative) likelihood of serving a certain food/beverage as the income level increases from one bracket to the next

APPENDIX C

TABLE 2: FOODS AND BEVERAGES SERVED BY CHILD CARE PROGRAMS SERVING 1-5 YEAR-OLDS IN GEORGIA STRATIFIED BY RACE/ETHNICITY PERCENTAGES

Table 2. Foods and Beverages Served by Child Care Programs Serving 1-5-Year-Olds in Georgia[1] Stratified by Race/Ethnicity Percentages

	%Black[2]			% Hispanic			% White			% Asian			% Other[3]		
Sites (%) serving at breakfast, lunch, dinner, or snack-time the day before survey	OR	Wald $\chi2(1)$[4]	p	OR	Wald $\chi2(1)$	p	OR	Wald $\chi2(1)$	p	OR	Wald $\chi2(1)$	p	OR	Wald $\chi2(1)$	p
Fruit canned in syrup, sweetened applesauce	1.005	9.317	0.002*	0.992	1.741	0.187	0.996	4.885	0.027*	0.986	1.564	0.211	0.979	2.415	0.120
Other fruit	1.007	7.906	0.005*	0.987	4.397	0.036*	0.996	2.759	0.097	0.983	1.591	0.207	0.977	3.126	0.077
Fried potatoes	1.006	10.434	0.001*	1.000	0.001	0.974	0.994	7.610	0.006*	0.933	6.467	0.011*	0.990	0.445	0.505
Beans	1.004	5.609	0.018*	1.004	0.525	0.469	0.996	5.921	0.015*	1.004	0.161	0.688	0.973	3.261	0.071
Other vegetables	1.010	12.269	<0.001*	0.992	1.471	0.225	0.993	6.535	0.011*	0.980	2.130	0.144	0.970	4.972	0.026*
Vegetarian meat substitutes	1.007	7.749	0.005*	0.995	0.366	0.545	0.992	9.399	0.002*	1.033	7.856	0.005*	0.992	0.217	0.641
Eggs	1.007	12.812	<0.001*	0.999	0.043	0.836	0.994	9.853	0.002*	0.984	1.253	0.263	0.973	2.974	0.085
Baked or broiled chicken/turkey/fish	1.012	37.073	<0.001*	0.997	0.376	0.540	0.990	27.276	<0.001*	0.978	3.704	0.054	0.961	7.841	0.005*
Processed meats	1.004	5.883	0.015*	0.994	1.183	0.277	0.997	3.297	0.069	0.992	0.445	0.505	0.984	1.598	0.206
Other meats	1.007	16.165	2.056	0.981	8.290	0.004*	0.995	6.667	0.010*	0.980	2.910	0.088	0.981	2.283	0.131
Peanut butter/nut spreads, nuts, seeds	1.001	0.183	0.669	0.985	4.547	0.033*	1.001	0.462	0.492	0.995	0.157	0.692	0.962	4.981	0.026*
Processed cheese	1.004	5.567	0.018*	1.004	0.509	0.475	0.996	5.728	0.017*	0.999	0.008	0.929	0.980	2.099	0.147
Natural cheese	0.999	2.728	0.428	1.001	0.053	0.818	1.001	0.638	0.425	1.018	2.027	0.155	0.976	3.222	0.073
Flavored yogurt with fruit flavoring/added sugars	1.002	1.404	0.236	0.994	0.846	0.358	0.999	0.389	0.533	1.000	0.001	0.971	0.970	2.907	0.088
Plain yogurt	1.004	4.961	0.026*	0.999	0.019	0.891	0.996	3.243	0.072	0.996	0.081	0.775	0.948	5.682	0.017*
Frozen treats	1.007	8.762	0.003*	0.996	0.296	0.586	0.994	6.026	0.014*	0.962	2.747	0.097	0.988	0.506	0.477

Candy	0.999	0.042	0.837	0.988	0.523	0.470	1.002	0.200	0.655	1.011	0.272	0.600	0.980	0.312	0.577
Sweet cereals	1.003	2.579	0.108	0.999	0.027	0.869	0.997	1.785	0.182	0.982	1.387	0.238	0.998	0.074	0.685
Sweet pastries	1.006	11.671	0.001*	0.989	3.267	0.071	0.995	6.819	0.009*	0.990	0.660	0.417	0.989	0.801	0.371
Regular potato or other chips	1.004	3.333	0.068	0.987	1.679	0.195	0.996	2.509	0.113	1.013	1.079	0.299	0.996	0.057	0.811
Other salty snacks	0.993	16.259	<0.001*	1.004	0.386	0.534	1.007	16.202	<0.001*	1.002	0.022	0.883	0.990	0.782	0.377
Whole grain bread/oatmeal/brown rice etc.	1.005	5.063	0.024*	0.994	0.917	0.338	0.997	1.503	0.220	0.981	2.471	0.116	0.963	7.543	0.006*
White bread/rice/pasta/etc.	1.003	3.283	0.070	0.996	0.634	0.426	0.998	1.475	0.224	0.983	2.386	0.122	0.993	0.406	0.524
Sugar-sweetened drinks	1.000	0.005	0.943	0.998	0.038	0.846	1.000	0.000	0.984	0.999	0.003	0.957	1.003	0.017	0.896
100% fruit or vegetable juice	1.003	2.118	0.146	0.994	1.452	0.228	0.999	0.182	0.670	0.976	4.306	0.035*	0.976	3.706	0.054
Milk	1.010	9.628	0.002*	0.989	2.480	0.115	0.995	2.272	0.132	0.958	12.581	<0.001*	0.963	6.658	0.010*
Bottled water	1.009	25.583	<0.001*	0.993	1.286	0.257	0.992	18.861	<0.001*	0.980	2.620	0.106	0.987	1.063	0.302
Tap water	0.991	20.839	<0.001*	0.998	0.099	0.753	1.010	22.621	<0.001*	1.004	0.083	0.771	0.994	0.296	0.586
Any water	0.998	0.677	0.410	0.992	1.124	0.289	1.005	2.478	0.115	0.990	0.455	0.500	0.977	2.985	0.084

*p<0.05

[1]Self-reported data from statewide Georgia Child Care Wellness Survey

[2]Each race/ethnicity was analyzed separately

[3]Represents students who do not identify as one of the four listed race/ethnicities

[4]Wald chi-square values indicate an increased (positive) or decreased (negative) likelihood of serving food/beverage category as the percent of students of that race/ethnicity increases

APPENDIX D

TABLE 3: FOODS AND BEVERAGES SERVED BY CHILD CARE PROGRAMS SERVING 1-5 YEAR-OLDS IN GEORGIA STRATIFIED BY GEORGRAPHIC LOCATION OF PROGRAM

Table 3. Foods and Beverages Served by Child Care Programs Stratified by Geographic Location of Program[1]

Sites (%) serving at breakfast, lunch, dinner, or snack-time the day before survey	Rural[2] (out of n)	Suburban (out of n)	Urban (out of n)	Wald $\chi 2^3$	p
Fruit canned in syrup, sweetened applesauce	45.1% (257)	45.9% (412)	44.4% (151)	0.109	0.947
Other fruit	85.7% (265)	82.8% (430)	89.9% (159)	4.692	0.096
Fried potatoes	28.9% (256)	26.5% (408)	29.4% (153)	0.713	0.700
Beans	43.6% (257)	45.1% (406)	54.9% (153)	5.511	0.064
Other vegetables	86.9% (268)	87.9% (435)	89.2% (158)	0.495	0.781
Vegetarian meat substitutes	14.6% (246)	16.8% (394)	23.0% (148)	4.586	0.101
Eggs	37.9% (255)	38.0% (408)	39.6% (154)	0.170	0.918
Baked or broiled chicken/turkey/fish	60.9% (261)	63.2% (421)	67.7% (155)	1.951	0.377
Processed meats	49.2% (260)	46.0% (411)	51.9% (156)	1.780	0.411
Other meats	55.2% (261)	46.5% (404)	56.9% (153)	7.109	0.029*
Peanut butter/nut spreads, nuts, seeds	42.0% (264)	34.7% (415)	42.5% (153)	4.949	0.084
Processed cheese	42.5% (252)	41.7% (403)	47.0% (151)	1.305	0.521
Natural cheese	41.1% (253)	55.7% (411)	62.3% (151)	20.323	< 0.001*
Flavored yogurt with fruit flavoring/added sugars	29.0% (255)	31.4% (408)	37.6% (149)	3.227	0.199
Plain yogurt	26.2% (248)	30.8% (399)	38.4% (151)	6.496	0.039*
Frozen treats	25.1% (255)	16.7% (401)	20.3% (148)	6.788	0.034*
Candy	6.3% (252)	4.5% (399)	6.6% (152)	1.431	0.489
Sweet cereals	25.5% (255)	25.3% (411)	25.5% (157)	0.004	0.998
Sweet pastries	41.5% (258)	41.0% (410)	48.1% (154)	2.435	0.296
Regular potato or other chips	16.3% (257)	19.6% (403)	19.7% (152)	1.260	0.533
Other salty snacks	53.1% (262)	57.7% (409)	46.2% (156)	6.180	0.045*
Whole grain bread/oatmeal/brown rice etc.	79.0% (267)	78.4% (426)	82.6% (155)	1.233	0.540
White bread/rice/pasta/etc.	65.4% (266)	63.3% (409)	63.2% (155)	0.351	0.839
Sugar-sweetened drinks	8.2% (255)	5.4% (404)	6.1% (148)	2.033	0.362
100% fruit or vegetable juice	71.5% (267)	58.7% (421)	68.1% (160)	12.837	0.002*
Milk	92.7% (274)	88.4% (440)	95.0% (159)	7.310	0.026*
Bottled water	42.9% (245)	40.2% (393)	51.4% (142)	5.309	0.070
Tap water	69.8% (258)	67.4% (408)	74.3% (148)	2.463	0.292
Any water	89.4% (273)	87.7% (432)	91.9% (160)	2.081	0.353

*p<0.05

[1]Self-reported data from statewide Georgia Child Care Wellness Survey

[2]Rurual, suburban, and urban programs were all analyzed separately

[3]Wald chi-square value indicates if there was a difference in rate of provision of food/beverage if program was located in different area