Testimony of
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on the subject of
"Examining the Powerful Impact of Investments in Early Childhood for Children, Families, and our Nation's Economy"
before the U.S. House of Representatives Committee on the Budget
July 20, 2022

Chairman Yarmuth, Ranking Member Smith, and Members of the Committee:

Thank you for the opportunity to meet with you today to discuss the powerful impact of investment in early childhood for children, families, and our nation's economy.

My name is Maureen Black. I am a Distinguished Fellow at RTI International where I specialize in research, programs, and policies related to early childhood development. I am also a professor in the Department of Pediatrics at the University of Maryland School of Medicine in Baltimore, Maryland where I served as the John A Scholl, MD and Mary Louise Scholl, MD Endowed Professor and Chief of the Division of Growth and Nutrition from 2003-2021. For over 25 years, I have been a licensed child psychologist and I have directed an interdisciplinary clinic for young children with growth and/or feeding problems. I have also directed the Maryland site of Children's HealthWatch, a non-partisan network of health care providers committed to improving children's health in America. My expertise is in the prevention of health disparities associated with threats to children's early development, including poverty, nutritional deficiencies (e.g., food insecurity and micronutrient deficiencies), and lack of early learning opportunities.

I have been funded by the National Institutes of Health (NIH) and other organizations for over 25 years and conducted 10 randomized controlled trials (RCTs) in low-income communities in Maryland and in low- and middle-income countries throughout the world, aimed at promoting young children's growth, health, and development. I have published over 450 peer-reviewed journal articles, book chapters, and commentaries, most related to children thriving. I have served on multiple review and advisory committees for NIH and other local, national, and international organizations, including UNICEF, the World Health Organization (WHO), and the World Bank Group. I have been president of two divisions of the American Psychological Association, served as president of the Maryland WIC Association, and I am the co-chair of the Advisory Council of Maryland Hunger Solutions.

My testimony today addresses the conditions necessary for young children to thrive, which forms the basis for the health, productivity, and wellbeing of adults and of the larger society. My testimony focuses primarily on the Special Supplemental Nutrition Program for Women, Infants,

and Children (WIC) and is based on my clinical experiences with children and families and research that I have conducted or reviewed.

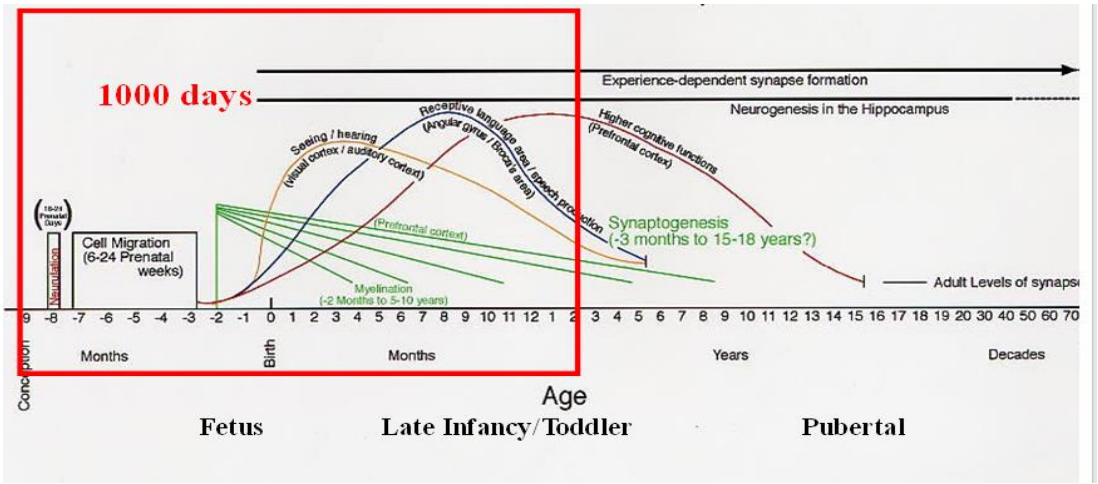
Early Childhood Development

The foundations of adult health and wellbeing begin prior to birth with parental health and wellbeing (Clark et al. 2020). Prior to birth, maternal nutrition, health, and behavior impact fetal physical and physiological development. Early adversities can disrupt prenatal growth and development, resulting in pre-term birth (defined as < 37 weeks gestation) or low-birth-weight (defined as < 2.5 kilograms or 5 pounds, 8.18 ounces). These conditions increase the risks for childhood mortality, disability, neurocognitive impairment, learning difficulties, and mental health problems and often extend into adulthood with adverse impacts on health, economic productivity, and socioeconomic outcomes (Institute of Medicine 2007; Simmons et al., 2010). Lifetime economic estimates of pre-term birth and low-birth-weight are staggering (estimates for pre-term birth of $26.2 billion in 2005 for the USA [Institute of Medicine, 2007]) and disproportionately impact families with limited resources.

In 2020, the pre-term birth rate in the USA was 10.1%, with racial and ethnic differences (CDC 2021). Among African-American women the rate was 14.4%, compared to 9.1% and 9.8% among white and Hispanic women, respectively. Preventing pre-term birth and low-birth-weight are national and global priorities endorsed by professional organizations, including the American Academy of Pediatrics and the World Health Organization. The PREEMIE Reauthorization Act of 2018 (PL 115-328) renews the country's commitment to address pre-term birth by supporting federal research and promoting known interventions and community initiatives.

Children's development progresses in an exquisitely timed, orderly sequence of interdependent capabilities, guided by genetic potential and environmental exposures and interactions. The first 1000 days (conception to age 24 months) are critical as major aspects of brain structure and function are formed (Figure 1).

Figure 1. Human Brain development (Thompson & Nelson, 2001)



The second thousand days (age 2-5 years) are also important as young children establish patterns of growth and development, and build dietary and physical activity habits that guide them through childhood, adolescence, and into adulthood (Black et al 2021).

During the early periods of rapid growth and brain development, the lack of required nutrients and caregiving can undermine children's development with long-term negative consequences to their physical and mental health (Prado & Dewey, 2021). In addition, poverty and other adversities during this period, including low-birth-weight, excess weight gain, and disruptions in care, can have long-term negative effects on adult health, including diabetes and cardiovascular disease (Jensen et al., 2017). Early developmental periods are also marked by plasticity and children's ability to adapt. Interventions early in life, including nutritional support and opportunities for early learning and responsive caregiving, can mitigate the negative consequences of adversities and enable children to reach their developmental potential, illustrating the resilience of young children and the importance of intervening early in their development (Black et al., 2017; Evans, 2013).

History of WIC

The 1969 White House Conference on Food, Nutrition and Health was a landmark bipartisan event that highlighted the need for action to overcome the poverty, undernutrition, and anemia experienced by thousands of young children in the United States (Kennedy & Dwyer, 2020). The outcomes of the conference were bold extensions to existing nutritional programs and the genesis of the WIC Program. WIC was informed by national evidence regarding hunger, undernutrition, and iron deficiency anemia in the context of poverty and developed as a national public health program to ensure the health and wellbeing of infants and children at nutritional risk in low-income households. By providing services to women during pregnancy, WIC was focused on reducing the prevalence of pre-term and low-birth-weight and ensuring that children were healthy at birth. By providing services to women during the neonatal and breastfeeding periods, and to infants and children until age 5 years, WIC was focused on promoting children's nutrition and health, and ensuring that they were thriving. WIC's focus on nutritional risk and low-income households (Federal Poverty Level $\leq$ 185%) promotes equity by addressing the needs of families with limited resources (Oliveira et al., 2002). In addition to food packages tailored to the nutritional needs of different age groups, WIC provides counseling regarding best practices for feeding infants and young children through validated practices such as responsive feeding. Finally, WIC provides screening for anemia (hemoglobin), lead and other health conditions with referrals as needed. Thus, WIC operates as a public health program that supports thriving among infants and young children.

At the local level, WIC is administered by state WIC agencies, including all 50 geographic states, the District of Columbia, five territories, and 33 Indian Tribal Organizations. WIC's coverage rate for eligible infants is higher than that for older children and women. In 2019, 1.6 million infants (43% of all infants in the USA) and over 80% of infants eligible for WIC were enrolled in the program. WIC serves about 6.2 million participants per month and federal program costs were $6 billion.

Investigation of integrity related to the implementation of the WIC program has shown that fraud or abuse occur among fewer than 0.01% of participants (Chaudhari et al., 2001). Given the controls in place, participant fraud is not likely to increase. WIC has a relatively low rate of improper vendor payments (with only 0.3% of WIC food dollars being associated with overcharges) (Gleason et al., 2013).

Economics of WIC

A recent economic analysis of WIC calculated the expected value of WIC's prevention of pre-term births, using estimated costs of the consequences of pre-term birth over the newborn's lifetime (Nianogo et al., 2019). With an estimate of 500,000 expectant women and three hypothesized scenarios: 1) universal – WIC services for all WIC eligible women, 2) status quo WIC services for all WIC-enrolled women (recognizing that some eligible women do not enroll), and 3) no WIC services for anyone. The number of pre-term births and costs vary across scenarios: (universal scenario: 22,177 pre-term births, cost of $1.6 billion; status quo scenario: 23.661 pre-term births, cost of $1.7 billion; no WIC services scenario: 31,235 preterm births, cost of $2. billion (see Figure 2). The savings for every pre-term birth averted is estimated at $46,118. Thus, every $1 spent per participant in either the status quo or universal scenario saves $2.48 in medical costs by preventing pre-term births. These findings suggest that WIC's standard of care is cost-saving and cost-effective. Broader coverage (and more pre-term births averted) would increase the cost-savings. These findings are generally consistent with a study conducted 25 years ago based on prenatal WIC participation and estimated Medicaid cost savings (every dollar spent on prenatal WIC was associated with a savings from $1.77 to $3.13) (Devaney et al., 1992). Thus, the reduction in pre-term births associated with WIC participation is a significant cost-savings that could increase if the program were expanded. Additional evidence is needed on the economic impact of WIC participation among infants and children, especially as healthier WIC foods impact childhood obesity rates.

Figure 2. Estimated savings by hypothetical reduction of pre-term births

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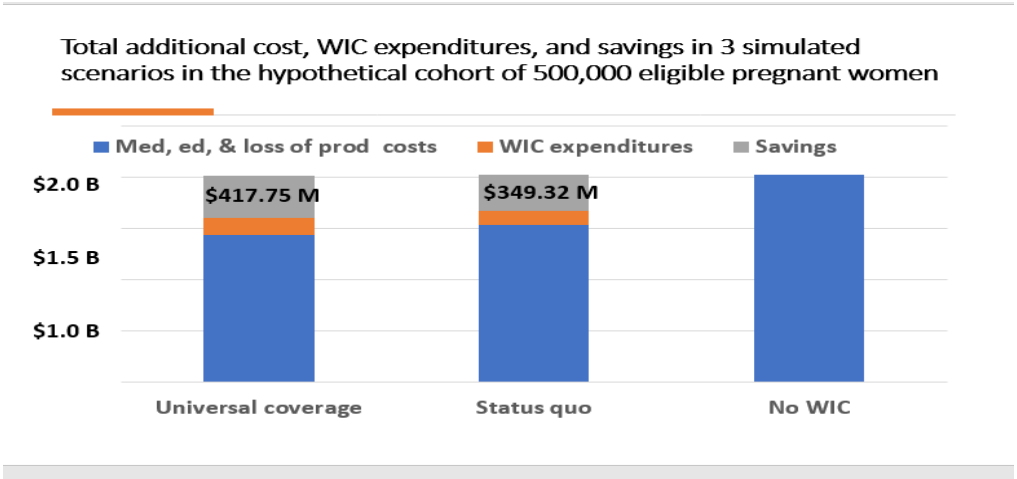


WIC Program Modifications

WIC food packages vary by the age, health, and nutritional needs of the child, and by the mother's status as pregnant, postpartum, and breastfeeding. The packages align with the Dietary Guidelines for Americans and the feeding practice guidelines of the American Academy of Pediatrics. In 2009, the food packages were revised to meet dietary preferences of the increasing ethnic diversity of the population and in response to increasing concerns about children's excess weight gain (Special Supplemental Nutrition Program for Women, Infants and Children, 2008). The food packages are designed to support breastfeeding, and to provide WIC participants with a wide variety of foods including fruits, vegetables, and whole grains, while giving WIC state agencies flexibility in prescribing food packages to accommodate the cultural food preferences of WIC participants.

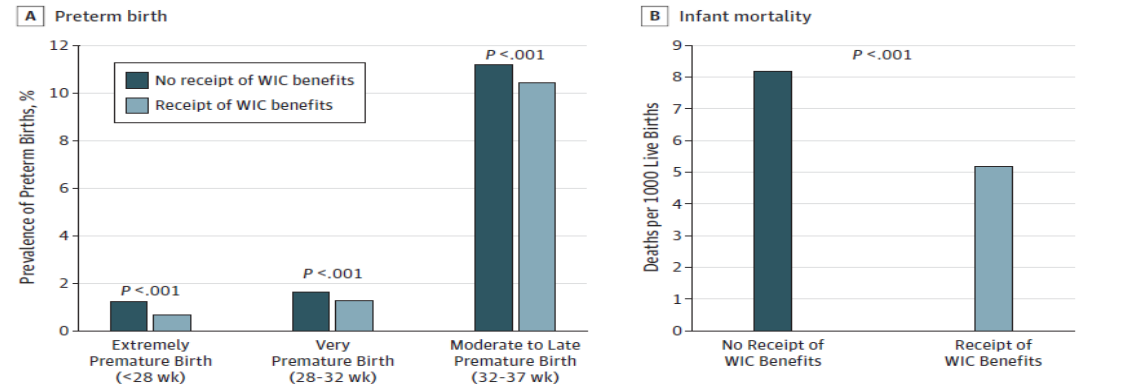
In the 2010s, WIC modernized program services to respond to the needs of participants and reduce barriers to participation. Transitioning from vouchers to Electronic Benefit Transfer (EBT) has facilitated the grocery shopping experience for participants and vendors, reduced stigma, and improved recordkeeping and accountability. EBT is operational in 48 of the 50 geographic states, with the final two states currently rolling out EBT benefits to participating families.

The Healthy, Hunger-Free Kids Act of 2010 (PL 111-178) stipulated that that the WIC food package be reviewed every 10 years to provide reliable information to WIC participants, providers, policymakers, and others. In 2017, the National Academies of Sciences, Engineering, and Medicine (NASEM) issued independent, science-based recommendations to improve the WIC food package – including increased issuance of fruits, vegetables, seafood, and whole grains. In 2020, the Dietary Guidelines were updated to include new guidelines for nutritional intake for women during pregnancy and lactation, and children from birth to 24 months of age. These advances are used at the state and federal levels to revise WIC programming to improve dietary and health outcomes for women, infants, and children.

Evaluations of WIC Participation

To reduce the potential threat of selection bias and the inability to use random assignment, the gold standard for experimental evaluations, evaluators assess the impact of WIC using strategies such as propensity score matching, difference in difference designs, or covariate adjustment. For example, a recent investigation using Medicaid birth certificate data from over 11 million racially and ethnically diverse expectant mothers found that the prevalence of pre-term birth was significantly lower among WIC participants compared to eligible non-participants (Soneji & Beltrán-Sánchez, 2019), with a 36.6% relative risk reduction in mortality by age 12 months. The pattern was consistent within the racial ethnic groups (Figure 3).

Figure 3. Association of Pre-term Birth and Infant Mortality rate with the Receipt of WIC During Pregnancy among Expectant Mothers Covered by Medicaid, 2011-2017



JAMA Network Open. 2019;2(12):e1916722. doi:10.1001/jamanetworkopen.2019.16722

Evaluations have consistently shown that WIC participation is associated with reductions in anemia (Yip et al., 1987; Sanjeevi & Freeland-Graves, in press) and beneficial effects on children's diet and nutrient intake (Siega-Riz et al., 2004; Jun et al., 2018). Longer WIC participation has been associated with higher diet quality and reductions in household food insecurity (Anderson et al., 2022).

A recent review following the 2009 food package revisions confirmed that prenatal WIC participation was associated with lower risk of pre-term delivery, low-birth-weight, and infant mortality, as shown previously, and to multiple measures of children's care and development and access to healthy food (Caulfield et al., 2022). For women, during pregnancy, maternal WIC participation was associated with better maternal diet quality, and lower risk of inadequate gestational weight gain; and during post-partum, maternal WIC participation was associated with child preventive care, immunizations and children's cognitive development. Among children, WIC participation was associated with better diet quality, and greater intakes of WIC-provided foods. Among households, WIC participation was associated with greater access to healthy food groups. The study could not differentiate whether outcomes differed across racial and ethnic subgroups.

Multiple studies have documented positive effects of WIC participation on children's dietary quality, which is likely to have a positive impact on children's development. At 12 months-of-age, children of mothers who participated in prenatal WIC had significantly higher scores on a standardized assessment of early development compared to children of WIC-eligible mothers who did not participate (Guan et al., 2021). In a sample of 27,000 WIC-eligible children under 3 years-of-age from multi-racial and ethnic backgrounds, WIC participation attenuated, but did not eliminate, the negative association between multiple adversities and children's "well-child" status (i.e., good health, no hospitalizations, no developmental concerns, and neither overweight not underweight) (Black et al, 2012), thus demonstrating the beneficial effects of WIC on preschoolers' development and well-being. Evidence is emerging on the impact of prenatal and

early WIC participation on children's academic performance (Jackson, 2015). Additional studies are needed to examine the longitudinal effects of WIC on children's health, development, and academic performance.

Breastfeeding promotion has been a central component of WIC, with variability in the impact of WIC participation on rates of breastfeeding initiation, exclusivity, and duration (Caulfield et al., 2022). A recent report endorsed WIC's strategies to support breastfeeding, including peer counselors, distribution of breast pumps, and an enhanced food package, along with better community support for breastfeeding (Rasmussen et al., 2017). Breastfeeding has been associated with retention in WIC beyond 1-year, suggesting the value of ongoing breastfeeding support from WIC providers (Whaley et al., 2017).

Excess weight gain among young children has increased over the past three decades, elevating children's risk for lifelong obesity and associated health problems, including diabetes, cardiovascular disease, impaired glucose tolerance, respiratory and joint problems, fatty liver disease, social and psychological problems, and other chronic diseases (Ogden et al., 2016;Whitaker et al., 2007). CDC and USDA analyzed data on children enrolled in WIC from 56 states and territories between 2010 and 2018 (Centers for Disease Control and Prevention, 2021). Among children aged 3 to 23 months, the prevalence of elevated weight-for-length (an indicator of early obesity risk) declined from 14.5% 2010 to 12.3% in 2014 and then stabilized (Pan et al., 2021). Among children aged 2 to 4 years, rates of obesity declined from 15.9% in 2010 to 14.4% in 2018. The prevalence and declines on obesity varied by state, by sex (greater for boys) and by race and ethnicity (higher among children who were Hispanic and American Indian or Alaska Native than non-Hispanic White, non-Hispanic Black, or Asian or Pacific Islander). Excess weight gain continues to be a national concern that will require ongoing efforts by WIC, Early Childhood Education programs, and others.

Longitudinal studies involving birth cohorts highlight the protective impact of early interventions that can mitigate the negative effect of early adversities (Evans et al., 2013; Trude et al, 2020). Longitudinal studies are needed to study the impact of WIC participation on adult health, productivity, and wellbeing (Black et al., 2012).

Response to Environmental Challenges

The WIC Program has demonstrated the ability to respond to environmental conditions impacting WIC participants, including the COVID-19 pandemic and the recent infant formula shortage. The economic threats from COVID-19, along with the closures of schools, childcare, and worksites to prevent the spread of the virus have inflicted disproportionate hardships on low-income families, including WIC participants. Approximately 50% of WIC participants reported a decrease in household income associated with the pandemic. The recent increase in access to fruits and vegetables, introduction of remote services, and flexibility related to the infant formula shortage represent WIC's flexibility and commitment to ensuring that expectant mothers, infants, and children receive the nutritional services, counseling, and health care they need, regardless of external challenges.

Cash Value Benefits. Cash Value Vouchers (now Cash Value Benefits) were introduced in 2007 to enable WIC participants to purchase fruits and vegetables ($9/month for infants and children and $11/month for pregnant, postnatal, and breastfeeding women). In April 2021, Congress authorized more than 4.8 million women and children participating in WIC to receive enhanced Cash Value Benefits for vegetable and fruit benefits (varying between $24 and $35/month, based on participant category). This investment (the "WIC bump") was extended in fiscal year 2022 through bipartisan action and illustrates WIC's public health success in promoting fruits and vegetables.

A multi-state survey among over 26,000 WIC participants was administered prior to and following the increase in Cash Value Benefit (Ritchie, et al., 2022). Prior to the 2021 increase, 76% of participants reported that the $9/month benefit was not enough. Following the 2021 increase, most participants (85%) were aware of the increased benefit, were satisfied with the $35/month, and children consumed an average ¼ cup increase in daily fruits and vegetables.

The increased access to fruits and vegetables should increase consumption among young children and provide a greater variety of produce for WIC families. Consistent access to more fruits and vegetables can shape shopping behaviors and child taste preferences in the long-term, and reduce healthcare costs by mitigating the risk of health conditions related to poor nutritional quality and enhancing food and nutrition security for low-income families.

Remote services. WIC initiated remote services for enrolling and recertifying in WIC, using phone, video, online, and curbside appointments. In some sites, depending on retailer technology, online shopping was authorized. Although participants reported missing the interpersonal connection with WIC providers, they reported a desire to continue to receive WIC services remotely. Approximately one-third reported buying more WIC food than prior to the pandemic (Ritchie et al., 2021).

Infant Formula Shortage. The USA experienced a severe shortage of infant formula in 2022 after a recall based on concerns regarding quality control. The shortage left many caregivers concerned about how to feed their infant. USDA (2022) reports that more than half (56%) of all infant formula purchased in the USA is through WIC's state-based, sole-source contracting process, which provides a specific brand of formula to 1.2 million infants, and results in an annual saving of $1.7 billion over purchasing formula on the open market. This cost containment strategy posed a unique challenge during the formula shortage. Starting in February 2022, waivers from USDA allowed WIC families to access additional container sizes and formula brands.

Recent legislation addresses the current formula shortage and methods to ensure future safety. The bipartisan Access Baby Formula Act (PL 117-129) promotes collaboration between USDA and FDA to assure a coordinated, public-private response to infant formula shortages, ensuring that the most vulnerable infants have access to adequate nutrition. This legislation has already been deployed to roll out nationwide waivers that allowed State WIC Agencies to authorize imported formulas as an option for WIC shoppers attempting to navigate the effects of the formula shortage.

Formula shortages also highlighted WIC's role as the nation's leading breastfeeding promotion and support program. WIC breastfeeding staff supported pregnant and new mothers in developing breastfeeding plans, increasing milk supply, or re-lactating during the formula shortages. These essential lactation support services would often be out-of-reach for low-income families if not for WIC support. WIC's breastfeeding support during the formula crisis builds on a long record of resolving income- and race-based disparities in breastfeeding rates, including a 30% increase in initiation rates among WIC-enrolled participants between 1998 and 2018. WIC's success in supporting and sustaining breastfeeding efforts must be strengthened as part of a comprehensive national strategy to reflect the medical and public health consensus that breastfeeding is the optimal source of infant nutrition, including efforts to more carefully regulate infant formula production, marketing, and promotion (American Academy of Pediatrics, 2022).

WIC's Impact on Communities

WIC brings resources into communities through authorized WIC retailers, which vary from small stores to large box stores. An assessment of grocery stores prior to and following the 2009 revision to the WIC food packages showed improved access to healthy foods, benefitting WIC participants and the society at large (Andreyeva et al., 2012). With the introduction of Cash Value Benefits to purchase fruits and vegetables and the WIC Farmers Market Nutrition Program, benefits from the WIC program extended to farmers. WIC builds capacity in local communities through partnerships with health providers and other community organizations to ensure that families receive effective support.

The American Rescue Plan Act of 2021 (PL 117-2) gave USDA resources for the modernization of WIC and the Farmers' Market Nutrition Program. The Act laid the groundwork for enhancing WIC participants' experiences and equity by investing in online technology solutions and forming partnerships between WIC and other sectors to facilitate and increase program access.

WIC Challenges and Future Positioning

In recent years, WIC has experienced a decline in enrollment and participation, which may result in increased risk of food insecurity, more infants born pre-term or with low-birth-weight, and decreased access to healthy food and healthy eating patterns for young children. Approximately 50% of WIC-eligible women, infants, and children are enrolled in WIC, potentially increasing the burden on the healthcare system. The declines in WIC participation have been attributed to multiple factors: improved economic conditions, falling birth rate, and immigrant-related concerns, plus confusion regarding eligibility, concerns about stigma, and logistical issues around transportation, hours of service, etc. Strategies supported by the American Rescue Plan Act can overcome many of these barriers by increasing the quality of participants' experiences without increasing costs.

WIC is well positioned to implement system level changes that will better serve existing and future WIC participants. For example, learning from the successes of the implementation of electronic benefit transfer, WIC is evaluating the feasibility of leveraging data sharing with other organizations, including Medicaid, SNAP, and health care providers. With permission from participants, WIC and health care providers could share findings from hemoglobin and lead screening between WIC systems and children's electronic medical records, building on referrals to provide more coordinated care. In addition, with permission from parents, women seeking prenatal care who are enrolled in Medicaid could be automatically entered into WIC. Finally, WIC could partner with health plans to provide nutrition and breastfeeding services for a broader range of the American public, including participants who are not income-eligible for WIC's healthy food benefit. These systems level advances could provide better integration across services, thereby better serving pregnant women and low-income families with infants and young children.

Summary

In summary, the WIC Program is tightly focused on the most critical period of human development (the first 2000 days, beginning prenatally until age 5 years) where brain development is rapid, unmitigated adversities can have long-term effects, and there is the greatest potential for all children to thrive. By addressing low-income households, WIC advances equity by promoting thriving for all children.

The WIC Program was initiated to address child hunger and malnutrition. It was driven by the science of early childhood health and nutrition, with tailored food packages informed by the Dietary Guidelines for Americans and children's developing nutritional needs. Over the past 50 years, WIC has become an essential public health component of the American society that promotes the health, nutrition, and wellbeing of young children, adds economic value to communities, and builds relationships with other health care providers. WIC's responsiveness to unprecedented and unanticipated environmental challenges, including the COVID-19 pandemic, the infant formula shortage, and the increase in children's excess weight gain, illustrates the critical role that WIC plays in promoting equity and preventing further disparities by protecting young children in low-income families. Innovative advances, such as revised food packages, remote registration and access, increased access to fruits and vegetables, and the electronic benefit transactions are examples of the dynamic aspects of WIC in responding to the needs of the American society. WIC is a cost-effective public health program that improves the human condition of Americans by ensuring that infants are born healthy and that young children thrive and are prepared to contribute to the larger society as they become healthy, well-adjusted, productive adults.

Looking forward, WIC is well positioned to implement system level changes, including expanding access to WIC's nutrition services and leveraging data sharing with health care providers that will better serve existing and future WIC participants. These innovations will

enable WIC to continue to effectively utilize taxpayer dollars and ensure that all American children can thrive.

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