



LESSONS LEARNED FROM THE 2022 US BABY FORMULA SHORTAGE

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Executive Summary

The baby formula shortage was a challenging experience for everyone in the U.S., yet low-income mothers experienced the worst effects of the baby formula shortage. Through conducting virtual interviews of mothers, I built a theory that uncovered three themes and multiple sub-themes that emerged on how low-income mothers coped with the baby formula shortage. These three themes were: (1) Access to and availability of baby formula during the shortage was difficult. (2) Community support in obtaining baby formula played a prominent role in mother's lives. (3) Social services and the healthcare system, specifically doctors, played a significant role in alleviating the baby formula shortage for mothers. Alongside these interviews, a background analysis of the policy and cultural situations was reviewed to provide context on how a baby formula shortage came to be.

The background information provided along with the interviews resulted in the creation of policy implications and recommendations ranging from policymakers changing requirements around WIC to social service officers partnering more with community organizations. These two pieces of information undergird this master's project (MP), which is meant to help guide policymakers and social service officers on how to best support low-income mothers and mothers writ large during their potential baby formula purchasing experience. By learning from their experiences and implementing recommendations that tackle the breadth and depth of the issues that caused the baby formula shortage, we can ensure we are effectively supporting two populations that are extremely important to the current and future success of our communities and the U.S., mothers, and infants.

Positionality Statement

As an able-bodied, cis-gendered, heterosexual black male in the U.S. raised by a single black mother, I came to this work because of my deep care for mothers, specifically black mothers. As a man raised by a single black mother, the brother to two younger sisters, and as someone who has deep relationships with women who desire to be mothers, this work matters to me because it impacts people I deeply care about. To highlight the underpinnings of Tupac Shakur's hit song "Keep Ya Head Up," it is crucial for someone with my identity to support women and the babies they give birth to, not just for moral reasons but for societal and economic reasons as well. When mothers and babies are well-supported, society and our U.S. economy are better because they are doing better. Documenting and providing tangible steps to solve future baby formula crises and alleviate barriers to access to baby formula is my way to support mothers and babies in the long term. Through acknowledging my biases up front and my proximity to this issue, I hope this will allow you, the reader, to determine the usefulness of my research on this topic based on its merits and not write it away because of the biases I carry because of my identity and proximity to the issue.

Importance of research

While a baby formula shortage such as the one we recently came out of as a nation may be a one-off, low-income mothers struggling to access formula for their infants are not. Low-income mothers still must use WIC to either buy or subsidize the cost of baby formula and still experience barriers to accessing baby formula post-baby formula crisis. Learning from low-income mothers about how they coped with the baby

formula shortage and the avenues they went through to find formula will be important in informing future policies that can improve access to baby formula for this population.

Prospective Audience

This master's project is meant to help guide policymakers and social service officers on how to best support low-income mothers and mothers with large families during their potential baby formula purchasing experience. Policymakers and social services officers have some of the most significant opportunities to alleviate the issues low-income mothers experienced during the baby formula shortage. Through this, MP policymakers can use this information to inform their policy proposals, while social service officers can use it to support mothers through their service offerings.

Baby Formula Shortage

The baby formula shortage began with supply chain issues caused by the pandemic, the recalling of several influential brands produced by Abbot Laboratories, and the closing of one of their plants in February of 2022 (Scribner,2022). The nationwide shortage was attributed to an Abbot Laboratory plant, where it is believed bacteria could be found in the plant, which eventually caused four children to become sick (Scribner,2022). This plant closure would lead families to take extreme measures to find baby formula for their infants. Some of these measures were families rationing baby formula (Christensen, 2022) and if they had the means driving hours to retrieve specific baby formula for their infants (Leon,2022). At one point during the height of the shortage, 43% of the out-of-stock formula could be accounted for by the closing of the Abbot Laboratories plant (Ahmed, DiMatteo, Jarsulic, Medina, Pathak, Rosenthal, 2022).

Most families who had infants were negatively impacted in some way by the baby formula shortage; some families felt the negative impact more than others. Low-income Black mothers were disproportionately affected by the baby formula shortage (Roess, 2022). Black mothers breastfeed at a lower rate (75.5%) than their Asian (92.4%), White (85.3%), and Hispanic counterparts (85.0%) (Redd, 2022). The lower breastfeeding rate meant black mothers were likelier to use baby formula to feed their infants. Some of the reasons low-income black mothers specifically were and still are impacted by the formula shortage include:

- Structural racism (Roess, 2022).
- Higher chances of living in food deserts (Feeding America, 2022).
- Lack of lactation support at their jobs (PBS,2022).
- Lack of transportation to go and obtain baby formula.

Lastly, since baby formula is the most regulated FDA food item, regulations have created unique barriers impacting access to baby formula (CNBC, 2022).

Historical perspective on breastfeeding vs. using baby formula

Part of the baby formula shortage crisis can be linked to U.S. views on breastfeeding. When women entered the workforce during industrialization and urbanization in the 1890s, a medical push began to get babies on a feeding schedule to accommodate women being able to work (Rothman, 2018). The lack of support for mothers to breastfeed as cultural norms shifted to women working meant that the most vulnerable mothers were left behind (Rothman, 2018). Mothers with means decided not to breastfeed and had other women, usually, poor women and women of color,

breastfeed their children for them (Rothman, 2018). For example, in the 1920s, wet nursing was an occupation, but these jobs were held down by women who were desperate for a job or women of color (Rothman, 2018).

Beginning in the 1940s, we see a push to promote formula and other alternatives to breast milk (Roess, 2022). As women continued to enter the workforce, breastfeeding became even more complicated, and women who wanted to breastfeed could be putting their career advancement at risk to do so. Only in the 1970s did we see advocates begin to advocate for mothers to breastfeed their infants again. However, the ones who usually did were usually more privileged (Roess, 2022).

These historical perspectives on breastfeeding and other systemic factors have led black mothers to rely more on formula today than their counterparts, causing the baby formula shortage to impact them disproportionately negatively (Ross, 2022).

The consequences of the baby formula shortage crisis for low-income black mothers and low-income mothers who could not access formula could include long-term detrimental impacts on the infants they support. Some long-term effects include malnutrition, poor growth, poor development, and more (Markham, 2022). These issues can negatively impact a child in school and exacerbate the systemic problems we face in the U.S. since low-income black infants are among the groups most negatively affected by the baby formula shortage.

The importance of WIC to formula access

The Special Supplemental Nutrition Program for Women, Infants, and Children (WIC) supports access to baby formula for families. USDA allowing WIC to be flexible

during the baby formula shortage highlights WIC's impact on low-income black mothers' access to baby formula. Once the shortage was recognized, USDA allowed states with contracts with Abbott to request waivers, so WIC participants of their state could use WIC benefits to buy other brands and types of formula (Neuberger et al., 2022).

WIC also covers many low-income families and is currently the largest buyer of baby formula in the United States (Neuberger et al., 2022). Currently, WIC serves more than 40% of U.S. infants and accounts for more than half of the formula consumption in the United States (Neuberger et al., 2022).

Access to formula within North Carolina

As of today, the baby formula shortage is over. However, even as we are a year removed from the beginning of the shortage, much work must be done to keep formula stocked at sufficient levels for all baby formula consumers. Even when sufficient inventory in stores is reached, there are still barriers low-income black mothers and low-income mothers' writ large will face in accessing formula that other families and mothers will not.

Discovering strategies through experiences

The core of my MP was based on six interviews. These six interviews were the bedrock of my framework because I was able to get the opportunity to build knowledge and realities with my research participants about the situation from their perspectives. In building these realities with my research participants, I was able to come up with three central themes, each with its sub-themes as well that were uncovered from the lived experiences of the mothers I interviewed:

1. Access to and availability of baby formula during the shortage was difficult.
2. Community support in obtaining baby formula played a significant role in mother's lives.
3. Social services and the healthcare system, specifically doctors, played a prominent role in alleviating the baby formula shortage.

These interviews will allow me to learn more about the baby formula shortage for multiple populations. The interviews also allowed me to discover how interviewees and their communities handled and coped with searching for baby formula for their infants.

To analyze the interviews, I used Nvivo to help build from the ground up, running themes throughout the interviews that became prevalent. Using Nvivo allowed me to create meanings, theories, and realities consistent with what the mothers said was their experience during the baby formula crisis.

Interviews over other methods

There are a few reasons I chose to use interviews as the primary qualitative method to answer my research question over observations, case studies, and document analysis. I chose interviews over case studies to document a broad range of experiences on recently occurring phenomena within a population. While "building block case studies" would have allowed me to identify common themes within a narrow phenomenon, they would not have given me the breadth of experience needed to determine the wide-ranging lessons I believe I gained from doing interviews.

In terms of why I chose interviews over document analysis, document analysis does not lend itself well to my question. The baby formula shortage is recent, and its

impacts are still being felt. In terms of documents to analyze, there are few to analyze. Also, in analyzing these documents, while they may give some ideas about low-income mothers' experiences during the pandemic, they would not have given the depth needed to understand and let them explain their solutions to resolving the issues they faced during the baby formula shortage. I chose interviews over observations because of the time restriction on producing materials for my current project. Observations would be significant to see how low-income mothers deal with the shortage in real-time. But that presents time constraints and ethical dilemmas. Not only would I need to gain access to multiple low-income mothers who would let me observe their actions, but I would also need to gain their trust, complete the observations, and analyze them quickly. The time I have for this project did not make observations feasible.

Regarding the ethical dilemmas of conducting these types of observations, I would need to be around mothers for quite a while in their personal spaces. The processes of going through the obstacles to doing observations would not outweigh the information and insight I would gain from doing observations. Ultimately these are the reasons I decided to pursue interviews for my MP Interviews allowed me to gain breadth and depth into the experiences of low-income women promptly.

Gathering Information Timeline

From November 15th until March 30th, I conducted virtual interviews with prospective research participants who fit my MP criteria. During these interviews, I conducted semi-structured interviews focused on my MP question and a broader set of questions aligned to participants' interactions with various social services and food security. After completing the interviews, starting March 30th – April 10th, I analyzed and

coded the interviews. Once analyzing and coding the interviews were completed, I focused on writing my MP and turning in the final version on April 20th.

Gaining Access

To conduct these interviews and gain access to the population I desired, I worked under a larger IRB-approved research project to interview previously already interviewed participants. The study already had access to the population I wanted to access. In terms of recruiting additional prospective research participants starting in January 2023, other peers and I helped with recruitment in the area by passing out flyers, posting information on social media, or potentially using other avenues to solicit research participants who fit in the broader research study. From there, potential research participants were screened to see if they fell under my MP or other peers' MP questions. If they fell under any of our respective questions, they were asked to do an interview. Additionally, if they responded to the questions related to my MP during their interview, once all interviews were done, I received their transcripts and began analyzing them to see what I could glean from their experience during the baby formula shortage.

Interview Process

I conducted ten interviews under the broader research study, and there were more the research team conducted as a whole. Out of the study, six participants related to my MP. During these interviews, participants were asked various questions focused on research participants' interactions with different social services programs throughout the pandemic. These interviews lasted an hour at maximum. Once an interview had

been completed, I created a memo highlighting the findings I found during the interview. Other research assistants in the same study followed the same protocol.

Analyzing and Coding Interviews

Since I was conducting my MP on a larger IRB-approved research project, I only pulled responses from people who fit my criteria. That criterion is an individual who had an experience buying baby formula during the baby formula shortage. The broader study also dictates that the women I interviewed were on a social service program, so all my participants will be on some combination of possible social services like WIC, SNAP, Medicaid, TANF, or the Child Care Subsidy. This impacted my study's generalizability, as not all mothers are on WIC or other social services. Also, all my research participants were from North Carolina counties, which impacted generalizability.

Once all interviews were conducted, I pulled participants' responses to my MP question from the broader interview and focused on building core themes consistently mentioned through most interviews. Afterward, I analyzed and synthesized the memos from the interviews. Through analyzing, synthesizing, and coding the interviews, I built from the ground up the themes I believe should inform new policies on improving access to baby formula. I coded my transcripts using incident-by-incident coding. This is because, within the larger transcript, not all questions were about my MP question. Using incident-by-incident coding, I determined reasons or events that shaped mothers' experiences during the baby formula shortage.

What worked and what did not work

The baby formula shortage impacted multiple stakeholders invested in baby formula, from stores to families, to doctors and other healthcare providers. The shortage led to multiple regulatory changes to WIC because of the lack of baby formula production. These changes impacted the store's formula inventory and consumers' purchasing norms. Additionally, based on interviews, community purchasing norms changed due to the baby formula shortage. Also, doctors' ability to support mothers in search of baby formula or change a baby's formula either helps or hurts a mother's ability to purchase the necessary formula for their child to eat. These wide-ranging regulatory changes, changing community engagement norms in sourcing formula, and doctors' impact on formula shortage highlight some of the many themes about what parts of our baby formula system lightened the burden of the shortage while others increased the burden of the shortage. Overall, three overarching themes emerged from conducting qualitative interviews focused on the baby formula shortage:

1. The lack of access to and availability of baby formula during the shortage.
2. Communities were rallying to support and assist mothers in obtaining baby formula.
3. The importance of the health care system, and doctors in mitigating the shortage, specifically for babies on special formulas.

Access and availability of baby formula

Interviews revealed four consistent barriers for low-income mothers and purchasers of formula when focusing on access and availability of baby formula. These barriers were the limited availability of formula in stores in rural areas, the restrictions

placed on formula size purchases, the limitations on buying special baby formula, and the high baby formula costs.

Limited baby formula availability in rural areas

As highlighted by Silva, a 45-year-old woman who lives in Roxboro, NC, compared to her daughter, who lives in a more urban area where she would assist in buying formula, she did not have as many places to go or options when it came to purchasing formula. Silvia, during her interview, stated, *"so this town I live in is small versus where my daughter lives. And there were times when they didn't have [milk] any[where] up here as well, but we would, get some [milk]..."* Also, Lisa, a 23-year-old woman who lives in Person County, highlighted similar issues when purchasing formula. Lisa had to rely on relatives in Durham to help her look for formula. These two instances highlight how difficult it was for rural low – income mothers to find baby formula because (a) during the baby formula shortage, rural stores' inventories were not adequately kept to support demand in the area and (b) rural residents only have so many store options to go to when it comes to purchasing baby formula.

Restrictions on formula size purchases

Another barrier participants highlighted that caused access and availability issues for baby formula during the shortage was the restrictions placed on formula size purchases. Diamond, who is a 35-year-old woman living in Durham, highlighted that for her, it was challenging buying formula with WIC because of their restrictions, *"if they don't have that size then of course it is, it's not on your voucher to use because it's like a WIC voucher, but they put your vouchers on a card to use."* Even outside of the baby formula shortage Olivia a 28-year-old mother, highlighted the difficulty of purchasing

formula for her baby during standard times *"It [formula] shouldn't be restricted on like just one kind because I think it was usually like Similac and my child needed Enfamil and it didn't have Enfamil on the WIC."* With these restrictions placed on baby formula size purchases, purchasing baby formula became more difficult for consumers during the shortage.

Limitations on buying special baby formula

Finding special baby formula was even more difficult than accessing regular baby formula for children. Lisa highlights this. She stated, *"I had friends that actually their babies was on a special [baby] formula that they could never find."* Although an account of someone else's baby formula experience, this tracks as Abbott Laboratories combined with its biggest competitor Reckitt make 80% of the formula in the U.S. (Szalinski, 2022).

High cost of formula

Lastly, the cost was highlighted numerous times concerning low-income mothers' difficulties during the baby formula shortage. Cost rang especially true on low-income mothers' ability to get formula when not on WIC. For people who were assisting someone buying formula or for a mother who had to use SNAP to buy formula, its high cost became an impeding factor in the baby formula purchase. This reality is highlighted in a quote by Lisa where she stated, *"with the food stamps, you know, I would normally buy like the food that we would actually eat and with WIC where they provide, you know, the [baby] formula for my daughter to eat, it was just more convenient, and it would save more food for us here at the house to actually eat."*

Takeaway from access and availability of baby formula

Overall lack of formula availability in rural areas, restrictions on formula size purchases, limitations on buying special baby formula, and high cost of baby formula led to difficulties accessing baby formula. These issues also led to availability issues in baby formula. Future policies and practices must consider how, even when there is a shortage, baby formula can be accessible to stores and consumers.

Community support in obtaining baby formula

During the baby formula shortage, a bright spot was the community engagement in ensuring that mothers and families who needed baby formula had baby formula. Interviews highlight three communal positives that shined bright during the baby formula shortage: the creation of informal networks to source baby formula, stores working together to determine where baby formula was for residents, and shifting consumer purchasing norms during the baby formula shortage.

Informal network creation to source baby formula

Another concept born out of low-income mothers' search to buy formula for their children was the creation of informal networks to source baby formula. Mothers would rely on each other to spread the word about when stores near them would receive baby formula or buy each other cans if they were at work or busy. Like a mutual aid model, mothers relied on each other to find baby formula for their children. Also, mothers relied on family members in other areas to find baby formula if it was unavailable in their area. In this regard, mothers had to rely on their community and create networks to meet their baby's nutritional needs. This concept of informal network creation to source baby formula was highlighted by Silvia well, as she used SNAP to help support her daughter

in buying formula. Also, Catherine, Catherine, a 29-year-old mother from Roxboro, NC, discussed how she leaned on her mother to look for baby formula for her child while at work.

Store networks to determine local availability

While mothers created informal networks to source formula, stores also did their part to help mothers and baby formula purchasers find baby formula. One helpful thing stores did was work together and determine where formula was available for mothers who would call stores. As highlighted by Diamond's quote, Diamond stated "*... if I called one store because I used to get tired of just going to the stores to see about milk because, you know, I still, still today I don't have a vehicle right now, so of course it's like, it was kind of hard going back and forth to try to see if it was milk there and it wasn't no milk. So they would, transfer me other to, other stores and if those stores had it [baby formula] then that's where I went.*" This practice of stores calling each other created a "store network" to determine where baby formula was for purchasers of formula proved valuable for residents. As Diamond and other interviewees highlighted, transportation was a significant barrier for them in purchasing formula. As other mothers noted, this was a more significant issue in rural areas where transportation and public transportation are not as consistent or reliable for residents. Store networks proved valuable in helping mothers and baby formula purchasers find formula even while dealing with a lack of transportation.

Shifting consumer purchasing norms

Lastly, one unique factor in interviews was the shifting consumer purchasing norms of baby formula. As purchasers began to realize the severity of the baby formula

shortage, many purchasers moved from buying formula in bulk to buying only the baby formula they needed. Part of this was because of store limits, but some interviewees explicitly called out how their baby formula purchasing norms changed during the shortage. This is highlighted by Catherine stating, *"I would just try to get like three [cans] at a time so that way someone else could have some as well."* This quote shows how, even during a severe struggle, individuals within these communities where the baby formula shortage was most severe saw themselves as part of a bigger collective and wanted to do their part in making sure that every mother had at least the opportunity to get the formula their baby needed.

Takeaway from community support in obtaining baby formula

When low-income mothers needed help finding baby formula during the baby formula shortage, they turned to their communities for assistance. Through creating informal networks that sourced formula, local stores working with each other to determine where formula was, and shifting consumer purchasing formula norms, mothers and families weathered the baby formula shortage by depending on their communities. Future policies and practices must consider how to involve the community best to ensure that baby formula is getting to the mothers and families who need it the most.

Social services and the healthcare system help alleviate the baby formula shortage

Another positive during the baby formula shortage was the social services and healthcare systems. Social services and doctors within the healthcare system helped alleviate the burden of the baby formula shortage. WIC benefits, along with some participants receiving an increase in SNAP benefits, allowed mothers to continue to

support their child's needs and the needs of the rest of their families. Doctors proved vital in sourcing formula for mothers whose babies were on special types of baby formula and were vital in helping mothers switch from one formula to another during the shortage, as some special formulas were easier to come by than others. Ultimately interviewees highlighted three positives the social services and healthcare systems provided in helping alleviate the baby formula shortage: WIC alleviating the high cost of baby formula, mothers working with doctors to find special baby formula for babies, doctors having the ability to switch baby formula to meet a child's nutritional needs.

WIC alleviates the high cost of baby formula

One positive impact low-income mothers on WIC had that other mothers or purchasers of baby formula did not have was subsidizing baby formula costs. Diamond indicates how even when helping her daughter purchase formula, the high cost of purchasing formula, especially since she had to use her SNAP benefits. Another mother, Catherine, also pointed out the difficulties in choosing between buying formula or other necessities for her family using SNAP benefits because of the high cost of baby formula. As highlighted previously, Catherine stated she would buy baby formula with her WIC benefits compared to her SNAP benefits because *"it was just more convenient and it would save more food for us here at the house to actually eat."* While WIC may not have made finding baby formula for low-income mothers of baby formula easier, amid rising inflation caused by the pandemic, it made it easier when it was found to purchase baby formula.

Mothers working with doctors to find special baby formula

During interviews, mothers mentioned relying on doctors to help find the special baby formula their babies needed. Catherine drives this point home in her quote when discussing her trials in finding baby formula for her child, "*... I would just go to different Harris Teeters, Targets anywhere I could to try to find, the formula for him. Cause he was on the, Gerber GoodStart Soothe [baby formula], which I think they still offer. Cause the regular one, he would spit up a lot. The doctor changed his formula over to that one.*" Without doctors' willingness to go the extra mile for many mothers, and listen to mother's experiences, the baby formula shortage could have been much worse.

Doctor's ability to switch baby formula

Along with doctors going the extra mile for mothers in helping them find baby formula, they also helped mothers by allowing them to switch baby's formula more easily. This allowed mothers to use WIC to purchase special formula or other more readily available formulas in their area that the baby could consume safely. Cynthia, a 29-year-old mother living in Person, highlighted the difficulties during pre-shortage days, which drives home the importance of doctors having more flexibility to switch baby's formulas. Cynthia stated, "*they said they could switch him to the powder form, but I knew he couldn't take it because he had, a reflux problem. He could only take a liquid. So it's like, uh, you stuck paying for it. Like I'm not gonna make my child sit there and throw up.*" Doctors were able to make these switches easier during the shortage because WIC requested "flexibility" in March [of 2022], and requirements were waived by some states [including North Carolina] when the scope of the crisis was becoming clear (Grose 2022). Moving forward, mothers being able to have their baby's doctor

switch the formula they drink easier can help alleviate future potential baby formula shortages and alleviate the financial burden mothers face when switches are not granted.

Takeaway from social services and healthcare system help alleviate baby formula shortage

Overall, the social services and healthcare systems played a role in alleviating the baby formula shortage. Because WIC alleviated the high cost of baby formula for low-income mothers and families, mothers worked with doctors to find special baby formula for babies, and doctors could switch baby formula to meet a baby's nutritional needs. Future policies and practices must consider how the social services sector, particularly the expansion of benefits, and the healthcare system, particularly doctors, can play an active role in providing mothers and families with adequate access and resources to baby formula.

Limitations of Data

While the data I received from the mothers who participated in my MP interviews was rich, there are limitations to my data. One of my study's limitations is that from this, there is not a one size fits all recommendation for solving the access issues low-income mothers face. While the overall research study interviews spanned the entire state of N.C., the interviews used in my study spanned only four N.C. counties: Caswell, Durham, Person, and Roxboro County.

Although there may not be one "silver bullet" or a perfect list of recommendations that one set of strategies can encompass, there are ways to overcome this limitation. To overcome this limitation, the overall themes above and the subthemes within each more

prominent theme appear in each county. The overall themes found from conducting these interviews allow anyone who comes across my research to see a focused view of experiences they can use to inform new strategies to improve access to baby formula and also implement in some form the policy recommendations mentioned below. These high-level themes will allow interested parties to better support low-income mothers who struggle to access baby formula in the future in the context they are working in. These high-level themes allow people to tailor needed changes to their location.

Policy Implications

Based on the interviews and review of the baby formula shortage, the research suggests that policy recommendations must have breadth and depth to them to be effective. Interviews suggest that policy has positive and negative implications that must be considered.

One of the main factors interviews show is that, regardless of geography, low-income mothers experience the negative impacts of a baby formula shortage the most. Additionally, these low-income mothers' communities suffer because more time must be expended upon sourcing baby formula. For people who are already time-constrained and must deal with other barriers, such as lack of reliable transportation to and from places, any external strain like a baby formula shortage negatively impacts them to a greater extent than their more resourced counterparts. Interviews also suggest that more needs to be done to decrease the cost of formula as without some form of subsidies like WIC, mothers, and families are left to choose between buying enough baby formula for their infants or feeding their families. Interviews also highlight that a more profound connection needs to be formed between the social service and

healthcare sectors to ensure that mothers can more readily access the baby formula their child needs.

On a positive note, interviews suggest that people who identify as part of a greater collective, such as Lisa underscored by not buying formula in bulk during the shortage, can help communities weather external shocks such as a baby formula shortage. Additionally, interviews highlight medical providers' positive role in buffering communities from external shocks like a baby formula shortage. Policies implemented must consider better equipping medical providers with the resources they need to serve their communities. Lastly, interviews also suggest that individual stores have a role in effectively supplying the communities they reside in with an adequate supply of baby formula. Policy recommendations must incentivize stores and other firms involved in the baby formula shortage to effectively serve the communities they are a part of, not just when a national crisis such as a baby formula shortage occurs but in day-to-day life since they reside in and are part of communities.

Policy Recommendations

Policy recommendations to solve the root problems of the baby formula shortage must be robust. They must consider the policies that created the shortage and the human aspect in supporting low-income mothers who bought and experienced the baby formula shortage. Additionally, policy recommendations must focus on the macro and micro aspects of the situation. Below is a list of recommendations broken down based on specific stakeholders.

Policymakers

1. Policymakers should work to expand access to WIC. WIC proved effective in helping low-income mothers and families already negatively impacted by the pandemic not to be more burdened by the cost of baby formula. More low-income mothers and families would have benefited from access to WIC to help buffer themselves, at least from the high cost of baby formula.

2. The baby formula shortage allowed doctors to switch the baby formula babies received more quickly. This was because WIC requested flexibility in these requirements. To make baby formula more accessible, WIC should continue to uphold flexibility in requirements to allow doctors to switch baby formula more readily. This will support low-income mothers and families in raising their children while allowing low-income mothers to access baby formula more efficiently, especially if the baby formula their baby usually eats is impacted by another baby formula shortage.

3. Similarly, restrictions around baby formula sizes should be decreased to allow low-income mothers and families to buy the necessary baby formula for their infants and decrease confusion and unnecessary red tape around baby formula purchasing.

4. Current baby formula contracts have consolidated baby formula manufacturing for the WIC program to a few large companies. Reforms such as greater contract visibility and restructured contracts that support states receiving baby formula need to be considered to create a more competitive economic climate to ensure a baby formula shortage is less likely to happen if one manufacturer goes offline.

5. With baby formula contract reform, more firms must be allowed to enter the baby formula market. There currently exists an oligopoly within the baby formula market. More incentives for firms to enter the market and less restrictive trade requirements would allow more foreign baby formulas that meet FDA requirements (Thomas, 2022) into the U.S. market and create a higher inventory level, alleviating some of the access issues to baby formula. Additionally, import costs should be decreased to help import foreign baby formula into the U.S. market.

6. Rural communities need deeper supplies of baby formula inventory to support their communities. Federal, local, and state policymakers must work to incentivize strong supply chains with rural stores that supply baby formula to ensure that rural communities have adequate baby formula supplies.

7. SNAP benefits must be updated to ensure that families who do not qualify for WIC are not forced to choose between feeding their family or feeding their infant. Whether increasing SNAP benefits for low-income mothers and families with infants to ensure they have enough to cover the cost of baby formula or changing the cost of the baby formula when SNAP benefits are used, SNAP must support all members and families if families receive these benefits.

Social Service officers

1. Social service officers must create stronger ties with communities to ensure that the community is well supported during a national crisis such as a baby formula shortage. Social service officers should partner with community organizations, faith-based organizations, and other well-connected community members to ensure their connections in the community are vital.

2. Social service officers should partner with community organizations and members to hold baby formula and breast milk donations to help support low-income mothers and families struggling to access baby formula. Additionally, these donations can be given to local hospitals to keep their baby formula and milk supplies at adequate levels and to local food pantries for similar reasons as doctors. This ensures low-income mothers and families have multiple places they trust to receive baby formula for their infants when they are in need.

3. Buying baby formula can be confusing, and understanding what baby formula your baby should and can take can be complicated. Social service officers should work with community organizations to host community engagement sessions focused on baby formula options available to their infants to ensure low-income mothers and families have the information they need to support their infants. This will ensure that low-income mothers and families are educated on all their options for feeding their infants if another baby formula shortage does happen.

4. Additionally, social service officers should partner with community organizations to work with low-income mothers and families who desire to breastfeed. These sessions should allow low-income mothers and families to receive the information, tools, and best practices to ensure a positive breastfeeding experience. Along with these sessions, support groups should be created to create strong ties between low-income mothers and families in the community who can support each other while they raise their children. This would assist with baby formula consumption on the margins by creating more low-income mothers and families with less desire to use baby formula.

5. Stores and social service officers must have a solid connection to ensure a baby formula shortage does not happen again. By working with stores and creating a formula tracking database, stores and social service officers can work together to ensure adequate baby formula inventory is kept at each location, ensuring local mothers and residents have access to purchasing formula at multiple locations.

6. Transportation is an issue impacting people in urban and rural areas. Social service officers should partner with ridesharing firms to allow low-income mothers to go to and from the grocery store at no-cost or a subsidized cost to purchase baby formula. This will alleviate mothers' transportation issues and decrease a barrier low-income mothers face when trying to purchase baby formula.

Areas of future study

While my research is robust and encompasses a wide range of interviews, policy implications, and recommendations, there are future areas of study interested researchers should consider diving deeper into. One area future researchers must consider is the macroeconomics of expanding WIC access or even just expanding subsidizing access to baby formula. Future economic studies are essential to determine such recommendations' economic impact and feasibility. Additionally, on the economic front, researchers should consider focusing more research on expanding SNAP benefits so that families who do not receive WIC are not burdened when purchasing baby formula with their SNAP benefits. What would be the economic gain of such a change, and how much of an increase is needed to ensure equitability amongst SNAP and WIC recipients?

On the qualitative front, researchers should consider the experiences and solutions mothers not on social services used to weather the baby formula shortage. Since these mothers potentially had no way to subsidize their baby formula purchases and had to deal with the impacts of the pandemic, it is crucial to understand their experiences, especially mothers who are a part of families who are just above qualifying for some form of social services. Additionally, qualitative researchers should consider other demographics' experiences purchasing baby formula during the pandemic, such as those in the LGBTQIA+ community or a part of non-traditional households. Their experiences can be vital in determining how we support all purchasers of baby formula. Lastly, qualitative researchers should look at how other countries with high baby formula usage rates support their mothers who use baby formula to determine what lessons we can learn from them and implement here in the U.S.

Conclusion

The baby formula shortage was a flash point moment for the U.S. regarding how tenuous the experience of purchasing and raising infants and children is for low-income mothers and families. The baby formula shortage also sheds light on the many barriers low-income mothers face in gaining access to baby formula. To ensure that low-income mothers are better supported, we need to learn from the experiences of those who had to weather the baby formula shortage and already lived in precarious situations in the U.S., low-income mothers. By learning from their experiences and implementing recommendations that tackle the breadth and depth of the issues that caused the baby formula shortage, we can ensure we are effectively supporting two populations that are

extremely important to the current and future success of our communities and the U.S.,
our mothers, and infants.

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