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School Transportation and Its Impacts on Caregivers in The Bahamas

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Inter-American Development Bank
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Acronyms

CAPI	Computer Assisted Telephone Interviewing
EFA	Exploratory Factor Analysis
MoEVTT	Ministry of Education and Vocational and Technical Training
MOW&FIA	Ministry of Works and Family Island Affairs
NPRIP	New Providence Road Improvement Project
RQ	Research Question
SIDS	Small Island Developing States
TA	Thematic Analysis
VFI	Variation Inflation Indexes

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Abstract

In Nassau, The Bahamas, ensuring children's access to school carries significant implications for the wellbeing of both children and their caregivers. This study investigates these impacts, examining how challenges and the burdens associated with school transportation affect caregivers' labor market participation, time use, and overall well-being, particularly for women who constitute 83% of our sample. We adopt a mixed-methods approach, drawing on qualitative insights from interviews and focus groups, complemented by descriptive statistics and logistic regression analysis of survey data from 477 caregivers. Our findings reveal significant impacts: school transport duties constrain caregivers' ability to work, forcing adaptations like reduced hours, job changes, tardiness, or requests for flexibility, while simultaneously fragmenting daily time budgets and limiting opportunities for rest or self-care. Caregivers, especially women and those with disabilities, report considerable physical and mental stress, although many still value the commute as family or activity time. High anxiety about children's safety during commutes further compounds these burdens. While potential solutions like group walking and school bus services garner interest, particularly among car-less households, significant concerns about safety and supervision, especially regarding gender-based violence, hinder widespread acceptance. This paper underscores the profound, often gendered, consequences of inadequate school transport systems, highlighting the urgent need for supportive, co-produced policies that address logistical challenges and caregiver well-being to foster more equitable access to education and opportunities.

Keywords: School Transportation, School Mobility, Caregiver, Labor Participation, Time Use, Well-being

JEL Classification: I23, I28 R40, R48

1. Introduction

Research on children's mobility, including school transportation, gained popularity in the 1990s (Thomsen, 2004) after the seminal work of Hillman et al. (1990) on independent mobility (Hillman et al., 1990). Since then, school transportation has evolved into an active research field that has developed primarily at the intersection of health and traffic safety.

Interest in school transportation research has grown alongside the attention policymakers worldwide have placed on developing interventions that facilitate children's access to primary and secondary education amidst the challenges of ensuring safe and enjoyable mobility in increasingly motorized cities. Such challenges sit at the intersection of urban transport configurations and the vulnerability of children and adolescents navigating the streets. On the one hand, car-oriented urban development and the design of infrastructure underpinned by principles that prioritize car speed have led to growing risks of traffic collisions, particularly in cities of the global south (Oviedo & Nieto-Combariza, 2021). Children often also bear significant disadvantages and risks due to lower access to appropriate transport infrastructure and services, contributing to high rates of road injuries, as well as lower rates of active transport, and adverse health outcomes among children. This, in turn, adversely affects their development and their ability to escape poverty as adults (Aranda-Balboa et al., 2021; Herrador-Colmenero et al., 2022).

Beyond concerns about traffic safety and social mobility, another factor explaining the rising focus on school transportation in research and practice is the strategic need to target children in efforts towards decarbonization and de-motorization of cities in response to the ongoing climate emergency. The hypothesis is that early exposure to walking and cycling might delay or reduce car dependency during adulthood. Scholars have established that children engaging in active mobility for school trips experience multiple benefits compared to their peers who travel by car. For example, regular walking or cycling is associated with obesity reductions and improved mental and physical health, as well as better focus and academic performance (Aranda-Balboa et al., 2020, 2021; Ikeda et al., 2020).

Although there is a nascent body of literature on safe transport and access to school for children (Aranda-Balboa et al., 2020; Lutfur Rahman et al., 2022; Pfledderer et al., 2021), there is limited research focusing on cities in the Latin American and Caribbean LAC region. There is also a lack of research that examines specific issues that children and their caretakers face in accessing school transport in the contexts of poverty, the prevalence of high crime rates and insecurity, and low-quality pedestrian infrastructure. Exposure to climate change impacts is under-researched. Moreover, long travel times to reach schools, associated with sprawling urban development, along with inadequate or unaffordable school transport systems can compound women's time poverty due to the amount of time and economic resources needed to accompany children to and from school or other activities; however, no research to-date has measured the impacts on parents.

While parents and caregivers are central actors in facilitating children's journeys to school, often bearing the material, logistical, and emotional costs of the commute, their own experiences remain largely peripheral in both research and policy concerning school transportation. Existing studies frequently focus on barriers and enablers from the child's perspective (Aranda-Balboa et al., 2020) or examine parental decisions regarding children's independent mobility (He, 2013; Sener et al., 2019; Yarlagadda & Srinivasan, 2008).

Consequently, a critical gap persists; despite acknowledging the potential burdens placed on caregivers, particularly women, and the associated inequalities (Scheiner, 2016), there has been limited empirical investigation into the specific consequences of these transport responsibilities on key domains of caregivers' lives. Three of such domains, which are the primary focus of the paper, are access to labor, well-being, and time use. There are various reasons to hypothesize that responsibilities derived from school trips might constrain the capacity of individuals to participate in the labor market. First, the timing of school trips

may coincide with times when individuals would be required to be on the job, reducing work hours or the availability for particular work shifts. Therefore, in the absence of safe routes to school or adequate coverage and quality of public-school bus systems, families that lack resources to pay for private school transport, necessitate that they transport children to and from school. The time involved in school transport, in turn, reduces the available hours for labor market activities such as searching for employment, and working once employed, reducing the range of employment opportunities available to these individuals. Nevertheless, other impacts on labor could include arriving late or requesting flexible schedule to accommodate time and energy for the school trip or even taking the children to the office. Apart from the impact on labor market participation, there are also reasons to hypothesize that school transportation could impact well-being. For instance, if school trips consume a significant share of the daily time and monetary budgets, caregivers may have less time for self-care activities such as sleep, engaging in social activities, and exercise. Additionally, the stress of long commutes and the logistical complexities of juggling multiple demands such as school drop off and pick up, work commutes and managing household responsibilities, combined with safety concerns can lead to negative physical, emotional, and mental health impacts on caregivers, diminishing their overall wellbeing.

This study directly addresses that gap by investigating how the daily management of school transportation impacts caregivers' labor market participation, time allocation, and subjective well-being. The demands of coordinating school travel—potentially conflicting with work schedules, consuming significant time and financial resources, and generating considerable stress related to safety or logistics—can plausibly constrain caregivers' ability to secure and maintain employment, manage other essential tasks, and preserve their own health and quality of life. Understanding these impacts is crucial, particularly in contexts like The Bahamas characterized by gendered divisions of care labor and socioeconomic pressures.

Therefore, contextualized in New Providence, the most populated island of The Bahamas, this paper explores the tangible effects of school transportation duties on parents and caregivers. Utilizing a mixed-methods approach that combines qualitative insights from interviews and focus groups with quantitative survey data, we examine the relationship between school transport responsibilities and outcomes related to work, time use, and well-being. The analysis also identifies potential solutions that might mitigate negative impacts. Our findings reveal that school transportation responsibilities generate significant adverse effects, disproportionately impacting women, lower-income individuals, and households with limited access to private vehicles, highlighting the need for targeted policy attention.

The remainder of this paper is structured as follows: Section 2 reviews the literature concerning the links between transport, caregiving, labor, time use, and well-being. Section 3 outlines the methodological approach, case study context, and sample characteristics. Section 4 presents the core findings detailing the impacts on caregivers across the three key domains and exploring perceptions of potential solutions. The final sections discuss the implications of these findings, acknowledge the study’s limitations, and offer conclusions and recommendations for policy and future research.

2. Literature review

The following three subsections present an overview of previous studies highlighting how transport in general and school transportation in particular can shape access to labor, time use, and well-being. Given that school trips are often assigned to women as a result of a gendered division of labor, we also discuss relevant care literature.

2.1 School transportation and caregivers' labor market participation

Labor market participation is closely tied to individual mobility, yet access to employment is profoundly shaped by factors beyond simple physical proximity, particularly gender and associated caregiving responsibilities. Transport systems and urban planning often overlook the distinct mobility needs generated by care work, which remains disproportionately shouldered by women globally (Schwanen, 2011; Levy, 2013; Uteng & Turner, 2019). Women's travel frequently involves complex patterns distinct from traditional male commuting, characterized by shorter trips, trip chaining for household errands or accompanying dependents, greater reliance on walking and public transport, and travel during off-peak hours (Hasson and Polevoy 2011; Pickup 1984; Soto Villagrán 2019; Guliani et al., 2015; Rodas-Zuleta et al., 2022). These patterns, dictated by the spatial and temporal demands of care, often compel women to seek employment closer to home or accept jobs with more flexibility, thereby limiting their access to the full spectrum of labor market opportunities (Ferrant, Maria, and Nowacka 2014).

Within this framework, school transportation emerges as a particularly significant and often inflexible component of care-related mobility. The daily, time-bound task of ensuring children travel safely between home and school predominantly falls to mothers (Scheiner, 2016). This responsibility imposes a rigid structure on caregivers' schedules that directly conflicts with many standard employment arrangements, demanding significant investments of time and logistical effort.

School transportation challenges are often intensified for caregivers of children with disabilities. Managing specialized transport needs or navigating longer distances to appropriately equipped schools frequently necessitate substantial adaptations, commonly involving one parent—usually the mother—reducing work hours or leaving employment entirely (Landby, 2019). Such cases starkly illustrate how the intersection of care needs and mobility constraints can severely limit labor participation.

While a broad positive association exists between general transport accessibility and employment (Bastiaanssen et al., 2022; Hernandez et al., 2020; Johnson et al., 2017; Tyndall, 2017), the specifics are critical for caregivers. For instance, the established importance of private car access for employment likelihood (Bastiaanssen et al., 2020) highlights a potential disadvantage for women, who often have lower access rates. While improved public transport might benefit car-less individuals, its effectiveness hinges on service quality, efficiency, reliability, and flexibility—attributes often lacking in services needed to coordinate complex school trips alongside work commutes. The specific dynamics in smaller cities like Nassau also remain under-researched compared to large metropolitan areas, predominantly studied in the Global North (Bastiaanssen et al., 2020).

Finally, the relationship between employment and school transport is reciprocal. Labor status influences school travel choices: mothers working full-time, particularly with fixed morning commutes, are less likely to escort children, who may travel independently or with others (He, 2013; McDonald, 2008). Conversely, non-working mothers or those with flexible schedules are significantly more likely to undertake escorting duties (He, 2013; McDonald, 2008). This interplay underscores the complex negotiations families undertake, but the primary focus of this paper remains on how the demands and characteristics of school transportation systems act as a constraint upon caregivers' labor market opportunities and participation.

2.2 School transportation and caregivers' time use

How families allocate time for commuting and other daily activities is a key social factor influencing school access. Time use decisions are often shaped by work demands, caregiving, and household responsibilities, particularly for women who traditionally bear the brunt of unpaid labor. A substantial body of research shows that gender shapes commuting and

chauffeuring duties in ways that resonate through families' work–life balance and labor-market outcomes. Across diverse national contexts, women travel shorter distances and dedicate more minutes to household-serving trips than men, even after controlling for income, occupation, and residence (Lee et al., 2022). These gaps widen in two-earner households: when men are the primary breadwinners, they perform far fewer child-chauffeuring trips, but the difference narrows when women also work outside the home (Lee et al., 2022). Indeed, married mothers provide most school runs, and the commuting gender gap emerges mainly when children are present (Lee et al., 2022). Labor-force participation falls as the number of preschoolers rises, suggesting mothers' reservation wages must compensate for intensive care demands (Lee et al., 2022). Such findings echo earlier research that women, despite comparable earnings contributions, still shoulder the bulk of unpaid childcare and housework (Fisher et al., 2024).

Daily mobility choices further accentuate disparity. Women are more likely than men to rely on public transport or walking modes that can lengthen trips, which often reflects their limited access to a household car and heightened safety concerns (Lee et al., 2022). Negotiating who uses the car, who works farther from home, and who manages the school run, therefore, forms a central part of intra-household bargaining (Hjorthol & Vågane, 2014).

Time-poverty, the chronic shortage of discretionary hours, intensifies where school commutes are long or inflexible. In dual-earner families, mothers are far likelier to adjust shifts or reduce paid hours to fit drop-off and pick-up windows. Women in lower-income households feel this squeeze most acutely, as limited public-transport coverage lengthens journeys and crowds out time for resting, studying, and advancement prospects (Oviedo & Titheridge 2016). He (2013) similarly shows that mothers often accept lower-wage jobs closer to home to stay available for school runs, constraining long-term earnings and career progression.

Support networks can offset these burdens. Grandparents, neighbors, or community groups frequently share chauffeuring, creating a safety net for working parents. Yet their availability varies with social capital and neighborhood resources; in many low-income areas, such networks are weak, pushing families toward costly private transport (McDonald 2008). When such informal systems fail, the time and financial toll on caregivers escalates.

2.3 School transportation and caregivers' well-being

Well-being, broadly understood as an individual's subjective assessment of how well they are faring in life and their perception of living a balanced and flourishing existence, is a critical concept for understanding the impacts of daily life experiences. While multiple definitions exist (Diener & Ryan, 2009; Diener & Toy, 2011), research frequently employs the construct of subjective well-being. This approach is particularly useful for assessing the effects of everyday activities, including caregiving and commuting responsibilities. Diener's tripartite model defines subjective well-being through the experience of positive emotions, the avoidance of negative ones, and an overall cognitive assessment of life satisfaction (Diener, 1984). Consequently, distinctions are often made between hedonic well-being (short-term pleasure and comfort) and eudaimonic well-being (long-term satisfaction and sense of purpose) (Parsons et al., 2020). Subjective well-being is also conceptualized as having distinct cognitive (evaluations of life domains like family or employment) and affective (long-term emotional appreciation of life) components.

A key principle of subjective well-being research is its prioritization of the individual's own perspective and personal criteria (Diener et al., 2018). The methodology generally avoids labelling individuals' self-assessments as inaccurate, recognizing that people inherently strive for well-being and are best positioned to evaluate their own lives based on their unique backgrounds, experiences, and aspirations (Frijters et al., 2019). This focus on subjective experience, coupled with arguments that well-being should be a primary policy objective (Frijters et al., 2019), has led to its increasing application within transport research (Chatterjee

et al., 2020; Clark et al., 2020).

Applying this framework to caregivers involved in school transportation reveals significant impacts. The demands associated with ensuring children's safe and timely commutes, particularly when navigating challenging transport environments, can substantially affect multiple dimensions of caregiver well-being. Chronic stress resulting from logistical complexities, safety concerns, and time pressures can negatively impact physical and mental health, leading to conditions such as anxiety, depression, and physical exhaustion (Landby, 2019). These health impacts may be exacerbated in contexts with limited transport options or for caregivers facing additional vulnerabilities.

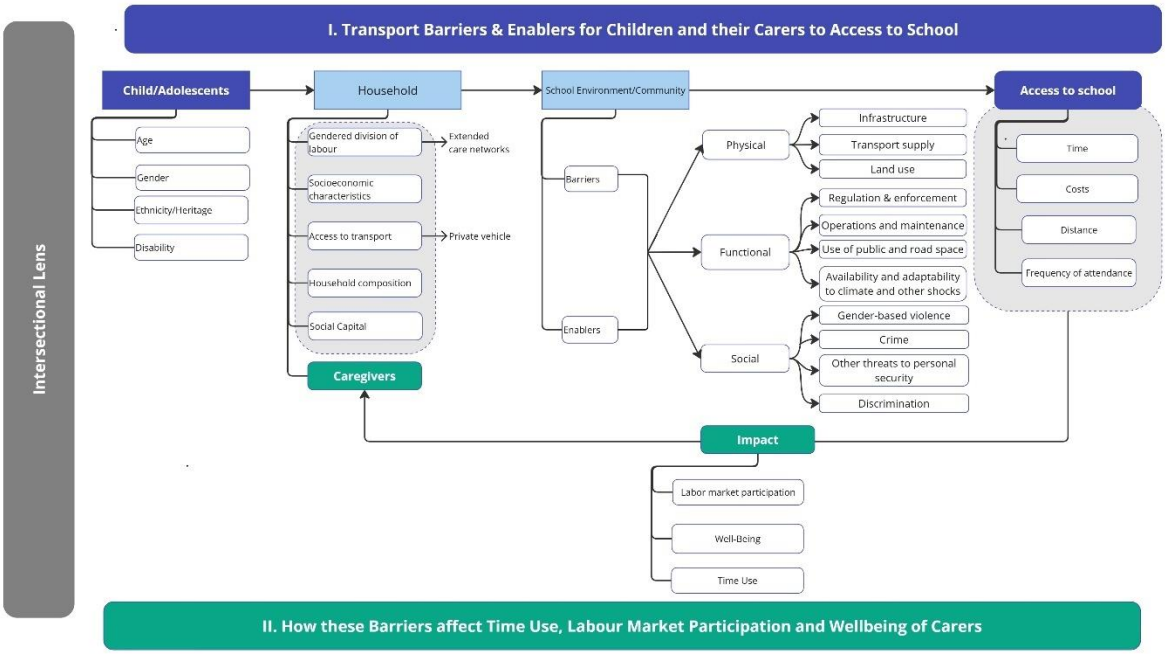
Furthermore, the significant time and resources dedicated to school transport can diminish quality of life. Time poverty, resulting from long commutes and the cumulative demands of unpaid care work, restricts caregivers' opportunities for personal pursuits, social interaction, or adequate rest, potentially leading to social isolation and reduced life quality. This erosion of discretionary time and the feeling of being overwhelmed by competing demands can, in turn, lower overall life satisfaction.

The emotional well-being of caregivers is also closely linked to the school transport experience. Persistent worry about children's safety during commutes, especially in environments perceived as unsafe, contributes to anxiety and emotional strain. The pressure to successfully juggle multiple roles (work, caregiving, household management) without adequate support can lead to feelings of guilt or inadequacy, potentially culminating in emotional exhaustion that impacts both the caregiver's health and their capacity to provide care (Schwanen, 2011). Therefore, examining school transportation through the lens of subjective well-being highlights the profound, multifaceted impacts these daily responsibilities can have on caregivers' lives.

3. Analytical framework

The relationship between transport barriers for commuting to school, caregiving responsibilities, and labor market participation poses a challenge to caregivers' well-being, time-use, and economic engagement. Figure 1 synthesizes these dynamics as depicted by academic research, highlighting the intersection of physical, functional, and social barriers within the school environment, community, and household. These factors shape access to school for children, influencing time, costs, distance, and attendance frequency, which, in turn, impact caregivers' time use, well-being, and labor market participation. By considering the intersectional aspects of age, gender, ethnicity and disability, the framework offers a comprehensive understanding of how these barriers affect children and their caregivers. This model is informed by the guiding research questions (RQs) for the research in Nassau and New Providence Island and will serve as input for the design and implementation of quantitative and qualitative instruments for collecting evidence about each RQ.

Figure 1. Analytical framework



Source: Authors' elaboration

4. Methodology

This study follows a mixed-methods approach (Creswell, 2022; Creswell & Plano Clark, 2018), combining qualitative and quantitative methods. The approach allows the research to benefit from understanding the lived experiences of the individuals subject of inquiry while allowing empirical generalizations and statistical rigor. That way, the research sheds light on contextual meanings as well as general patterns.

The qualitative component of the research had two phases. The first phase involved an online data collection where the research team conducted semi-structured interviews with stakeholders of the school community, such as representatives from advocacy groups. The second phase involved fieldwork in the second week of September 2024. The first step of the methodology was to select four schools from New Providence Island in the Bahamas (see Figure 2).

Two schools chosen, Uriah McPhee and Sybil Strachan, are primary schools. The other two schools are C.V. Bethel and Doris Johnson, which are senior high schools. These four schools were selected in consultation with government officers. The overall criteria were that, while the selected schools should resemble the typical physical and social characteristics of the schooling system in The Bahamas, they should also be in areas that are expected to be improved in the future.

For the four selected schools, the research team deployed three qualitative data generation strategies. The first data generation strategy was a set of interviewees from the local school community, including teachers, bus drivers, school security personnel, principals, and school administrators. The research team reserved one day for each school and recruited participants via purposive and snow sampling (Etikan, 2016) and stopped when researchers considered the process had reached saturation point on the main topics of the interviews (Baker & Edwards, 2012; Braun & Clarke, 2021). The second strategy was a set of focus groups (one at each school) with parents. The focus groups were co-organized with the principals of each school and hosted on the school's locations. Snacks and refreshments were offered during the focus groups. The third strategy was to collect images of the built and natural

environment surrounding the schools via mobile phones, walkthroughs with 360-degree cameras, and overflights with a drone. All interviews and focus group were recorded and transcribed.

For the quantitative part of the research, we designed a survey on school transportation to be filled in by parents and caregivers. The survey included a section on demographics and household composition where respondents had to report the age of household members, including children. After that, the survey randomly selected one child of school age from the household, and a new section asked information about that specific child's school trip to and from school. The survey also included sections to explore how respondents perceive enablers and barriers of school transportation and how they rate features in the built and natural environment of their children's school trip. In addition, there were sections to explore outcomes on access to labor, time use, and well-being. Specifically, the enumerators asked respondents to rate their level of concern or perceptions regarding crime, potential altercations, stray dogs, traveling in groups with other children, traffic safety, etc., for series of hypothetical scenarios involving a child traveling on their own to school, with the following introduction: "While [*child's name*] may not travel by themselves to and from school, I would like you to imagine that for some reason they do have to travel to school by themselves. In this case, on a scale from 1 to 5, where 1 is strongly agree and five strongly agree, please rate the following statements." (see Annex for survey instrument).

The content of the survey was informed by results from the qualitative work. For example, the qualitative work motivated the inclusion of questions about stray dogs that children might encounter on their walking school trips, the risk of children getting into physical altercations with other children, and issues of discrimination. In the same vein, the interviews and focus groups with parents pointed at issues of traffic safety and crime (particularly sexual harassment against girls) as important barriers and, therefore, several questions in this direction were included. Other elements that emerged from the qualitative work and that informed the survey was how parents perceive the school bus, if they would be willing to allow their children to travel on the school bus, and if they feel safer when their children travel with other children.

The wording of the questions was reviewed by a local consultancy firm with extensive experience on survey data collection in The Bahamas. The purpose of this review was to tailor the questions to the local context and to present them in a natural language to The Bahamian community so they could more clearly and effortless understand the content in the survey. Additionally, the survey was translated to Creole, one of the languages spoken in The Bahamas. The Creole version of the survey also followed a review of the wording. Data collection of the survey was carried out by the local consultancy firm via Computer Assisted Telephone Interviewing (CAPI) with pollsters previously trained. Data collection happened in November and December 2024.

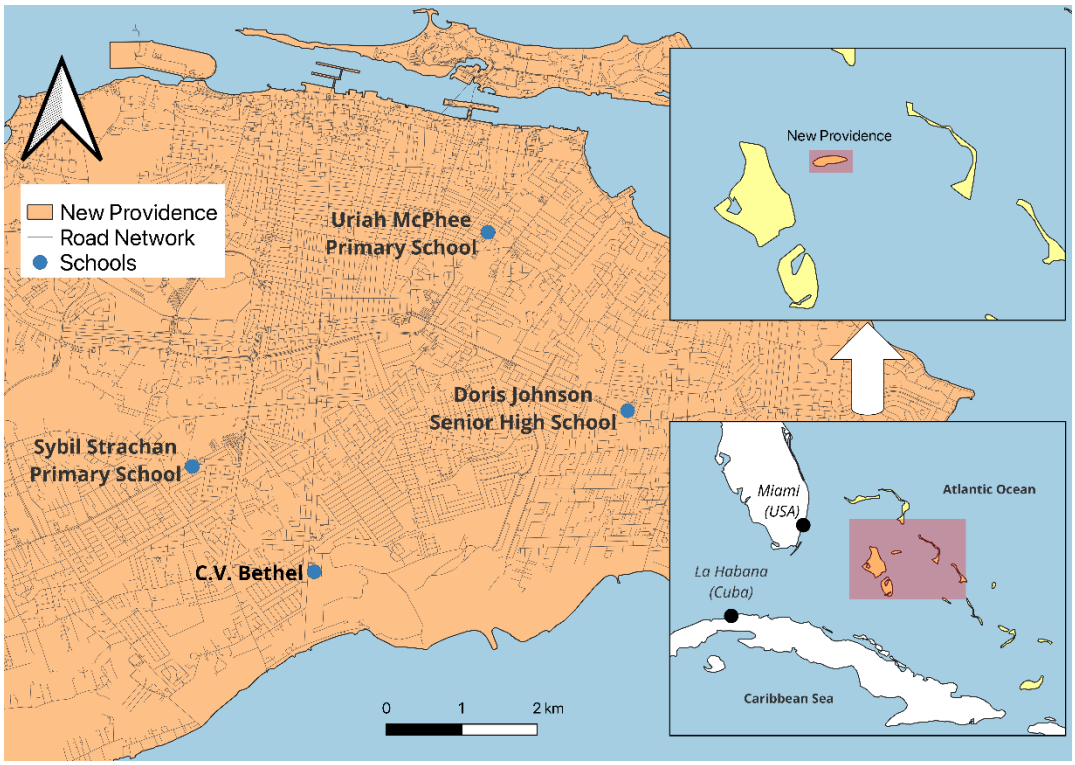
4.2 Case study description

With a population close to 400,000 inhabitants (Bahamas National Statistical Institute, 2024), The Bahamas is part of the Caribbean Region and the Lucayan Archipelago. This gives rise to the more distinguishing geographical feature of the country, being an islandic nation with over two thousand islets (or cays) and 700 islands (Gerhardt, 2023). One of these islands is New Providence, which concentrates 74.5% of the country's population and is home to Nassau, the capital city.

The geographic location in the Caribbean, the multiple islands and beaches, and the tropical weather have consolidated the Bahamas as an attractive international destination, positioning tourism as the primary contributor to the economy. This is reflected in the estimated seven million visitors that the country received during 2022. Tourism accounts for 60% of the GPD and employs (directly and indirectly) half of the workers across the islands (The World

Bank, 2023). It is probably due to tourism that The Bahamas managed to recover from the disruption of the Coronavirus pandemic and reduce the unemployment rate below two digits. But tourism does not manage to reduce gender inequalities. Women who are head of their household earn 23.2% less income than men who are head of their household (Bahamas National Statistical Institute, 2019). This contrasts with statistics suggesting that the workforce of the country is composed of slightly more women (54%) than men (46%) and that the unemployment rate is lower for women (8.5%) when compared to men (9.1%) (Bahamas National Statistical Institute, 2023).

Figure 2. Case study: Nassau (The Bahamas) and schools selected for the qualitative part of the research



Source: Authors' elaboration

Despite the geographical advantages that attract tourism and drive the economy, due to its geography the country is highly vulnerable to the impacts of climate change. For example, The Bahamas have been hit by twelve major hurricanes between 1980 and 2018 (Wright et al., 2023). The most recent, Hurricane Dorian, produced damages and losses estimated in US$3.4 billion and contracted the economy (Zegarra et al., 2020). Other major geographical and climate-related risk in The Bahamas is sea level rise, the destruction of mangroves, coral reef degradation, which translates into recurrent and increased flooding (Gerhardt, 2023). Flooding is exacerbated by the country's low elevation (the highest point is 64 meters above sea level) and by limestone, a sedimentary rock that absorbs saltwater and enables underground flooding.

Apart from exposure to hurricanes and flooding, The Bahamas also faces challenges related to health (Ministry of Health and Wellness, 2019) that are expected to impact well-being negatively. For example, the prevalence of hypertension, overweight and obesity is above the average for the Americas. Moreover, 11.5% of Bahamians have diabetes and 6.8% are considered pre-diabetic. The overall negative health outcomes have been linked with

insufficient physical activity levels and poor nutrition (Poon-King et al., 2025; Tejerina et al., 2018; WHO, 2018). A recent survey (Ministry of Health and Wellness, 2019) revealed that only 30% of the Bahamian population fulfils the minimum physical activity levels. The same study also shows that 60% of Bahamians drink two beverages with sugar per day and 50% eat fried food three times per week (Ministry of Health and Wellness, 2019). Problems associated to poor nutrition might be worsen by a significant part of the population suffering food insecurity (Karpyn et al., 2021; The Government of The Bahamas, 2023).

4.3 Data sources

The first phase of the qualitative component of the research recruited six interviewees, while the fieldwork involved 28 interviews. Most of the fieldwork interviews were conducted with teachers (12), followed by school principals (3) and school bus drivers (3). Other participants were, for example, security guards (2), one police officer, and one crossing guard. The four workshops had, in total, 27 participants with a clear overrepresentation of women. In Sybil Strachan, there were three women and two men; in C.V. Bethel, ten women; in Doris Johnson, two women and one man; and in Uriah McPhee, nine women.

Table 1a presents a general description of the school transportation survey demographics questions. Two main patterns are specific to this sample and the conditions of the study: age distribution and gender composition. Most of the 477 respondents fall within the 36 to 45-year-old bracket (43.3 %), followed by those between 46 and 55 (29.3 %). In comparison with national figures, these two cohorts are clearly over-represented. The 2024 Bahamas census (Bahamas National Statistical Institute, 2024) indicates that each group comprises about 24.5 % of the population. This imbalance was anticipated, as the survey intentionally targeted adults with school-aged children, a criterion more likely to be met by younger generations than older cohorts.

The sample is also markedly skewed by gender: 83% of participants are women, significantly higher than their 52% share in the national population. This disparity, mirrored in the qualitative recruitment, reflects the deeply gendered nature of caregiving in The Bahamas. Social norms consistently assign duties like escorting children to school disproportionately to women, who consequently bear the associated burdens and potential adverse effects investigated in this study.

Table 1a. Sample description – survey on school transportation

Variable	Total	Percentage (%)
What is your age?		
18 to 25	11	2.3%
26 to 35	83	17.6%
36 to 45	204	43.3%
46 to 55	138	29.3%
56 to 65	24	5.1%
More than 65	11	2.3%
Null Value	6	---
What is your gender?		

Table 1a. Sample description – survey on school transportation

Variable	Total	Percentage (%)
Female	390	83.0%
Male	80	17.0%
Null Value	7	---
What is your marital status?		
Never married	203	42.9%
Married	196	41.4%
Living together/common law	9	1.9%
Divorced	35	7.4%
Legally separated	20	4.2%
Widowed	10	2.1%
Prefer not to say	4	---
What is the highest level of education you have completed?		
Primary School	5	1.1%
Secondary School	173	36.5%
Technical Qualification (e.g., plumber, electrician)	53	11.2%
University undergraduate degree (associates or bachelor)	199	42.0%
Post Graduate degree	44	9.3%
Prefer not to say	3	---
Household Density (Individuals per room)		
Minimum	0.1	---
1st Quartile	1.0	---
Median	1.3	---
Mean	1.5	---
3rd Quartile	2.0	---
Maximum	7.0	---
Standard Deviation	0.7	---
Do you have any disability		

Table 1a. Sample description – survey on school transportation

Variable	Total	Percentage (%)
Yes	63	13.2%
No	414	86.8%
What is your relationship with the head of your household?		
Self / Head of the household	274	57.7%
Partner (including spouse, living together, or unmarried partner)	144	30.3%
Son / daughter	45	9.5%
Other	12	2.5%
Prefer not to say	2	---
How would you describe the main activity that you were doing last week?		
Employed full time (more than or equal to 35 hours per week)	431	90.4%
Employed part-time time (less than 35 hours per week)	6	1.3%
Unemployed (actively looked for a job in the last week)	11	2.3%
Retired	9	1.9%
Studying/in School	2	0.4%
Homemaker (taking care of my household full time)	15	3.1%
Long-term sick or disabled	2	0.4%
Unemployed (did not actively look for work in the last week)	1	0.2%

Source: Authors' elaboration based on survey data

The survey asked respondents to indicate the number of household members and their respective ages. For those within school-age, one member was randomly selected, and detailed information was collected about their trips from home to school and back. Results show that mothers are responsible for 63.5% of these trips, compared to just 18.3% for fathers—highlighting a notable gender disparity. This finding underscores the unequal burden placed on women regarding school transportation. Additionally, 13.1% of children are transported by an adult who is not their parent, while only 5.1% travel independently.

Table 1b. Transport-Related Descriptive Statistics

Variable	Total	Percentage (%)
How many motorized vehicles (e.g., cars, trucks, and motorcycles) are in your household?		
0	16	3.4%
1	189	39.8%
2	199	41.9%
3	71	14.9%
Prefer not to say	2	---
How often do you have access to a private vehicle for your personal mobility?		
Never	24	5.1%
Occasionally (1-3 times a week)	21	4.4%
Frequently (4-6 times a week)	11	2.3%
Always	418	88.2%
Other	1	---
Don't know	2	---
Who is the main person responsible for transporting children to and from school?		
Child walk on their own	36	5.1%
Child’s Father	130	18.3%
Child’s Mother	450	63.5%
Other	93	13.1%
Transport mode - trip from home to school		
Bus/Jitney	9	3.4%
Car	241	92.0%
Walking	12	4.6%
Transport mode - trip from school to home		
Bus/Jitney	10	4.8%
Car	189	90.9%
Walking	9	4.3%

Table 1b. Transport-Related Descriptive Statistics

Variable	Total	Percentage (%)
Departure Time - Trip from home to school		
Before 6am	3	1.2%
6:31am – 7am	23	8.9%
7:01am – 7:30am	128	49.4%
7:31am – 8:00am	72	27.8%
8:01am – 8:30am	29	11.2%
8:31am – 9:00am	6	2.3%
After 9:01 am	1	0.4%
Departure Time - Trip from home to school		
Before 2pm	10	4.8%
2:01pm – 2:30pm	6	2.9%
2:31pm – 3pm	22	10.5%
3:01pm – 3:30pm	102	48.6%
3:31pm – 4:00pm	42	20.0%
4:01pm – 4:30pm	17	8.1%
4:31pm – 5:00pm	7	3.3%
After 5:01 pm	4	1.9%
Before 2pm	10	4.8%

Source: Authors' elaboration based on survey data

Table 1b presents the descriptive statistics of transport related variables in the survey. Women accounted for 63.5% of those primarily responsible for children's school travel. Such patterns align with findings from diverse contexts documenting female majorities undertaking school transport responsibilities (He, 2013; Herrador-Colmenero et al., 2022; Scheiner, 2016). Therefore, the over-representation of women in this study likely indicates their greater direct involvement in, and concern regarding, the challenges of school transportation.

For trips from home to school, 92% of children ride in private vehicles, with the remainder of the trips via jitney or walking (Table 1b). Although cars are the primary mode of transportation in New Providence, this percentage appears unusually high, suggesting the survey may overrepresent car-based travel. The figure drops slightly for trips from school to home, with 90.9% of children traveling by car.

There are two additional elements of the school trips that potentially diminish access to labor and well-being. The first is the schedule of the trips that can collide with working shits and other responsibilities. According to survey data, 86.3% of trips from home to school start before 8 am, with 48.9% concentrating between 7 am and 7:30 am. Similarly, 86.8% of the

trips from home to school start before 4 pm, with 48.6% starting between 3 pm and 3:30 pm. Results also show that 9.9% of children are dropped-off in schools earlier than 7 am, while 5.2% are picked-up from schools after 4:30 pm. This suggests that some parents are struggling to balance school trips with other obligations and children are forced to stay at school even at schedules when schools are not operating. The second element is travel time. The average travel time for the trip from home to school is 27.8 minutes and 38.9 for the trip from school to home. Considering the size of New Providence and that most of the trips are completed in motorized vehicles, these travel times are relatively high.

4.4 Analytical methods

All recordings and transcripts were reviewed multiple times by members of the research team to ensure the quality of the data. After that, the qualitative data was analyzed with Thematic Analysis TA, a widely used method used in qualitative research to understand patterns in texts and analyze human behaviors and experiences (Braun et al., 2019; Braun & Clarke, 2019; Clarke & Braun, 2016). Thematic analysis identifies common patterns in data that capture similar meanings and group them as codes. Codes following the same topic are grouped into themes. As is standard in Thematic Analysis, the research followed six phases. The first phase was familiarization, with researchers iterating transcripts to have a clear idea of the content and themes. After that, phases two and three are reserved for code and theme identification, respectively. Phase four was reserved for reviewing the codes and themes identified in the previous section. Phase five was to name codes and themes. Finally, phase six focused on wrapping up and writing the results.

Likewise, quantitative data were analyzed with descriptive statistics, statistical tests (t-tests or Chi-squared tests) for group differences, and logistic regression models. We focused on four groups of variables considered in this research as potential outcomes influenced by school transportation. The first group considers impact on labor, the second group impact on time use, the third group impact on well-being, and the fourth group is composed of variables that can shed light on potential solutions. All these questions were presented to respondents in the context of school transportation. For example, one of the well-being questions was to rate the level of agreement with the statement “Transporting my child to and/or from school leaves me feeling physically exhausted.”

We conducted statistical tests for all the labor, time use, and well-being outcomes, considering different demographic, transportation, and school transportation-related variables. Demographic variables included gender, disability, being responsible or not for care responsibilities, and a proxy for income. The proxy for income was household density, measured as persons per room, following the recommendation of local experts and the consultancy firm reviewing the wording of the survey and collecting the data. Transportation variables were reduced to the total number of motorized vehicles owned by the household and whether the individuals have access to a private motorized vehicle for daily mobility. Similarly, the school transportation related variables were if the respondent is or not responsible for transporting children to and or from school, if the individual has at least one child attending primary school, if the individual has at least one child attending high school, if the individual has at least one child attending public school, and if the individual has at least one child attending private school.

Table 2. EFA - Exploratory Factor Analysis of Perceptions that Represent Barriers or Enablers to School Transport

Variable	Scale	First Factor Perceived Traffic Safety	Second Factor Perceived risk of gender-based violence	Third Factor Perceived risk of other threats to personal security
School zones traffic laws (e.g., slow down) are enforced		0.740	---	---
Drivers stop appropriately at the crosswalks around school		0.720	---	---
Do you agree that the sidewalks, ramps, crosswalks, and similar features around the school are of high quality?		0.440	---	---
The pick-up/drop-off area of school is safe for children to walk around		0.380	---	---
I would worry my child might experience physical sexual violence (e.g. being touched inappropriately against their will) on the way to school		---	0.610	---
I would worry that strangers might approach my child on the way to/from school	1:Strongly Disagree 2:Disagree 3:Neutral 4:Agree 5:Strongly Agree	---	0.880	---
I would worry that my child might experience some form of harassment (unwanted comments, being followed, inappropriate looks, whistles, etc.) to/from school if they were to travel unaccompanied		---	0.760	---
I would worry that my child might get robbed on the way to/from school if they were to travel unaccompanied		---	---	0.700
I would worry that my child may be attacked or scared by stray dogs along the way to school if they were to travel unaccompanied		---	---	0.470
I would worry my child might experience discrimination along their way to/from school if they were to travel unaccompanied		---	---	0.320
There is a risk that my child could get involved in a fight with another child on the way to/from school if they were to travel unaccompanied		---	---	0.720

Source: Authors' elaboration based on survey data. Note: All factors have a mean of zero and range approximately from -1 to1.

Moreover, we computed three factors (or latent variables) via Exploratory Factor Analysis (EFA): 1) "Perceived Traffic Safety", 2) "Perceived risk of gender-based violence", and "Perceived risk of other threats to personal security" for a reference child's trips to and to and from school. These factors were based on enabler and/or barrier perception questions about the built and natural environment, as well as the multiple risks children might encounter

on school trips, in the case that they were to travel independently. Results are presented in Table 2. High and positive values of perceived traffic safety mean that individuals perceive that the trips to school and the area surrounding schools are safe. On the contrary, high and

positive values of Perceived risk of gender-based violence and Perceived risk of other threats to personal security are associated with individuals being more concerned about the risks children might face. The three factors were also part of the statistical difference exploration. Statistical tests were either Chi-square association tests when the two variables were categorical, or t-test for mean differences when one variable was categorical and the other continuous. When the two variables were continuous, we computed Pearson correlations.

We fit logistic models for the last group of variables, the potential solutions. For all the regression models, we started with an initial full specification that included demographic and household composition variables, car ownership and car-access variables, perceptions of enablers and barriers (factors), variables associated with care responsibilities, and time-use measurements. Then, for each model, we computed the Variation Inflation Indexes (VIF) to assess multicollinearity. Then, we estimated a backwards stepwise regression models to reduce the specification by selecting significant variables from the initial specification. The final specification for each model was based on the stepwise backwards regression, though we decided to keep variables for theoretical reasons. New VIFs were computed for the final specifications, as well as robustness checks to identify potential issues of endogeneity or omitted variable bias.

5. Findings

Combining qualitative and quantitative evidence, we will present results in four subsections, one for each sphere of life analyzed (labor, time use, and well-being), plus the results associated with the potential solutions.

5.2 Impacts on labor market participation

The responsibilities associated with ensuring children's safe and timely transport to school significantly shape caregivers' engagement with the labor market in New Providence. Our survey data and qualitative insights from caregivers and school stakeholders reveal a spectrum of impacts, ranging from definitive changes in employment status to pervasive daily adaptations and constraints that influence how caregivers work.

For some caregivers, the demands of school transportation require considerable changes to their employment situation. Survey results highlight this reality: 6.9% of respondents reported having had to quit a job entirely to manage these duties, while a similar proportion, 8.1%, had to change jobs for the same reason. Placed in the context of national unemployment figures for The Bahamas (around 8.5% for women and 9.1% for men at the time of reference), these percentages suggest school transport is a notable factor contributing to labor market disruption for a considerable segment of the caregiving population.

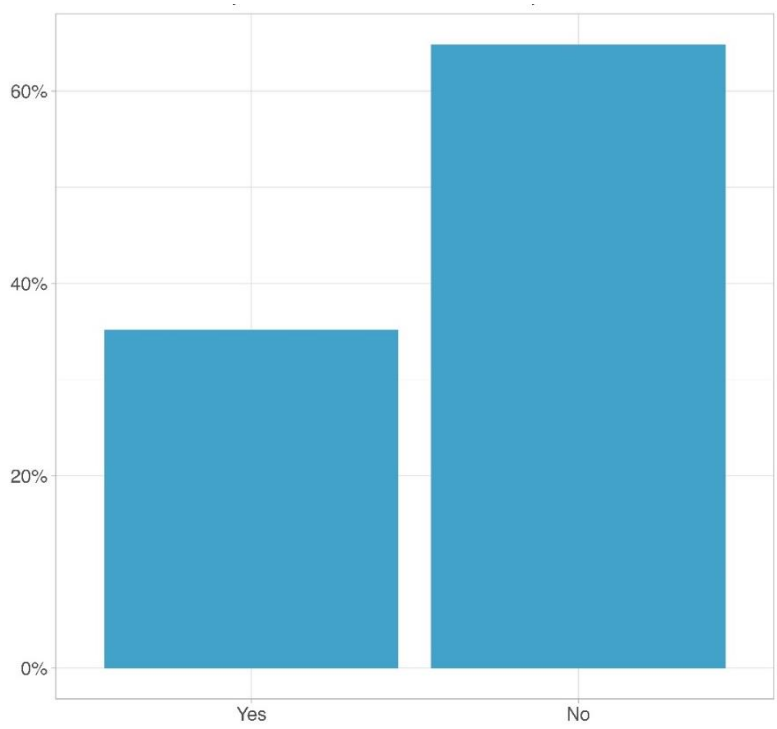
Fieldwork findings corroborated this, indicating that reducing work hours is a common coping mechanism. The direct conflict between work demands and care duties was reflected in caregiver testimonies. As one mother managing primary school commutes explained, the lack of alternatives forced a difficult choice: “I’ve had to reduce my work hours because there’s no one else to drop-off or pick-up my children.” The ripple effects extend beyond the individual household, as noted by a primary school teacher who observed, "Parents taking time off work to pick-up their children often don't return to work, which impacts their income and the economy.”

Beyond altering current employment, school transport duties frequently constrain

caregivers' ability to take on additional work responsibilities, limiting potential income growth and career advancement. This constraint was reported by over a third (35.2%) of survey respondents (see Figure 3). Predictably, the effect is more pronounced among those directly tasked with school trips (37.4% affected) compared to others in the household (23.9%), although the latter group is not immune, potentially due to shared household resources like vehicles.

Access to private transportation resources appears to mitigate this constraint significantly. Caregivers in households with two or more vehicles were considerably less likely to feel their ability to take on extra work was affected, compared to those in households with one or no cars (59.2% unaffected vs. 40.8%). Socioeconomic status, proxied by household density, also plays a statistically significant role (p=0.02); those feeling constrained lived in denser households on average (1.54 persons per room) compared to those unaffected (1.36), suggesting lower-income caregivers face greater difficulty absorbing the demands of school transport alongside potential work expansion.

Figure 3. Does the need to transport children to and from school affect your ability to take on additional work responsibilities?



Source: Authors' elaboration based on survey data

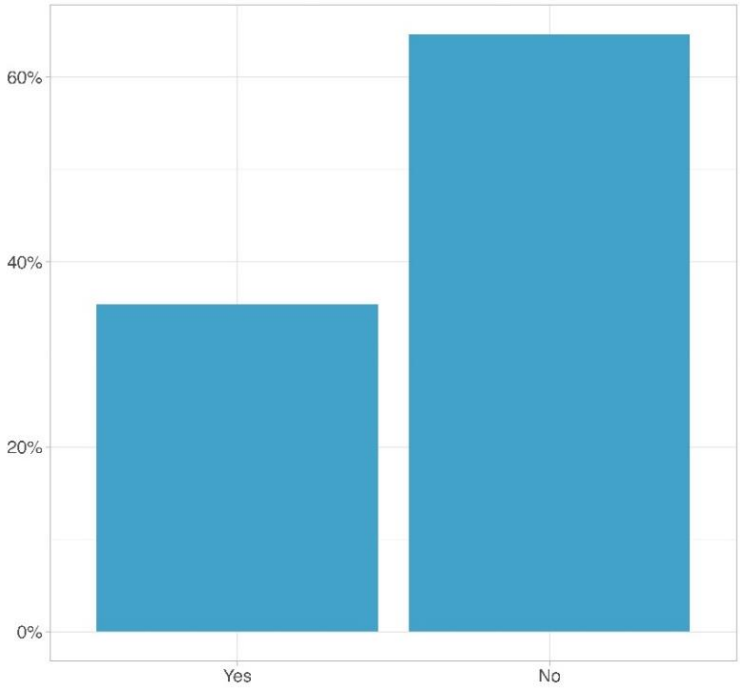
Furthermore, caregivers' perceptions of the journey's risks are intertwined with these labor constraints. Those who felt their ability to take on additional work was affected also reported significantly lower perceptions of traffic safety (average factor score -0.18 vs. 0.10 for unaffected) and higher average concerns about both gender-based violence and other threats to personal security compared to those who did not feel constrained. This suggests that the mental load and anxiety associated with navigating perceived unsafe environments contribute to limiting work capacity.

Even when caregivers maintain their employment structure, school transport responsibilities commonly lead to friction and necessitate significant adaptations within the workplace. Frequent tardiness emerged as a prevalent issue. Over a third (37.4%) of the

quantitative sample reported being late for work at least once in the preceding month due to transporting children. For a notable subset (7.9%), this was a chronic problem, occurring eight or more times in the month. The tangible impact of this persistent difficulty was highlighted by the experience of a manager at a Children's Emergency Hostel: "I've had staff who struggled with tardiness because of school responsibilities, and one even had to leave her job."

Requesting flexible working arrangements is another major adaptation strategy, driven by the need to align work schedules with school timings. Caregivers frequently mentioned making personal sacrifices: "I changed my shift to make sure I can drop-off and pick-up my kids," and "I've had to adjust my hours and skip lunch breaks to pick-up my kids." The survey confirmed the widespread nature of this adaptation, with 35.4% of respondents having requested flexibility (e.g., adjusted hours, remote work) specifically due to school transport duties (see Figure 4). This necessity disproportionately affects women, with 38% requesting flexibility compared to 23.9% of men, reinforcing the gendered nature of reconciling care, transport, and employment. Similar to the observed constraints to working more hours, needing flexibility in work hours was associated with higher household density (lower-income proxy). Safety concerns also appear to motivate these requests; individuals seeking flexibility reported significantly higher average concern about gender-based violence risks (0.13 vs. -0.08 for those not requesting it), likely reflecting a desire to personally ensure their children's safe passage. The pressure is significant enough that employers sometimes implement structural changes, as described by one manager: "I had to introduce a 12-to-8 shift to accommodate staff who needed flexibility for school runs."

Figure 4. Have you requested working arrangements (e.g., adjusted hours, remote work) due to school transportation duties?



Source: Authors' elaboration based on survey data

Bringing children to the workplace represents a further coping mechanism, reported by 37.5% of caregivers surveyed. This strategy appears related to the child's age and perceived need for supervision, being less common among parents of more independent high school students (32%) compared to those without high school children (47%). Parents whose children attended public schools (31.5%) reported it less frequently than those without children in public schools (43.9%). Importantly, this adaptation was significantly associated with higher

caregiver concerns about threats to children's personal security during the commute (average risk factor score 0.16 vs. -0.10 for those not adopting this strategy), suggesting it serves partly as a protective measure against perceived dangers when schedules misalign.

Finally, the challenges caregivers face with school transport directly impact children's consistent access to education. Transport-related issues – including affordability of bus fares, vehicle breakdowns, or impassable routes due to flooding – were identified during qualitative work as key reasons for children missing school. This was quantified in the survey, with 17% of caregivers reporting their child had missed school days since the term began due to such transport problems. This absenteeism disproportionately affects children attending public schools (62.3% of those who missed school had at least one child in public school). Access to private vehicles is a strong mediating factor: 22.1% of children in households with 0-1 car missed school, compared to 12.6% in households with 2+ cars. The disparity is starker based on direct vehicle access: 45.8% of caregivers without personal vehicle access reported their child missed school, versus 15.3% for those with access (though the no-access group was small, n=24). Lower socioeconomic status (higher household density) was also significantly associated with children missing school. While this study centers on caregiver impacts, these findings illustrate a critical indirect consequence: mobility constraints on caregivers translate into reduced educational opportunities for children, potentially impacting their future prospects and perpetuating cycles of disadvantage.

5.3 Impacts on time use

The daily responsibilities of school transportation profoundly affect caregiver time use in New Providence, presenting a complex picture where recognized potential benefits coexist with substantial burdens. Caregivers perceive positive dimensions to the commute; survey results show overwhelming agreement that walking children to school offers an opportunity for physical activity (90.7%) and that the journey itself can be a space to share time with children (94.7%) (see Figure 5). This suggests a desire to find value in these routines. However, qualitative evidence reveals these positive aspects are frequently overshadowed by the considerable time commitment and logistical challenges involved.

School transport duties, encompassing preparation and travel, demand substantial time from caregivers daily. This time cost inevitably conflicts with other responsibilities, notably employment (as discussed in Section 5.1) and activities essential for personal well-being (addressed in Section 5.3). The rigidity of school schedules often clashes with caregivers' work hours, forcing difficult daily negotiations and contributing to overall stress.

These time burdens are not borne equally. The responsibility for school transport disproportionately falls on women, magnifying the impact on their available time. Inadequate support systems compound this gendered constraint. As one Civil Society representative explained, the lack of structural support creates immense difficulties, particularly for vulnerable women:

"If you have a single mother who has 3 children, and they're going to 3 different schools, and she's working at a job that might give her just 1 hour off, it's going to be a problem. Now that mother may not even have a car. So, she's stuck on the bus trying to collect her children, and then she's going to be stuck on the bus trying to get back to work her job, which really doesn't work."

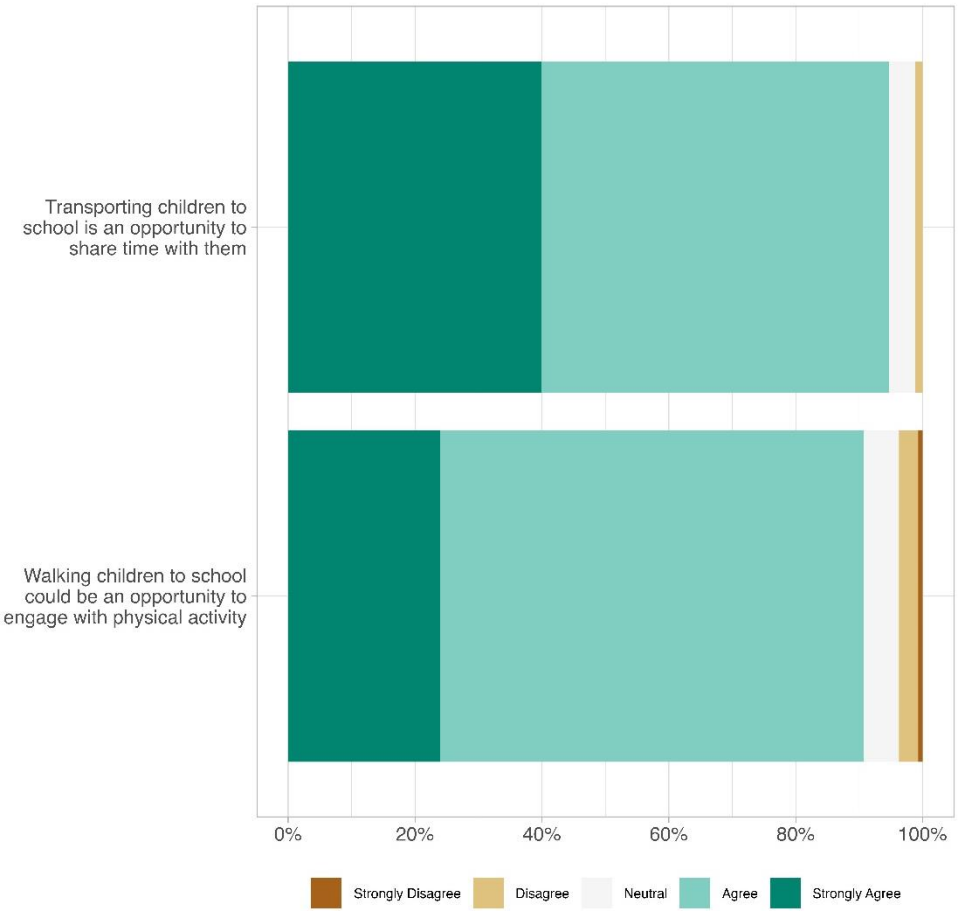
Another representative articulated the systemic issue:

“Gender inequities, particularly in caregiving responsibilities, create significant barriers for women, who often bear the brunt of managing children's school commutes. The lack of adequate support systems, such as childcare and flexible work arrangements, further complicates their ability to balance work and caregiving. “

This lack of support infrastructure deepens women's time poverty, restricting their

capacity for paid work and personal pursuits.

Figure 5. Time use outcomes



Source: Authors' elaboration based on survey data

When parental time is insufficient to bridge the gap between work obligations and school schedules, children often experience the direct consequences. One major outcome reported by school staff is the necessity for very early drop-offs or late pick-ups, leaving children unsupervised outside official school hours. A primary school counsellor observed that: "By 7:15 AM, there's a noticeable number of students already here because their parents need to get to work." Teachers noted the link to specific work schedules, like those in the hotel industry, which can lead to children waiting long after school ends: "Parents in the hotel industry tend to oversleep, leading to late drop-offs. We've had students here as late as 6 PM, waiting for their parents to get off work."

A Reserve Officer at a senior high school confirmed this: "Most parents work until 5:00 PM, so their children are left waiting." This logistical challenge emphasizes resource disparities, as one principal noted: "Parents who can bring their kids are often more involved … they have more resources and time." In extreme cases, the lack of timely pick-up necessitates formal intervention, as described by a principal: "We had a little girl here until about 7:00 PM. We had to give her food and ended up taking her to the police station." The systemic nature of this misalignment was underscored by another principal, explaining the conflict between parental work start times and official school policy: "Some parents have to be to work for 6:30 AM or 7:00 AM o'clock, and the children are here. The Ministry of Education's policy is to open gates at 8:00 AM."

A second major consequence impacting children is delegating transport responsibilities to older siblings. When parents are unavailable, often due to early work starts or long shifts [teacher: “Parents working long shifts often have to drop their kids off early, leaving them unsupervised.”], the task falls upon older children, sometimes relatively young themselves, to manage complex journeys for younger siblings. A high school counsellor shared a student's experience: “One student told me she has to drop her siblings at school first, which means taking two buses before arriving here. […] If a parent has to go to work early, they often tell the child, ‘You’re on your own to get to school.’” This practice was confirmed by school support staff: “A 10-year-old or 11-year-old is supervising the little one, ensuring they get to school, even when the parent is already at work by 6 AM” (Janitor, Senior High School). Teachers described the intricate logistics involved: “They’ll have to take the younger ones to school first, which sometimes means going in opposite directions before coming to school themselves.” This delegation carries direct costs for the older child, as a primary school teacher observed: “The eldest child is often late to their school because they have to drop off their younger siblings first.” Thus, parental time constraints directly impact children's routines, safety, and potentially their own educational engagement.

Managing school transport time in Nassau at the household level presents a complex reality for caregivers. While holding potential for positive interaction, the journey is frequently dominated by time scarcity, logistical hurdles, and schedule conflicts. Gendered care responsibilities and insufficient institutional support amplify these pressures. The coping strategies adopted by families often shift the burden onto children, creating supervision gaps or delegating complex tasks to older siblings. These temporal impacts demonstrate how shortcomings in the school transport system reverberate through families, influencing daily stress, shaping work patterns, and affecting children's school day experience.

5.4 Impacts on well-being

Beyond constraints on time and employment, the daily management of school transportation in Nassau demonstrably affects caregiver subjective well-being. Qualitative fieldwork revealed pervasive narratives of stress generated by these responsibilities. Caregivers consistently described the strain of navigating traffic, coordinating incompatible schedules, and balancing the school run with work and household duties. This pressure was particularly acute for mothers, especially single mothers, who often felt stretched thin managing multiple roles. As one mother at a primary school said, “I’m a single mom with three kids, and it’s overwhelming trying to get everyone to school on time.” The feeling of “juggling work, traffic, and school runs” was frequently described as simply “overwhelming,” a sentiment echoed even by those attempting proactive schedule management, like another mother who worked nights: “I work nights so I can be available during the day for my kids […] The stress of juggling work, traffic, and school runs is overwhelming.” A third participant from a primary school focus group captured the resulting time scarcity and constant pressure: “I’m always rushing, juggling between work, school runs, and household responsibilities.”

The daily routine itself requires personal sacrifice and contributes to this stress. The same mother who felt overwhelmed also detailed the needed early start: “I’m up at 5:00 AM and out of the house by 7:00 AM to ensure my child gets to school on time. Instead of eating, I’m stuck in traffic.” This individual strain reflects broader systemic issues. A representative from civil society linked these daily struggles to deeper well-being consequences: “The compounded stress of coordinating school transportation without adequate support affects caregivers’ mental health and overall well-being. Prolonged time spent in traffic and the constant need to balance work and childcare responsibilities contribute to chronic stress and fatigue.”

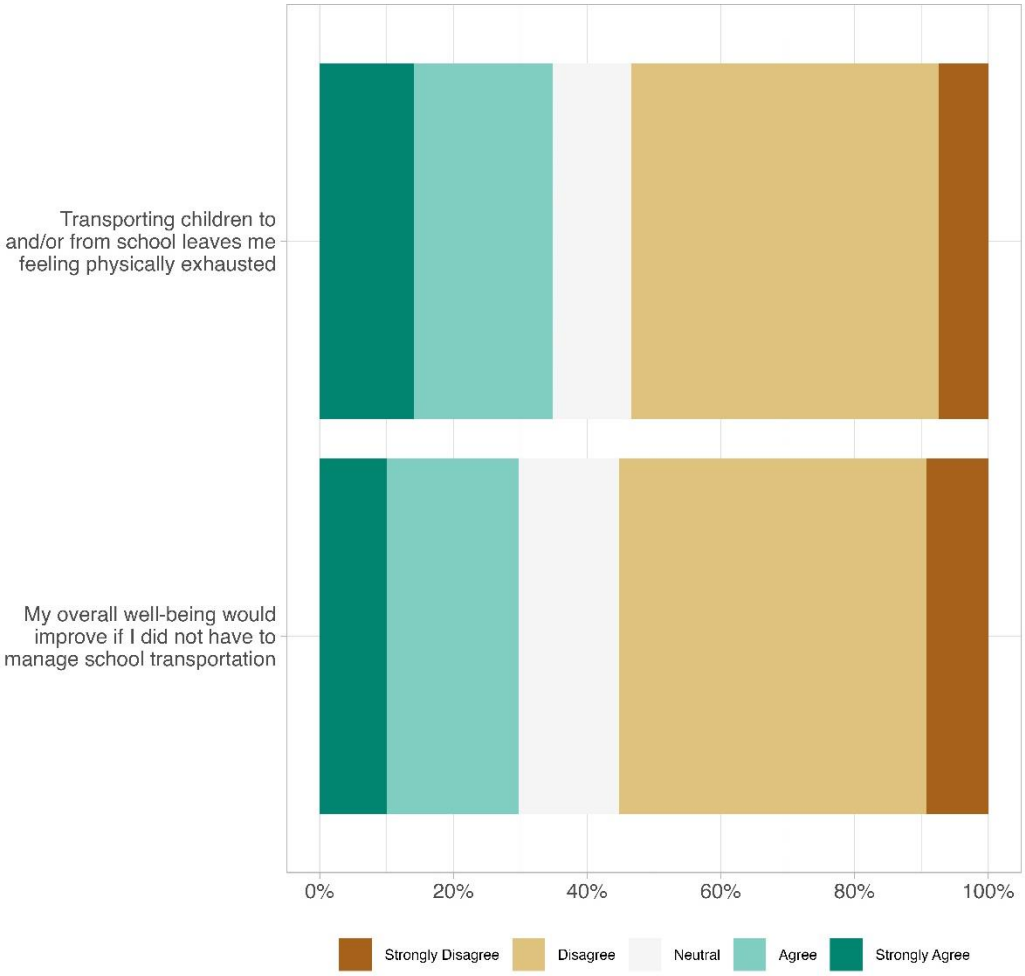
This qualitatively described stress manifests quantitatively as significant physical exhaustion. Survey data indicates over a third (34.9%) of caregivers agree or strongly agree that school transport duties leave them physically exhausted (see Figure 6). This fatigue

reveals inequalities: parents with children in public schools reported higher average exhaustion (3.0 on a 5-point scale) than those in private schools (2.7). Women reported higher average exhaustion (2.9) than men (2.5). Furthermore, the burden appears cumulative, as individuals with other care responsibilities felt significantly more exhausted from school transport (average 3.4) than those without (2.8).

The origins of this exhaustion appear related to both the logistical effort and the psychological burden associated with perceived risks along the journey. Although modest, statistically significant correlations emerged between exhaustion and caregivers' risk perceptions. Higher perceived traffic safety correlated with lower physical exhaustion (-0.11), suggesting safer commutes are less draining. Conversely, heightened concerns about the risk of gender-based violence (correlation 0.16) and other threats to personal security, such as robbery or fights (correlation 0.12), correlated with higher physical exhaustion. This implies that the constant vigilance and anxiety required when commutes are perceived as unsafe contribute directly to fatigue. Parental anxiety about children's safety is a key driver, especially regarding specific vulnerabilities. As the Representative from Civil Society explained about risks faced particularly by girls: “These girls after school, if they're not getting a ride directly home, then they're encountering people along the way... this is part of why parents are fearful.” Managing these fears adds a significant layer to the daily well-being cost for caregivers.

Despite clear evidence linking school transport to stress and physical exhaustion, the survey revealed a more complex relationship with caregivers' assessment of their overall subjective well-being. Only a minority (29.7%) agreed or strongly agreed that their overall well-being would improve if they were relieved of school transport duties (Figure 6). Most disagreed or were neutral. This divergence between reported exhaustion/stress and perceived impact on overall well-being suggests several possibilities. Caregivers may internalize this task as a fundamental parental responsibility, accepting the associated burden without viewing it as the primary factor diminishing their overall life satisfaction. Alternatively, the lack of readily available, trusted alternatives may make it challenging to imagine genuine well-being improvement simply from removing the current duty; without safe options, the worry might remain or shift. The data reveal some nuances: individuals facing compounded burdens—those with other caregiving responsibilities or disabilities—expressed slightly higher agreement that their well-being would improve (average 3.1 vs. 2.7). Risk perceptions also played a role, mirroring the exhaustion findings: higher concerns about gender-based violence and other threats correlated weakly but significantly with a greater desire to relinquish the duty (correlations 0.12 and 0.13, respectively). This suggests that when the journey feels particularly dangerous, the transport task weighs more heavily on overall well-being perceptions.

Figure 6. well-being outcomes



Source: Authors' elaboration based on survey data

In sum, school transport responsibilities impose clear well-being costs on caregivers in Nassau through stress and physical exhaustion. These impacts are connected to the time pressures (Section 5.2), labor constraints (Section 5.1), and pervasive safety anxieties discussed here. While the link to overall life satisfaction is complex and mediated by other factors, the findings underscore that caregiver well-being is negatively affected by the current state of school transportation. Reducing this burden requires interventions that address not only logistical efficiency but also the fundamental need for safe, reliable, and trustworthy ways for children to travel to school.

5.5 Perceptions of potential solutions

Discussions during focus groups and the stakeholder workshop frequently converged on potential solutions to alleviate the burdens associated with school transportation, accounting for more than half (57.1.5%) of the conversation time (see Figure 7). While ideas like parent-managed rotation networks or technology-based coordination apps were mentioned, two proposals garnered the most attention and positive reception: scaling up the existing, limited school bus system and facilitating groups of children walking together. Consequently, survey questions were designed to explore caregiver perceptions regarding these two specific options.

Currently, The Bahamas operates a targeted school bus system with specific eligibility requirements; only 10.1% of survey respondents reported having this option available for their child. To gauge broader interest, caregivers were asked their level of agreement with the statement: “If a public-school bus is available, I would like for my child to use it.” While the majority (54.8%) disagreed, a substantial minority (35.4%) agreed or strongly agreed, suggesting a significant potential user base should the service be expanded or made more widely accessible.

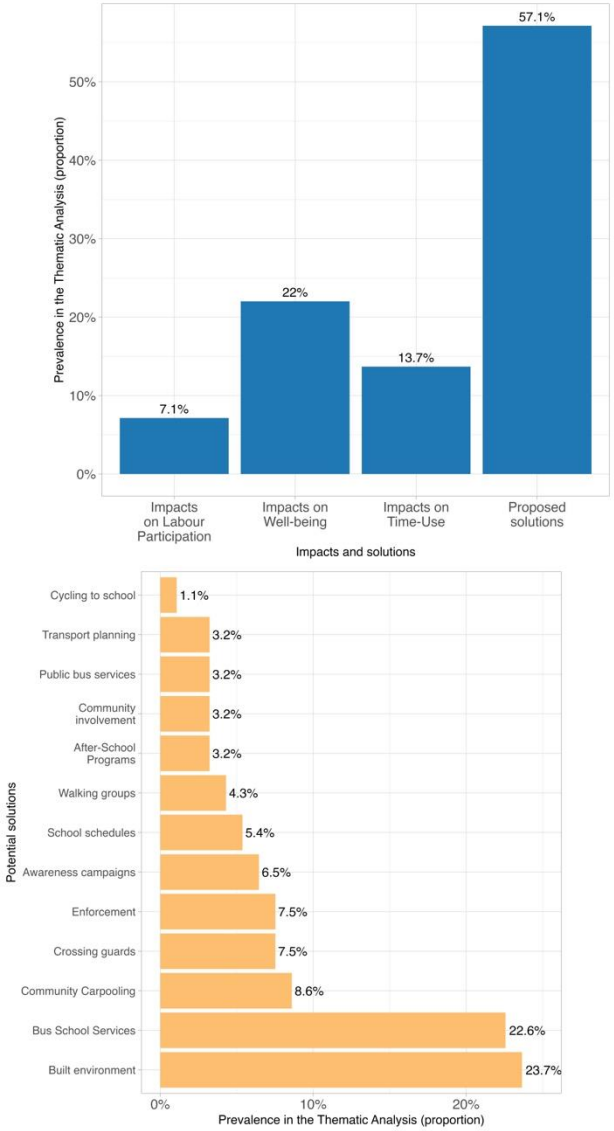
A logistic regression model (Table 3) revealed key determinants, examining factors associated with willingness to use a hypothetical available school bus (binary outcome: Agree/Strongly Agree vs. Neutral/Disagree/Strongly Disagree). Unsurprisingly, lack of access to a private vehicle was the strongest predictor, increasing the odds of potential uptake nearly eightfold compared to those with access. This aligns with qualitative insights recognizing the considerable burden of car-less caregivers and suggests that improved public school bus options would primarily benefit this group. Similarly, lower income (proxied by higher household density) significantly increased willingness, confirming that cost and resource constraints drive interest in collective transport.

The profile of potential adopters also includes caregivers aged 46-55, those with lower levels of education, those with children attending high school (indicating greater trust in older children's ability to use a bus), and those already burdened with more hours of other care activities. These findings suggest the potential service appeals most strongly to those facing greater mobility constraints or time pressures.

Critically, perceptions of safety heavily influenced willingness to use a school bus. Higher perceived traffic safety along the general school route positively correlated with acceptance (estimate 0.438, $p=0.001$). Conversely, strong concerns about the perceived risk of gender-based violence acted as a significant deterrent (estimate -0.517, $p=0.004$). This indicates that caregivers weigh the potential benefits against deep-seated fears about children's vulnerability, particularly regarding harassment or assault, within a shared, potentially unsupervised environment. Parents are unlikely to entrust their children to a system perceived as unsafe, regardless of convenience.

Qualitative comments directly addressed the conditions needed to overcome this reluctance and build trust. Caregivers emphasized the need for reliability and security features: “If the buses had supervision and reliable routes, I’d let my kids use them,” stated Parents at Primary School. A Janitor at Senior High School suggested technological solutions: “If buses are equipped with tracking systems and trained drivers, parents can feel secure.” Another group of Parents at Primary School elaborated on essential operational elements: “A school bus with designated stops and reliable schedules would solve so many problems. There should be a monitor to ensure kids behave and stay safe.” These insights highlight that the feasibility of expanding school bus services depends fundamentally on designing a system that proactively addresses safety through supervision, vetting, reliability, and clear operational standards.

Figure 7. Impacts and Solutions to Barriers to School Transport (Thematic analysis of qualitative data)



Source: Authors' elaboration based on fieldwork data

Interestingly, caregivers currently directly involved in transporting their children were less likely (46.3% lower odds) to agree to use an expanded school bus service. While counterintuitive, this may also stem from safety concerns; these parents might be actively transporting children precisely because they perceive existing alternatives, including unsupervised travel, as too risky. Therefore, the expansion of the current school bus system as currently operated in New Providence might not meet their threshold for safety. Alternatively, managing the transport themselves, while burdensome, might offer a degree of control and schedule flexibility these caregivers value over adhering to fixed bus routes and times.

Table 3. Results – logistic model (school bus)

If a public-school bus is available, I would like for my child to use it 1: Yes; 0: No

	Estimate	Odds Ratio	Std. Error	z value	Pr(>|z|)	
Intercept	-2.073		0.531	-3.905	0.000	***
Perceived Traffic Safety	0.438	54.976%	0.134	3.261	0.001	**
Perceived risk of gender-based violence	-0.517	40.384%	0.178	-2.914	0.004	**
Perceived risk of other threats to personal security	0.295	34.286%	0.172	1.718	0.086	.
School Transportation Responsibilities						
No	ref	ref	ref	ref	ref	
Yes	-0.621	46.263%	0.298	-2.087	0.037	*
Child(ren) attending high school						
No	ref	ref	ref	ref	ref	
Yes	0.647	90.892%	0.264	2.453	0.014	*
Child(ren) attending public school						
No	ref	ref	ref	ref	ref	
Yes	0.463	58.829%	0.261	1.772	0.076	.
Age (years)						
Under 35 years old	0.188	20.733%	0.340	0.555	0.579	
Between 35 and 45 years old	ref	ref	ref	ref	ref	
Between 46 and 55 years old	0.657	92.807%	0.291	2.259	0.024	*
Older than 55 years old	0.514	67.203%	0.483	1.064	0.287	
Marital status						
Not married	ref	ref	ref	ref	ref	
Married or living together	-0.343	29.033%	0.279	-1.228	0.220	
Other	-0.945	61.126%	0.383	-2.470	0.014	*

Table 3. Results – logistic model (school bus)

If a public-school bus is available, I would like for my child to use it 1: Yes; 0: No

	Estimate	Odds Ratio	Std. Error	z value	Pr(>|z|)	
Education level						
Low	0.522	68.588%	0.260	2.007	0.045	*
Medium	ref	ref	ref	ref	ref	
High	-0.926	60.402%	0.530	-1.749	0.080	.
Cars						
None	1.115	204.893%	1.117	0.998	0.318	
One	ref	ref	ref	ref	ref	
Two	-0.224	20.088%	0.271	-0.828	0.408	
Three or more	-0.741	52.313%	0.396	-1.869	0.062	.
Access to a private vehicle						
Yes	ref	ref	ref	ref	ref	
No	2.063	686.734%	0.789	2.613	0.009	**
Household Density (Person per room)	0.517	67.684%	0.172	3.008	0.003	**
Care activities (hours)	0.120	12.800%	0.056	2.150	0.032	*

Sample Size = 422; AIC = 473.98; R2 McFadden = 0.22; Adjusted R2 McFadden = 0.14
"***": p < 0.001 (highly significant)
"**": p < 0.01 (very significant)
"*": p < 0.05 (significant)
".": p < 0.1 (marginally significant)
No star means p ≥ 0.1 (not statistically significant)

Source: Authors' elaboration

The survey also explored perceptions of children walking to school in groups, a strategy that could inform initiatives like "walking school buses" escorted by adults. Caregivers rated their agreement with the statement: "It would give me peace of mind if my child travelled to school with other children." A clear majority (62.9%) agreed or strongly agreed, indicating general support for the principle of collective walking as a potential source of security or reassurance, while 22.4% disagreed.

The logistic regression model predicting agreement (Table 4) again showed lack of household cars as the most influential factor, increasing the odds of finding peace of mind in collective travel nearly eightfold compared to having one car. Lower income (higher household density) was also positively associated with agreement. These results mirror the school bus findings, suggesting that caregivers facing greater resource constraints see higher value in shared or collective mobility solutions. Interestingly, individuals with disabilities were significantly more likely (+132.6% odds) to agree, reflecting a greater need for mutual support

or supervision networks. Conversely, those with higher existing care responsibilities were less likely (-56% odds) to agree, possibly due to complex schedules making coordinated walking groups difficult to manage.

Safety perceptions again played a key role. Higher perceived traffic safety positively correlated with finding peace of mind in children walking together. However, concerns about other threats, specifically the perceived risk of children getting involved in fights with peers, significantly decreased agreement. This suggests that while walking together might mitigate some risks (like abduction by strangers), it raises concerns about interpersonal conflict, requiring consideration in designing any group walking program.

In conclusion, while caregivers express interest in collective solutions like school buses or children walking together, particularly those facing resource constraints, uptake hinges on addressing safety and trust. Any government-enabled expansion of school buses requires robust, verifiable safety measures co-developed with parents. Similarly, facilitating walking groups necessitates addressing traffic safety and perceived risks of peer conflict. These findings highlight that designing acceptable solutions requires careful attention to caregivers' specific anxieties and priorities.

Table 4. Results – logistic model (walking school buses)

It would give me peace of mind if my child travelled to school with other children 1: Yes; 0: No

	Estimate	Odds Ratio	Std. Error	z value	Pr(>|z|)	
Intercept	-0.087		0.491	-0.176	0.860	
Perceived Traffic Safety	0.316	37.177%	0.118	2.685	0.007	**
Perceived risk of gender-based violence	-0.126	11.854%	0.160	-0.787	0.431	
Perceived risk of other threats to personal security	0.564	75.841%	0.149	3.785	0.000	***
School Transportation Responsibilities						
No	ref	ref	ref	ref	ref	
Yes	0.090	9.434%	0.280	0.322	0.748	
Child(ren) attending primary school						
No	ref	ref	ref	ref	ref	
Yes	-0.423	34.496%	0.225	-1.878	0.060	.
Child(ren) attending public school						
No	ref	ref	ref	ref	ref	
Yes	0.356	42.761%	0.241	1.480	0.139	
Gender						
Male	ref	ref	ref	ref	ref	
Female	0.128	13.673%	0.301	0.425	0.671	
Age (years)						
Under 35 years old	-0.172	15.790%	0.298	-0.577	0.564	
Between 35 and 45 years old	ref	ref	ref	ref	ref	
Between 46 and 55 years old	0.416	51.576%	0.271	1.535	0.125	
Older than 55 years old	-0.250	22.094%	0.455	-0.549	0.583	
Marital status						
Not married	ref	ref	ref	ref	ref	
Married or living together	-0.034	3.312%	0.253	-0.133	0.894	
Other	-1.062	65.411%	0.344	-3.083	0.002	**
Cars						
None	2.178	782.748%	1.110	1.961	0.050	*
One	ref	ref	ref	ref	ref	
Two	0.203	22.484%	0.250	0.810	0.418	
Three or more	-0.270	23.678%	0.337	-0.802	0.423	

Table 4. Results – logistic model (walking school buses)

It would give me peace of mind if my child travelled to school with other children 1: Yes; 0: No

		Estimate	Odds Ratio	Std. Error	z value	Pr(>|z|)	
Disabilities							
	No	ref	ref	ref	ref	ref	
	Yes	0.844	132.584%	0.360	2.341	0.019	*
Household Density (Person per room)		0.379	46.037%	0.163	2.328	0.020	*
Care responsibilities							
	No	ref	ref	ref	ref	ref	
	Yes	-0.821	55.993%	0.342	-2.397	0.017	*

Sample Size = 425; AIC = 540.72; R2 McFadden = 0.10; Adjusted R2 McFadden = 0.03
"***": p < 0.001 (highly significant)
"**": p < 0.01 (very significant)
"*": p < 0.05 (significant)
".": p < 0.1 (marginally significant)
No star means p ≥ 0.1 (not statistically significant)

Source: Authors' elaboration

5.6 Analysis of impacts by primary mode of transport

In this section, we highlight that despite that most respondents reported that children are transported to and from school in private cars, there are differences when compared to children that are not transported in private cars (via walking, jitney, or other mode). In Table 5 we present results for the trip from home to school. The three latent variables (Perceived Traffic Safety, Perceived Risk of Gender-Based Violence, and Perceived Risk of Other Threats to Personal Security) were derived using Exploratory Factor Analysis (EFA) (discussed above). Each variable is scaled approximately between -1 and 1. For Perceived Traffic Safety, positive values indicate that individuals believe children are safe and not at risk of traffic accidents. Conversely, negative values suggest that parents are concerned about traffic-related dangers to their children. In contrast, for the other two latent variables, positive values reflect parental concern about their children's safety in relation to gender-based violence or other security threats. Negative values, on the other hand, indicate that parents feel their children are safe and have little to no concern in these areas.

Respondents that relied on non-car transport modes to transport their children reported significantly higher household density (mean = 2.433 persons per room) compared to those using cars (mean = 1.398), indicating that lower incomed groups were less likely to transport their children via private car. Similarly, perceived risk of gender-based violence was lower (interpreted as more favorable) among non-car users (mean = -0.165) compared to car users (mean = -0.003). For perceived risk of other threats to personal security, both groups reported concerns, but the values were higher among non-car users (mean = 0.133) than car users (mean = 0.074).

Table 5. Results – Mean values of Household Density and Latent Variables by the mode used to transport children from home to school

Transport mode for transporting children from home to school									
	Total	**Household density**		**Perceived Traffic Safety (latent variable)**		**Perceived risk of gender-based violence (latent variable)**		**Perceived risk of other threats to personal security (latent variable)**	
		mean	SD	mean	SD	mean	SD	mean	SD
By Car	198	1.398	0.675	0.006	0.919	-0.003	0.896	0.074	0.891
Not by Car	17	2.433	1.598	-0.097	0.669	-0.165	0.654	0.133	0.684

Source: Authors' elaboration

In Table 6 we present results for the trip from school to home. Like the trip from home to school, children not transported by car in the return journey are more likely to come from denser households (mean = 1.589 persons per room) compared to those transported by car (mean = 1.312), again suggesting potential socioeconomic differences between these groups. However, notable differences emerge when examining perceptions of safety and risk. In contrast to the school trip to school, where non-car users perceived lower traffic safety, non-car users in the return trip reported substantially higher perceived traffic safety (mean = 0.266)

compared to car users (mean = -0.072). This shift suggests that the route home may be perceived as safer, or that timing, environmental conditions, or social dynamics in the afternoon differ from those in the morning. For perceived risk of gender-based violence, the pattern is reversed compared to the morning trip. Perceived risk of other threats to personal security remained low across both groups.

Table 6. Results – Mean values of Household Density and Latent Variables by the mode used to transport children from school to home

Transport mode for transporting children from school to home	Total	Perceived Traffic Safety (latent variable)		Perceived risk of gender-based violence (latent variable)		Perceived risk of other threats to personal security (latent variable)		Perceived Traffic Safety (latent variable)	
		mean	SD	mean	SD	mean	SD	mean	SD
By Car	152	1.312	0.666	-0.072	0.962	0.084	0.839	-0.091	0.981
Not by car	11	1.589	1.010	0.266	0.950	-0.095	0.418	-0.098	0.619

Source: Authors' elaboration

Table 7. Results – difference by availability of school bus routes

In the last month, were there any school bus transport routes to which your child had access?	Total	Household density		Perceived Traffic Safety (latent variable)		Perceived risk of gender-based violence (latent variable)		Perceived risk of other threats to personal security (latent variable)	
		mean	SD	mean	SD	mean	SD	mean	SD
Don't Know	134	1.465	0.584	0.106	0.774	-0.133	0.910	-0.093	0.888
Yes, publicly provided	48	1.596	0.795	-0.320	0.871	0.052	0.793	-0.027	0.840
Yes, privately provided	49	1.134	0.620	0.293	0.992	0.240	0.778	0.116	0.856
No	246	1.490	0.855	-0.051	0.990	0.009	0.905	0.029	0.994

Source: Authors' elaboration

Finally, Table 7 presents results considering the different forms of availability (or not) of school bus transport routes. Household density was highest among those with publicly provided school bus services (mean = 1.596), suggesting that these services may be more

common among low-income families. In contrast, families with privately provided school bus services had the lowest household density (mean = 1.134), possibly reflecting greater financial resources or access to alternative transport options. In terms of perceived traffic safety, the most positive assessments came from those with privately provided transport (mean = 0.293), while those relying on publicly provided services reported the most negative views (mean = -0.320). This suggests that private services may be associated with safer or more comfortable environments, either through more direct routes, better vehicles, or parental control. Those who were unsure ("Don't Know") also reported positive traffic safety perceptions (mean = 0.106), while respondents without access to exclusive bus routes reported slightly negative perceptions (mean = -0.051). Perceptions of gender-based violence risk (where high and positive values denote high levels of concern and negative values are associated with lack of concerns) varied more. Families with private transport reported the highest concern (mean = 0.240), which may reflect more awareness or more sensitivity to risks. Conversely, those in the "Don't Know" category perceived the lowest risk (mean = -0.133). Public bus users and those without exclusive transport had relatively neutral and low scores.

6. Discussion

This study examined the consequences of school transportation responsibilities for caregivers in New Providence, The Bahamas, shedding light on the impacts on labor participation, time allocation, and well-being. It extends previous analysis of the barriers and enablers shaping these journeys (Scholl et al., forthcoming. 2025) by focusing on the lived effects for those managing the daily school run, predominantly women. The findings reveal that navigating school transport within Nassau's current context imposes significant costs on caregivers, constraining their daily lives and opportunities in ways that require targeted policy attention and collaborative solutions.

The demands of managing school commutes exert considerable pressure on caregiver well-being. Physical exhaustion, reported by over a third of respondents, is compounded by significant mental stress arising from complex logistics and persistent safety anxieties (Landby, 2019). Fears concerning traffic safety, crime, and particularly gender-based violence (Scholl et al., Forthcoming) correlate strongly with caregiver distress and the adoption of protective measures that consume time and emotional energy (Schwanen, 2011). This constant strain limits essential opportunities for personal time and rest, reducing overall quality of life. The complexity of caregiver well-being is highlighted by the finding that most caregivers, despite acknowledging the burden, did not perceive that simply relinquishing this duty would markedly improve their overall life satisfaction. This may reflect deeply internalized parental roles, the high value placed on ensuring educational access, or a pragmatic assessment based on the lack of perceived safe and reliable alternatives. It suggests effective support must enhance the conditions of the journey, particularly safety and reliability, rather than merely aiming to remove the task.

These well-being challenges are closely linked to marked constraints on caregivers' time. Our study provides empirical evidence on caregivers' considerable 'time poverty' (Oviedo and Titheridge, 2016), driven by fragmented daily schedules resulting from unreliable transport, mismatches between school and work hours, and limited informal support networks (McDonald, 2008). Caregivers adapt through strenuous logistical efforts, including very early drop-offs or late pick-ups. The delegation of transport responsibilities to older siblings, a common coping strategy reported qualitatively, carries potential intergenerational consequences by impacting the older child's own schooling. Amidst these difficulties, caregivers recognize the commute's potential as valued family or activity time. This suggests an unmet desire for positive interaction and healthier routines, currently compromised by the stressful nature of the journey itself. Interventions that make commutes safer and more efficient could potentially allow these valued aspects to emerge more fully.

The pressures on time and well-being inevitably restrict labor market participation. School transport duties force difficult trade-offs, leading some caregivers to quit or change jobs, reduce hours, or avoid career-enhancing responsibilities. These findings align with research highlighting how care-related mobility constrains employment, particularly for women (Landby, 2019; Taş & Ahmed, 2021). More common adaptations, such as frequent tardiness or negotiating flexible work schedules, signal systemic friction between existing employment structures and caregiving realities. The significantly higher reliance on flexibility among women caregivers exemplifies how gender norms interact with transport deficits to shape economic opportunities (He, 2013; Uteng & Turner, 2019). Access to private vehicles mediates some of these impacts, underscoring the heightened vulnerability of car-less households in heavily car-reliant societies and urban environments (Bastiaanssen et al., 2020). These burdens extend transport difficulties to students, with absenteeism suggesting potential long-term effects on educational attainment.

Addressing these interconnected challenges requires moving beyond incremental adjustments towards systemic solutions. Given the diverse realities faced by caregivers (Scholl et al., Forthcoming) and the centrality of safety and trust, effective interventions necessitate active collaboration. Sustainable improvements hinge on government agencies across key sectors like Transport, Education, Social Services, Gender Affairs, and Finance working in genuine partnership with parents, school communities, and transport operators. This engagement is vital not just for consultation but for grounding solutions in lived experience, such as those documented across this paper, ensuring logistical and financial viability, building trust, and fostering the commitment needed for long-term effectiveness.

One clear pathway involves government-enabled, reliable, safe collective transport, particularly concerning the school bus system. While current usage is limited, considerable latent demand exists, especially among vulnerable groups who stand to gain most from alleviated time and cost pressures. Yet, realizing this potential requires directly confronting the critical barrier identified: deep-seated safety concerns, primarily around supervision and the risk of harassment or violence. Government action, therefore, must prioritize facilitating a system that actively earns caregiver confidence. This demands a joint process with parents and schools to define and enforce robust safety protocols—including vetted supervisors, reliable operations, driver standards, safe stop infrastructure, and transparent accountability—before significant expansion is pursued. Addressing these safety concerns is as fundamental as resolving logistical and financial hurdles. Similar collaborative planning would be essential to support other potentially viable options, such as organized walking groups.

7. Conclusions

This study demonstrates that school transportation responsibilities in Nassau impose significant and multidimensional burdens on caregivers. These burdens extend beyond logistics to impact labor participation, time allocation, and well-being. The findings confirm that these duties, disproportionately borne by women, interact with existing transport deficits and safety concerns to constrain daily life and opportunities for many families in the Bahamas.

The research makes several contributions. It provides empirical evidence on the specific consequences of school transport demands in a Caribbean Small Island Developing States context, filling a gap in the academic literature. It highlights the profound interconnectedness of mobility challenges with caregiver well-being, time poverty, and labor market access, particularly emphasizing the gendered dimensions of these impacts. The study also reveals the complex nature of caregiver perceptions, including the coexistence of perceived burdens with valued aspects of the school journey, and identifies critical barriers such as safety concerns related to collective transport options like school buses.

Certain limitations should be considered. The cross-sectional nature of the survey data allows us to identify associations but prevents definitive causal claims. Reliance on self-

reported data for impacts on labor, time use, and well-being is subject to individual perception and recall bias. While the study included diverse schools, the findings are specific to the Nassau, New Providence context and may not be directly generalizable to other islands in The Bahamas or different settings without further research. Additionally, the use of household density as an income proxy, while necessary due to data collection constraints, provides only an indirect measure of socioeconomic status.

Despite these caveats, the policy relevance is clear. The current situation creates hardship and potentially hinders equitable access to education and employment. Effective responses require coordinated, multi-sectoral action. Policy should prioritize facilitating safer, more reliable school transport options, developed through genuine partnership between government entities, schools, and parent communities to ensure solutions address safety concerns and build trust – essential for options like an enhanced school bus system. Continued investment in safer pedestrian infrastructure and strengthened traffic safety enforcement around schools remain necessary supporting actions.

Additionally, exploring broader support systems for caregivers, such as promoting workplace flexibility and accessible out-of-school care, can help alleviate daily pressures. A gender-sensitive perspective must inform all interventions. Crucially, sustainable solutions depend on structured collaboration across relevant agencies and with communities to ensure logistical and financial viability.

Future research should pursue longitudinal studies to better understand causal pathways and long-term impacts. Economic analyses could quantify the costs of current constraints. Further investigation into the design and feasibility of specific solutions, potentially using participatory pilot programs alongside preference studies, would provide valuable practical insights. Focused research on the needs of specific vulnerable groups, including families managing disabilities, is also warranted. Addressing the challenges documented here through such continued inquiry and committed, collaborative policy action offers a pathway towards more equitable and supportive environments for families navigating school journeys in The Bahamas and can hold valuable lessons for other places facing similar challenges in the urban Caribbean.

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