



# Journey to school, safety and security of school children in Benin City, Nigeria



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## ABSTRACT

School children travel forms an important part of the general traffic planning. However, over the years the access needs and transport requirements of the children have been overlooked or neglected. The paper examined the travel characteristics of school children and the challenges they faced en-route school. Both primary and secondary data were used for this work. Using multi-stage sampling, 373 questionnaire were administered to school children in selected secondary schools. The questionnaire were purposely administered in those schools. Secondary data were obtained from relevant organizations. Both descriptive and inferential statistics were used for data analysis. Walking accounted for more than 65% of the mode of transport to school. The main reasons for walking to school were short distance (32.4%) and high cost of transportation (27.4%). Poor driving was the most important challenge school children face en-route school. In terms of safety and security, out of 56 school children involved in road crashes, 5.4% had dislocation while only 1.6% of the school children had experienced kidnapping at one time or the other. Students' *T*-test showed a significant difference ( $p < 0.05$ ) in the use of different modes to school. The paper suggests improved drivers' enlightenment, provision of mass transit, construction and repair of walkways as well as transport policy that addresses the access needs of the school children.

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## 1. Introduction

Children form an important component of traffic planning and travel analysis. They are key to the current transportation analysis because they represent a major transport user. Focusing on school children who constitute a close knit is very cardinal because their trips usually take place at peak times and have the same destination everywhere (Morris, Wang, & Lilja, ND). Regular journey patterns are often easier to target with road safety programmes or travel demand management strategies since large numbers of people travelling to the same place at the same time increase not only the efficiency with which road safety programmes can be delivered, but also the potential for shared services.

Concerns for school children's travel and safety have been apparent over the years (Ampofo-Boateng & Thompson, 1990; Pease & Preston, 1967; Zeedyk, Wallace, Carcary, Jones, & Larter, 2001). School children travel long distance and spend substantial amount of time in getting to schools. A large number of them walk to school with most of the walking and crossing facilities in poor and dilapidated condition (Porter & Blaufuss, 2002). This is compounded with poor traffic behavior of drivers of motorized transport leading to increasing pedestrian accidents which is still widely regarded as one of the most serious of all health risks facing children in both developed and developing countries (Turner, McClure, Nixon, & Spinks, 2003;

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Warsh, Rothman, Slater, Steverango, & Howard, 2009). Children as pedestrians have problem coping with traffic and are particularly vulnerable to injury or death by vehicles (Ampt, 1995). They are at risk especially in the road environment because their attention is easily lost, have limited traffic experience, small in stature (height) and they find it hard to judge speed accurately (Schieber & Thompson, 1996; WHO/UNICEF, 2008). In other words, they have poor traffic knowledge. Research in developing countries has shown in general that children's road user knowledge is poor compared with children in developed countries such as the UK (Downing and Sayer, 1983).

While traditional transport planning has tended to focus on addressing the access needs of the mainstream commuters through improved transport infrastructures and services, the children, which represent a significant number of existing and prospective transport users, are left out. This is an oversight given that majority of the population of developing countries is made up of children and young people who are major stakeholders in transport development (Mashiri, Zukulu, & Buiten, 2005). Therefore, exploring and understanding this group's mobility constraints and access needs is essential for developing well informed transport policies and programmes that suite their access requirements. The study, therefore, examined school children travel patterns and its associated risks in Benin City, Nigeria. This introduction is followed by review of relevant literature and methodology. School children travel patterns is contained in section four while section five is the discussion of findings and the last section is recommendations and conclusion.

## 2. Literature review

Children travel forms an important component of travel analysis. Their access needs and transport requirements are different from the general population. Children have a close knit travel destination which provides for easier solutions to their transport problems and access needs. Distance to school has been a critical factor in school children travel analysis (Black, Collins, & Snell, 2001; Timperio et al., 2006; D'Haese et al., 2011; McDonald, 2008; McMillan, 2007). The reason for increasing distance has been explained further by (Morris et al., ND). They noted that continued urban sprawl and the need for women in paid employment to put their children very close to place of work so as to be able to combine their work journey with picking and dropping children at school were partly responsible for increasing distance.

The Australian Bureau of Statistics (ABS) (1994) observed in 1994 that about 58.4% of children attending primary/secondary schools in the region of Victoria lived within a distance of less than 2 km from the school, and about 82% of all school children lived within 5 km from the school. In the study of Godfrey, Mazzela, Cabrera, and Day (1998) distance to school was the second most cited factor for parents who drove their children to school on regular basis. It was found that once the students lived than 1.5 miles (2.4 km) away from school, it was very unlikely that they would walk to school.

Studies have also shown a curvilinear relationship between commuting distance and the probability of using active transport (Harten & Olds, 2004; Yeung, Wearing, & Hills, 2008). With increasing distance, children made fewer active trips. In Queensland, Australia for example, only one third of the school trips was made using active transport with a mean commuting distance of 2.5 km (Yeung et al., 2008). Also, those children using active transport commuted less than half of the distance (1.5 km) of those using motorized transport. Similarly, the provision of safe walking paths has been identified as an essential physical element that promotes walking for school children who travel on foot. Although Johansson et al. (1996) and McMillan (2007) both presented insignificant relationships between walkway quality and travel mode of children, walkway quality has been found to positively affect children walking travel (Ogilvie, Egan, Hamilton, & Petticrew, 2004; Thompson, Rahman, & Humbert, 2005 and Lin & Chang, 2010). Ogilvie et al. (2004) specifically noted a small shift in walking with the development of pedestrian networks.

Furthermore, in most advanced countries the mode of transport to school by children is mostly through the use of car. For instance, 87.5% of the school children in Victoria Australia were transported to school by car and only 9.9% of them walk to school (Australia Bureau of Statistics (ABS), 1994). Children in Melbourne, Australia use autos for 70% of their travel (Ampt, 1996). Beck and Greenspan (2008) found in United States, that only 14% of the students' aged 5–14 years usually walk to school which is similar to other recent estimates (Dellinger & Staunton, 2002; McDonald, 2007). A 10-year analysis in the UK showed that children school trips on foot and bike decreased by 10% point (UK DfT, 2002).

However, in less developed countries such as South Africa, over 70% of school children travel to schools by walking (Dhoda & Allopi, 2005). Specifically, in Delft schools in Cape Town walking was found to be the predominant mode of travel to school. Muchaka, Behrens, and Abrahams (2011) found that 91% and 86% of the children in these schools walk to and from school respectively. Masaoe, Mistro, and Makajuma (2011) found in Nairobi (Kenya) and Dar es Salaam (Tanzania) that 68.9% and 48.6% of the school children travel to school through the use of Non-Motorized Transport (NMT) respectively. Specifically in Nairobi, 93.4% of the school children attended school by walking.

Generally, children experience different types of problems en-route school. These include, among others, poor drivers' behavior, dilapidated walking and crossing facilities, fatigue as a result of long walk as well crime and insecurity. Rose (2000) found in Victoria (Australia) that primary and secondary school age children accounted for about 30% of pedestrian accidents between 1990 and 1996. For children aged 4–12 years in Victoria, about 65% of pedestrian accidents occurred immediately before or after school opening time; while for older children aged 13–18 years old, the comparable figure is 49%. This shows that children have difficulty in coping with traffic and are particularly vulnerable to traffic crashes, especially in a poor driving environment (Macpherson, Roberts, & Pless, 1998; Tester, Rutherford, Wald, & Rutherford, 2004). In South Africa for example, crossing difficult and poor walking facilities accounted for over 90% of the problems encountered

by school children en-route school (Dhoda & Allopi, 2005). In Rondebosch schools in Cape Town, road safety concern was the most important problem learners encountered while walking to and from school where as in Delft schools fear of crime was ranked as the most important problem (Muchaka et al., 2011).

Holtmann and Van Vuuren (2007) observed that children daily travelling either by walking or public transport to school expose them to possible anti-social behavior and crime leading to general fear and anxiety. Kruger and Landman (2007) showed a high correlation between crime and the physical environment. They noted that the users of public transport and Non-Motorized Transport (NMT) were more likely to suffer consequences of crime and anti-social behavior compared to automobile users. They argued that the considerable amount of time involved in travelling further away from homes increases the chances of victimization while walking or on public transport. It has been reported that parents view the outcome of abduction (kidnapping) or assault as being vastly more hideous than the consequence of the more common road accidents (Godfrey et al., 1998). Most of these studies were carried out in developed countries with little or no attention given to school children's access needs and mobility requirements in developing countries. This study, among other things, fills this gap.

### 3. The study area and methodology

The study area is Benin City the administrative headquarters of Edo State in South East geo-political zone in Nigeria. Benin City comprises three local governments namely, Egor, Oredo and Ikpoba-Okha Local Government Areas. In terms of transportation, Benin City is well connected to all parts of the state and the country by a network of federal and state roads. Although there is no railway connection, it has a good airport with a reasonable well run private air company connecting the city to other parts of the country. The city is an inland town and has no water transportation, but it is located close to the port towns of Koko and Warri both in Delta state. The major roads linking all parts of the city are in poor condition. These roads are plied by both public and private transport system.

There is a public bus transport system owned by the state government. Most of the motor cycles, taxis and mini-buses are owned and operated privately. There are few local governments approved inter-change points or recognized bus or taxi stops within the city in the areas immediately around the city centers. Although, there are number of undesignated motor parks located along main roads linking the city with other states, these parks are poorly managed and there are inadequate facilities for the comfort and convenience of the commuters. The major roads within the city, such as Akpakpava Road, Mission Road, Ikpoba Road, Oba market Road, Sapele Road, and Airport Road, are all in appalling condition.

Similarly, pedestrian facilities such as walkways and crossing facilities, where they are available, are in deplorable and dilapidated condition in the city. Most sections of the roads do not have pedestrian walkways. The few available designated bus stops are in descript condition leading to the conversion of some of them to other uses. Most of them do not have either seat or shelter. The numerous undesignated bus stops are called by the activities that take place adjacent to the bus stops (Ipingbemi, 2010).

As at 2010, the total secondary schools in Benin City were 782 with 162,167 students (Edo State Ministry of Education, 2010). The study is basically on the secondary school children in Benin City with age range of between 11 and 17 years. Both primary and secondary sources of data were explored for this study. The primary data were collected through physical observation and the use of pre-tested and validated structured questionnaire. Adopting a multi-stage sampling, 8 of the 782 secondary schools were selected. A total of 373 school children representing 0.09% of the population of secondary school students in the city were served with questionnaire using convenience sampling. Secondary schools were picked because children in these schools are knowledgeable enough to talk about their traffic experience. They also required little supervision in completing the questionnaire. Though the questions were kept short and simple, the information contain in the questionnaire included data on travel patterns to school, mode of transport, condition of pedestrian facilities, safety on roads as well as security. Secondary data (data on the number of kidnapped children) were collected from Edo State Police Command. Data were analyzed using descriptive statistics such as tables of percentages and graphs. Student's *T*-test was adopted to test for significance among different modes of transport used by school children.

### 4. Results

The results of this study are presented under two sub-headings: travel patterns; and safety and security of school children.

#### 4.1. Travel patterns of school children

The travel pattern of the school children include, among others, the distance travel to school, mode of transport and the time taken to get to school. In terms of distance travel to school, 26.5% of the school children travelled less than 1 km to get to school, 32.2% travelled between 1 and 2 km, 14.2% of them travelled between 2 and 3 km, 11.8% travelled 3–5 km and more than 15.3% of the children travel over 5 km. In other words, about 84.6% of the children travel less than 5 km from their respective homes to various schools. This is depicted in Table 1. Similar to the distance travelled to school is the time taken to

**Table 1**

Distance Travelled and Mode of Transport of School Children. Source: Authors' Fieldwork (2010).

Distance travelled	Freq	%	Mode of transport	Freq.	%	Mode * distance travelled (km) crosstab						Student's T-test				
						<1	1–2	2–3	3–5	>5	Tot	Test value = 0				
												T	df	Sig. (2 tailed)	Mean diff.	95% Confidence interval of the difference
																Lower Upper
<1 km	99	26.5	Walking	243	65.1	99	120	24	0	0	243	26.793	372	.000	1.99196	1.8458 2.1382
1–2 km	120	32.2	Bicycle	2	0.5	0	0	2	0	0	2					
2–3 km	53	14.2	Motorcycle	46	12.3	0	0	27	19	0	46					
3–5 km	44	11.8	Commercial vehicle	52	14.0	0	0	0	25	27	52					
>5 km	57	15.3	Private vehicle	30	8.1	0	0	0	0	30	30					
Total	373	100	Total	373	100	99	120	53	44	57	373					

get to school. 20% of the school children spent less than 5 min to get to school, 36.3% spent between 6 and 10 min, 27.6% spent between 11 and 30 min while about 16% of them spent over 30 min to get to their various schools.

The mode of transport as shown in Table 1 indicated that more than 65% of the school children travel to school on foot. The use of bicycle accounted for just 0.5%, motorcycle 12.3%, commercial vehicle (bus and taxi) constituted 14.0% while those who carried their children/wards to school were only 8.1%. Furthermore, school children who stay within 2 km to their schools walk to school while motorized vehicles were used for distances that were more than 5 km as shown in Table 1.

The large percentage of school children that walk to school are due to various reasons as depicted in Table 2. 32.5% of them identified short distance and 28.4% said it was high cost of transportation that was responsible. Poor income of parents and the need for exercise accounted for 18.1% and 11.1% respectively.

Furthermore, the condition of pedestrian walkway facilities was also examined. The walkway facilities described as poor by school children accounted for 48.8% followed by walkways in fair condition which constituted 36.6% while those in good condition were 12.3% as shown in Table 2.

Only 3.3% of the walkway facilities were in excellent condition. Except probably in Lagos and Abuja the pedestrian walkways in most of Nigerian cities, where they are available, are in dilapidated condition (Ibitoye, 2008). Aside poor walkways, many school children who walk to school encountered several other problems. Table 2 indicates the ranking of the challenges faced by school children while walking to school. The most important problem ranked by children is poor drivers' behavior which is followed by road side trading, on-street parking, poor road design and insecurity in that order.

#### 4.2. Safety and security of school children

Safety is an important component of children travel. It is even more imperative in this study because more than 65% of them walk to school making them to be vulnerable to road crashes. Only 9.7% of the school children interviewed said they had been involved in road crashes at one time or the other (see Table 3). They had crashes either as passengers or were being hit by drivers of vehicles or riders of motorcycles. It must be noted that this may have a grave implication on the way they travel in the future. Also, those who experienced road crashes suffered different types of injuries. In Table 3 and 625 of them had minor scratches, 30.4% had bruises and 5.4% had dislocation. Those who had fracture constituted only 1.8%. Although the degree of injuries may be mild, the associated emotional and psychological consequences are instructive.

Similarly, security of children is an important component of their travel to school. The security issue has to do with school children getting to school without being molested, harassed or kidnapped. Until recently, kidnapping has been a major problem in Niger Delta region in which Benin City is located. In spite of the prevailing high rate of reported cases of kidnapping in Niger Delta as a whole, incidence of kidnapping in Benin City is relatively not common. For instance, only 1.6% of the respondents have been kidnapped and eventually released at one time or the other. This observation is supported by secondary data from the Edo State Police Command in Benin City, where it is documented that between November 2009 and September 2010, only eight (8) school children comprising five males and three females were kidnapped. Student's T-test showed a significant difference ( $p < 0.05$ ) in the use of different modes of transport by school children as depicted Table 2.

### 5. Discussion of findings

There are various implications associated with children travel to school. With respect to distance travelled, more than 70% of them travelled over 1 km to reach their respective schools which is more than the recommended neighborhood planning requirements of 500 m (Gardner, Evans, & Withman, 1999). With respect to the percentage of students living 2 km within

**Table 2**

Travel patterns of school children. Source: Authors' Fieldwork (2010).

Reasons for walking to school	Freq.	%	Condition of walkways	Freq.	%	Ranking of challenges faced by children en-route school	
Short distance	79	32.5	Poor	116	47.8	Poor drivers' behavior	1
High cost of transportation	69	28.4	Fair	89	36.6	Road side trading	2
Traffic congestion	24	9.9	Good	30	12.3	On-street parking	3
For exercise	27	11.1	Excellent	8	3.3	Poor road design	4
Poor income of parents	44	18.1				Insecurity	5
Total	243	100	Total	243	100		

school, the percentage (58.7%) found in this study is higher than the percentage of 54% found in Australia in 2004 (ABS, 2004) probably because more than 65% of the school children in this study walk to school; the need therefore to find a school that is close to home. The large percentage of school children that travel to school by walking is consistent with other findings in most African cities (Dhoda & Allopi, 2005; Masaoe et al., 2011; Muchaka et al., 2011; Porter et al., 2009) but different from other findings in developed countries where more than 80% of school children are transported to school by automobile (Beck & Greenspan, 2008; Dellinger & Staunton, 2002; McDonald, 2007). The large number of school children that travel to school by walking is beneficial to their health because active commuting has been associated with overall levels of physical activity (Cooper, Page, Foster, & Qahwaji, 2003; Tudor-Locke, Ainsworth, & Popkin, 2001). Furthermore, majority of the learners travel less than 30 min to get to school which is also consistent with Muchaka's et al. (2011) findings in South Africa.

Also, the present investigation found a curvilinear relationship between commuting distance and the probability of children using active transport. With increasing distance, there was a decline in the use of active transport (walking). For instance, 90% of the school children who walked to school commuted less than half the distance (<2 km) of those using motorized transport ( $\geq 5$  km). This is also consistent with previous research (Harten & Olds, 2004; Yeung et al., 2008).

The small percentage of school children using bicycle to travel to school in this study is not surprising because there are various socio-economic factors inhibiting the use of bicycle in developing countries especially Africa (Dorcey, 2008). Also, the percentage of school children using commercial motorcycle is relatively small compared to walking due to poor safety record of this means of transport in Nigeria (Ipingbemi, 2008; Oluwadiya et al., 2009). In fact, there are instances where parents/guardians warn their children/wards not to board commercial motorcycles popularly known as 'Okada'.

Furthermore, most of the walkways in this study were either in poor or fair condition; and is consistent with the findings in South Africa (Dhoda & Allopi, 2005). Ahlport et al. (2008) noted that lack of sidewalks or discontinuous sidewalks acted as a barrier to get to school because they made walking to school more dangerous. Results from the National Survey in the United States have shown that sidewalks are an important feature that promotes active commuting to school in children (Fulton, Shisler, & Yore, 2005). When roadways are equipped with sidewalks nearly four times as many people walk and more than six times as many people walk along two-lane roads as four-lane roads (Jacobson, Raccoppi, & Rutter, 2009). Researchers have found that factors such as block size, sidewalk length, route directness, access to green spaces, attractive streetscapes and mixed land use were positively correlated with active travel (Giles-Corti & Donovan, 2003; Saelens et al., 2003).

The poor quality of walkways is compounded with the fact that most of the walkways have been taken over by street trading and on-street parking; a phenomenon that forces school children to share road space with moving vehicles. This portends a grave danger for the safety of school children on the road. Most drivers and riders do not go through formal training as some of them only learn how to drive or ride through friends and relatives (Ogunsanya, 2004). Therefore, they do not possess prerequisite traffic knowledge to deal with the road environment. Though reliable crash data are difficult to come by field observations revealed that school children are regularly hit as pedestrians but are not formally reported. Arosanyin (2004) attributed non-formal reporting of road crashes to the culture and attitude of Nigerians to road crashes in the country.

Furthermore, the ranking of poor drivers' behavior as the most important impediment to walking to school is consistent with other findings in developing countries (Dhoda & Allopi, 2005; Muchaka et al., 2011). Most drivers in Nigeria have poor traffic knowledge (Adesanya & Adeniji, 1998; Ogunsanya, 2004), especially riders of commercial motorcycles popularly known as 'Okada' which has become a menace in Nigeria cities. Many of these riders do not know that they have to stop for pedestrians where there is 'Zebra Crossing' road marking or 'Children Crossing' sign. For the drivers who know, field observations showed that it was not respected. The problem is compounded because some of the road markings and traffic signs are in poor and dilapidated condition. Street trading is a feature of urban activities in Nigeria. Wares, books, food items, etc. are spread on the walkways and in some cases kiosks and canopies are also erected on them creating barrier to children who walk to school. In the same manner, vehicles are parked on road shoulders and sometimes on the walkways forcing school children to share the carriageway with moving traffic with its attendant consequences.

While safety and security are important components of school children travel, the study revealed that only about 15.1% of the children were involved in road crashes in the last 6 months. This data has to be treated with caution because it is cultural in Nigeria not to say negative thing against oneself (especially when it comes to accident) to avoid occurrence or reoccurrence (Arosanyin, 2004). So the issue of road crash (accident) is still being undertaken with care because many people still believe that road crash (accident) is caused by devil or wizard, thereby making intervention much more difficult in developing countries particularly in Nigeria (Dixey, 1999; Kouabenan, 1998; Peltzer & Renner, 2003). In spite of this small



**Table 3**

Crash and kidnapping experience of school children. Source: Authors' Field Work (2010).

Crash experience	Freq.	%	Type of injury	Freq.	(%)	Kidnapping experience	Freq.	%
Yes	56	15.1	Minor scratches	35	62.5	Yes	6	1.6
No	317	84.9	Bruises	17	30.4	No	367	98.4
			Dislocation	3	5.4			
			Fracture	1	1.8			
Total	373	100	Total	56	100	Total	373	100

percentage of school children that sustained injury from road crashes, the actual figure is still worrisome. The consequences are in many folds. For instance, the financial burdens on the parents are enormous. The emotional dislocation and psychological pains on the children is unquantifiable both now and in the future (Bryant, Mayou, Wiggs, Ehlers, & Stores, 2004; Ellis, Stores, & Mayou, 1998; Mayou & Bryant, 2003). Many of them because of the experienced they had may become 'travel phobia'. The effect of kidnapping on children's psychology may be eternal due to torture and agony they might have gone through (Alexander & Klein, 2009). In fact, personal safety such as the fear of crime and child abduction has been found to serve as a barrier to physical activity and active travel (Loukaitous-Sidens, 2006; Ahlport et al., 2008).

## 6. Recommendations and conclusion

It is obvious from the foregoing that a large percentage of school children walk to school and face various challenges along their way such as street trading and on-street parking as well as insecurity. It is therefore imperative to propose strategies for enhancing effective and efficient travel of school children to school.

Looking at the distance travelled and the amount of time spent in getting to school by walking, it is important that the government provides subsidized Mass Transit Services to school children to facilitate the quick movement of children to school. The service will only be available to school children that can present their school identity cards so that the system will not be abused. This strategy is presently in operation in some states in Nigeria.

Furthermore, government as a matter of urgency should enact law that prohibits street trading. Anyone who contravenes the law should be prosecuted immediately. This will free the walkways from unnecessary obstructions. Also, where walkways are necessary but not available now, government should construct one; and at the same time repair dilapidated walkways. Similarly, on-street parking, except where they are designated, should be banned completely. This will make available more space on walkways and the road shoulders for school children to walk to school thereby preventing them from having direct contact with moving traffic.

Similarly, drivers should be further enlightened on the need to respect the right of school children to the use of road, particularly at-grade crossing facilities, because drivers' behavior is one of the major challenges confronting school children. Many drivers do not know that they have to stop where there are 'Zebra Crossing' road marks or sign post with inscription 'Children Crossing'. This portends a grave danger for our children. The enlightenment programme should be spearheaded by traffic agencies especially the Federal Road Safety Commission (FRSC) on regular basis.

As part of the security measures for school children who walk long distance before getting to school, the government should provide 'Safety Houses' for them as being practice in Australia (Morris et al., ND). The Safety Houses are to provide community assistance to children should they feel unsafe while travelling to and from school. This is achieved through a network of Safety Houses which provide a reliable means for children to get help as quickly as possible, by identifying safe places that children may run to in local areas in order to get help in the face of danger, or perceived danger. Finally, in view of the peculiar nature of children travel it is important that the government adopts transport policy that will specifically address the travel requirements and access needs of the children.

In conclusion, it must be noted that school children travel should form an important component of the general transport analysis and planning. This becomes expedient in this study because of the substantial number of school children that travel to school on foot. Short distance and high cost of transportation were the main reasons why students walk to school. It must be noted that about half of the walkways were in deplorable condition. Poor drivers' behavior was the most important challenge school children face en-route school. In terms of safety and security, though the percentage of school children involved in road crashes or kidnapped was relatively low, however, the psychological and emotional implications for victims were enormous. It is therefore imperative that government gives priority to the access needs of school children through improved drivers' enlightenment, construction and repair of walkways as well as put in place transport policy that specifically addresses the access requirements of school children.

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