

The journey from home: Experiences of persons with disabilities of the urban transport system in Accra Metropolis, Ghana

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ABSTRACT

Accessible transport services facilitate the engagement of persons with disabilities in various life-enhancing opportunities for alleviating poverty and reducing inequalities. Research on transport services in Accra has primarily reflected the travel concerns of the general population, neglecting the travel patterns, behaviours, and experiences of vulnerable and marginalised minority groups, such as persons with disabilities. The study involved 230 individuals with disabilities. An auditing scheme and a questionnaire were utilised, using smartphones and tablets to collect the relevant data. The quantitative data were analysed using SPSS version 26 to generate descriptive statistics and the Relative Importance Index (RII), highlighting key challenges faced by persons with disabilities. The qualitative data were coded using MAXQDA software and included as anonymous quotations to complement the quantitative results. The data revealed that trips for religious activities, healthcare, and social engagements were the predominant travel patterns of persons with disabilities. Non-inclusive walking environments (such as poor sidewalks) and inadequate vehicular conditions (including high-floor vehicles and the absence of assistive aids) present significant challenges for persons with disabilities. Consequently, the study recommends a disability outreach programme to improve awareness and compliance with disability policies and guidelines in both the transport and physical environments.

1. Introduction

Close to 80 % of the persons with disability live in low-income countries, of which 60 to 80 million are known to live in Africa (Disabled World, 2024; World Health Organisation, 2011). Persons with disability often experience barriers to participation and socio-economic exclusion as their needs are often marginalised, leading to unemployment, inequality, poverty, and exclusion from opportunities (Kett et al., 2020; Magidimisha-Chipungu, 2024). According to Groce and Kett (2019), persons with disability's exclusion may be attributed to development agencies and government officials' consideration of disability as a charitable or medical issue rather than a development concern. While this notion is heavily contested by Oliver (2013), lessons from various African countries provide instances where the presence or onset of a disability exacerbates one's living situation owing to negative

connotations of disability. For instance, Abane et al. (2019) and Voice Ghana (2013) report that employers often perceive disability as a marker of incompetence or associate it with increased operational costs, such as modifying work environments or acquiring adaptive technologies. Similarly, concerns about rising operational expenses have discouraged transport operators from adopting adaptive technologies or upgrading to modern, accessible buses. As a result, persons with disability are left to compete for space with the general population or face significant challenges when boarding or alighting from buses (Odame, 2022a).

The progressive framing of disability from a charity or medical model to a social or human rights model has produced marginal successes (particularly in the transport sector) despite numerous development agendas focusing on inclusivity (Groce and Kett, 2019). For instance, all 191 members of the United Nations have ratified the

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Convention on the Rights of Persons with Disabilities (UNCRPD), which seeks to provide a framework for action towards an equitable world for persons with disabilities (UNCRPD, 2006). The Sustainable Development Goals (2015–2030) have 10 targets and 15 clear indicators that aspire to ensure a safe, affordable, accessible and sustainable transport system while focusing on vulnerable populations like persons with disability (Vanderschuren and Nnene, 2021).

Notwithstanding, Vanderschuren and Nnene (2021) found that many African countries do not involve persons with disability in transport planning and design, which is essential to meeting their mobility needs in society. For instance, among the transport policies of 29 African countries examined, six (including Benin, Burundi, and Cameroon) unintentionally excluded provisions for individuals with visual impairments. In contrast, eight countries (including Algeria, Botswana, and Burkina Faso) acknowledged individuals with visual impairments but lacked dedicated transport provisions for them (Vanderschuren and Nnene, 2021). A few African countries (e.g., Ghana and South Africa) have comprehensive disability-inclusive transport policies, even though gaps exist between policy and practice (Magidimisha-Chipungu, 2024; Vanderschuren and Nnene, 2021).

Like all commuter groups, the role of transport services in connecting people to opportunities cannot be overstated (Duri and Luke, 2022). Public transport (popularly called *trotro* in Ghana, *Matatu* in Nairobi and *Danfor* in Lagos) serves a public need. It is popular among low-income groups owing to the low fares charged (Hotor, 2016), ready availability (Dumedah and Eshun, 2020) and wide coverage (Dzisi et al., 2021). Like many African cities, informal services dominate the public transport market, which controls about 85 % of the travel market (Abane, 2011). Within Accra, the Ghana Private Road Transport Union (GPRTU) oversees nearly 80 % of all intra-city trips (Abane, 2011). Unfortunately, the GPRTU's operations have significant setbacks, including service delivery inefficiencies, frequent bus breakdowns, lack of schedules, service unavailability, poor bus conditions and the absence of inclusive accessories for persons with disability (Hotor, 2016; Agyemang, 2015).

In contrast to higher-income countries like Sweden (Stjernborg, 2019) and the United States (Pyrialakou et al., 2016), discussions on public transport services in developing nations, including Ghana, rarely focus on persons with disability, their mobility needs, and the challenges they face. For instance, a review of Ghanaian transport literature reveals that while studies on mobility, such as walking (Okyere et al., 2023; Sam et al., 2023) and public transport use (Alimo et al., 2024; Hotor, 2016) exist, they often mention persons with disability only in passing. Moreover, previous research tends to treat commuters as a homogeneous group, failing to account for their diverse aspirations, needs, and mobility challenges. However, persons with disability constitute a distinct commuter group that encounters significant barriers to public transport access (Duri and Luke, 2022; Odame et al., 2020; Vanderschuren and Nnene, 2021). The most notable disability-focused transport research in Ghana was conducted by Odame (2021), who employed a qualitative study with 50 participants. While this study provided valuable insights into the mobility experiences of persons with disability, its small sample size, qualitative methodology, limited data collection tools, and exclusive focus on public transport constrained its ability to examine their mobility challenges comprehensively. This study, however, takes a quantitative approach, allowing for broader participation and a more extensive analysis of persons with disability's mobility experiences. It incorporates an auditing scheme, field photographs, and questionnaires to extend the discussion to include their interactions with the physical environment.

This study is set in Accra, the capital city of Ghana, which hosts the administrative headquarters of all disability associations and public transport service providers in the country. Furthermore, Accra serves as a significant focal point for inclusivity in Ghana. Notably, the Ghana Federation of Disability Organisations (GFD) took legal action to prevent the official commissioning of the George Walker Bush Highway due to the lack of provisions for persons with disability (Ghanaweb, 2012).

However, despite these efforts, the highway was inaugurated without addressing the mobility needs of the disability community.

For context, Ghana signed the UN Convention on the Rights of Persons with Disabilities in 2007 and ratified it in 2012, becoming the 119th country in the world and the 32nd in Africa to do so. Ghana's commitment to achieving the Sustainable Development Goals related to social inclusion and mobility (Goals 1, 5, and 11) also allows for the exploration of transport access infrastructure for persons with disabilities, indicating its dedication to safeguarding the rights of persons with disabilities and promoting their social inclusion.

2. Methods

The study was conducted in the Accra Metropolis (Fig. 1). Accra is the national capital city of Ghana and has the highest number of persons with disability and vehicular population (Ghana Statistical Service, 2012). According to the Ghana Statistical Service (2012), Accra's population of persons with disability stood at 36,177 (comprising 21,101 visually impaired, 4435 hearing impaired and 10,641 physically challenged), representing 5.1 % of Ghana's disability population. Accra's disability population exceeds other African cities like Lomé (3 %) (Curtis et al., 2021) and Johannesburg (5 %) (Lomahozo, 2021). The study targeted persons with disability with blindness, deaf/hard hearing, and physical/mobility challenges, which constitute more than a third of Accra's disability population (Odame, 2017). The study sample was selected based on the following criteria: Age (16 years and above, which is the minimum age for consent), work or residency in Accra and public transport use (i.e., at least once a month). Using Deming's (1940) sample size calculator (see below), 230 persons with disability were sampled, comprising 75 blind, 74 deaf and 106 physically challenged

$$n = N^* z^2 s^2 / [e^2 (N - 1) + z^2 s^2]$$

Where,

n is the sample size

N is the population size

z is the z-score for a given level of confidence

s is the standard deviation of the population

e is the desired margin of error

The study adopted two research instruments: an auditing scheme (observation checklist) and a questionnaire for persons with disability. The auditing scheme, which examined the presence and conditions of disability-inclusive facilities, was developed based on sections 23 to 30 of the Ghana Disability Act and the United Nations International Best Practices for Accessible Transport (Mitchell and Rickert, 2010). Both documents outline similar disability-inclusive requirements for public transport services. Using key requirements like priority seats, vehicle floor height, ramps, wayfinding aids and other assistive devices, randomly selected vehicles at selected terminals were examined to ascertain the transport operators' adherence to the provisions of the two policy documents. Pictures were also taken to augment the narrative to communicate the study's findings. This instrument was administered at four popular public transport terminals: the Kwame Nkrumah Terminal, Tema Station Terminal, 37 Military Terminal and Kaneshie Terminal. At each terminal, the research team used the auditing scheme to assess the disability-inclusiveness of 15 public transport buses.

A questionnaire was developed based on insights from previous studies on the user experience of persons with disabilities on campus shuttles/buses (Odame et al., 2020), tourism sites (Adam et al., 2017a, 2017b), schools (Addo, 2014) and public buildings (Danso and Tudzi, 2016; Imrie and Edwards, 2007; Tudzi et al., 2017). The questionnaire was electronically designed using the Kobo toolbox and deployed using smartphones and tablets. The Kobo toolkit is a free, open-source mobile phone application designed to collect data. The questionnaire had both open and closed ended questions and comprised three broad themes ranging from persons with disabilities' socio-demographic

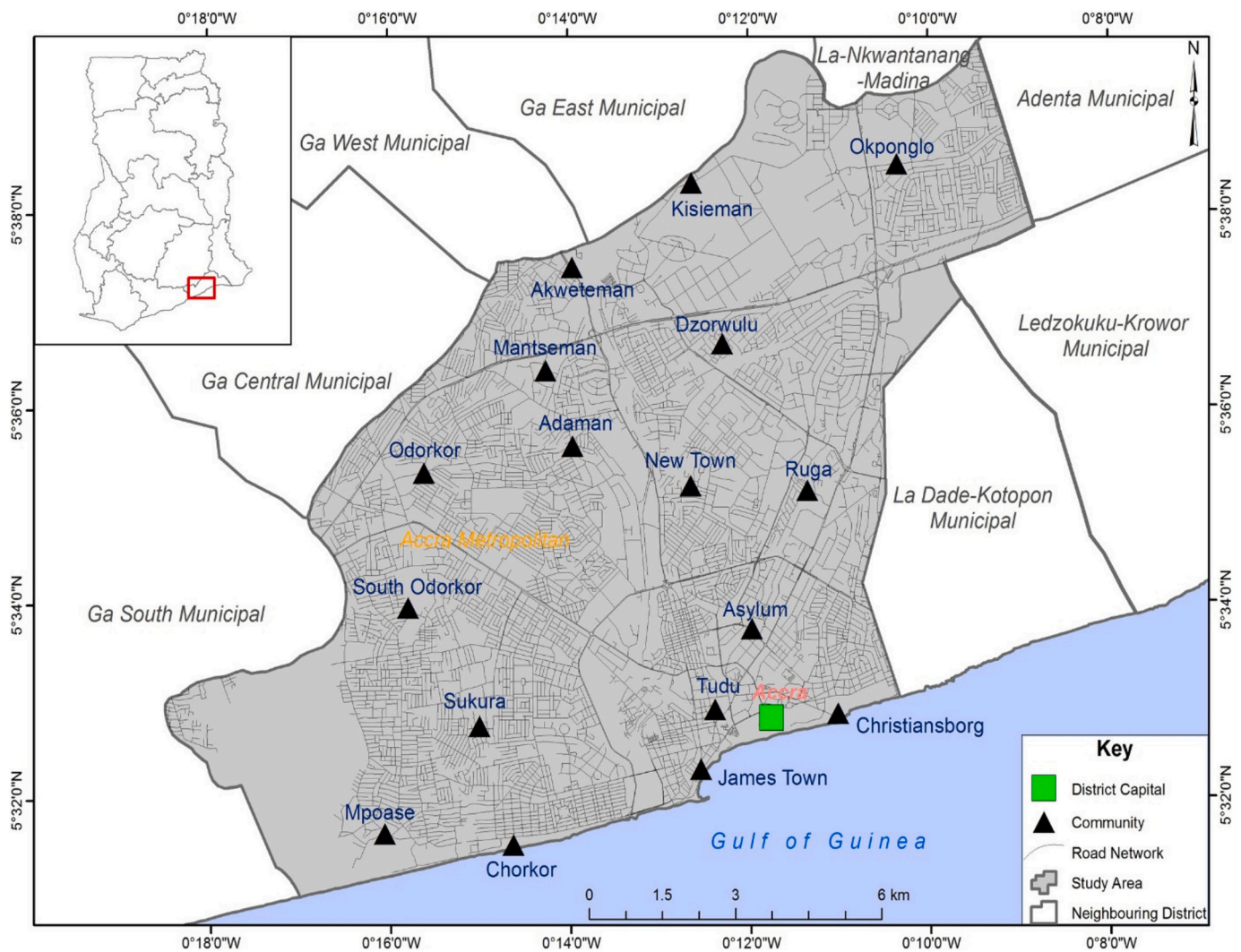


Fig. 1. Map of the study area.

Source: Geospatial Lab, University of Education - Winneba, 2022

characteristics (age, sex, marital status, monthly income, education attainment) (Naami, 2019; Obeng-Atuah et al., 2017), mobility patterns (common facilities persons with disabilities like to visit, frequency of such visits, mode of transport used in visiting such facilities, cost of travel, etc.) (Acheampong, 2017; Adam, 2019; Porter et al., 2011) and their mobility challenges in the urban transport space (conditions of the sidewalks, streetlighting, attitude of transport operators and floor height of buses) (Odame, 2022c; Odame, Sam et al., 2021; Odame and Amoako-sakyi, 2019). It took an average of 25 min to complete the questionnaire.

The instruments were pre-tested on June 15–17, 2021, at the University of Education, Winneba (UEW), with three students with disabilities, each with visual, hearing, and physical impairments. The pre-testing allowed the researchers to evaluate the question items, the Kobo Toolkit's efficacy as a data collection tool, and the skip logic.

The quantitative data from the questionnaire were coded in the SPSS Version 26 software and further screened for missing data and wrong entries. Descriptive statistics (e.g., frequencies and percentages) were generated to present the background characteristics of the respondents. Further, the Relative Importance Index (RII) was also generated to highlight prominent mobility challenges for persons with disabilities. The RII, as adopted by Danquah et al. (2019) was computed as:

$$RII = (R_1 \cdot 1) + (R_2 \cdot 2) + (R_3 \cdot 3) / (A \cdot N)$$

Where R_1 = the number of respondents who answered: "Not a

challenge."

R_2 = the number of respondents who answered: "Minor challenge."

R_3 = the number of respondents who answered: "Major Challenge".

A = the highest weight (i.e., 3).

N = total number of respondents.

From the above, Danquah et al. (2019) opine that the importance of each factor is based on the higher value of the Relative Importance Index. By this, the most important factor will be ranked in ascending order starting from 1.

The qualitative data from the open-ended questions centred on respondents' mobility challenges were coded under discrete themes suitable for thematic analysis using the MAXQDA software. The corresponding author identified common themes while extracting excerpts for further emphasis. Similar or opposing ideas were explicitly stated and supported by anonymous quotations.

Compliance with ethical principles was upheld before, during, and after the data collection exercise. The respondents gave verbal consent before participating in the data collection, as this is popular among persons with disabilities who could not read, write, or sign a consent form. At all levels, participants were informed of their right to terminate the process if they wished to do so. Potential participants were informed about the purpose of the study and assigned an aide (research assistant) to complete the questionnaire. Respondents received incentives (between GHS 25 and 40) to cater for their transportation expenses to the

Accra Rehabilitation Centre (ARC), where the data collection exercise took place. The ARC is a popular reference point for the disability community.

3. Results

3.1. Overview of respondents

The study involved 129 males (56.1 %) and 101 females (44.9 %). The predominant age group comprised respondents aged between 38 and 48 years, representing 33.5 %. While most of them had attained Senior/High/Technical education (44.6 %), the most common education termination point for most Ghanaians. Nearly 42 % of the respondents were unemployed. Among those employed, the majority (25.2 %) were self-employed in the informal sector. Relative to the average monthly earnings of a household with four members (GHS 892 or \$147.2) in Accra, the average income of the respondents was lower (\$56.4 or GHS 342) (Bank of Ghana, 2021).

3.2. Public transport vehicle audits

Table 1 shows that the observed vehicle floor height ranged from 320 to 520 mm above the UN-recommended floor height of 230 mm. The “above-range” floor heights were typical of older models of Toyota Hiace, Hyundai Grace, and Mercedes-Benz 207 Sprinter buses. It was also noted that none of the 45 audited vehicles had disability signage, ramps or boarding platforms, handrails at the vehicle entrance or interior, assistive devices, clearly labelled signage indicating vehicle routes, a fare policy in favour of PWDs, or priority seats or designated areas for PWDs. However, the study found that the drivers/conductors call out major stops for the information of commuters and wait for passengers to alight before they take off (in 90 % of the cases) (see Table 1).

3.3. Mobility patterns

Persons with disabilities’ mobility patterns provided an opportunity to explore their common destinations and trips. Some trips were not applicable depending on a respondent’s needs or living conditions (see Fig. 2). For instance, trips to work by unemployed respondents or trips to school by respondents who are out of school. From Fig. 2, most persons with disabilities’ trips were religion-related and undertaken weekly (91.89 %) for Sunday/Saturday church services or Friday Jum’ah prayer services. This was followed closely by trips to health facilities attended yearly (55.84 %) or monthly (39.59 %). Finally, trips for social activities, including funerals, naming ceremonies, and weddings, also ranked high among respondents, even though such trips were conducted monthly (72.19 %) or yearly (20.86 %). The bottom three trips for respondents were trips to schools, leisure/recreational centres, and work, of which only 9.2 %, 40.9 %, and 47.39 % claimed to embark on such trips, given that more than 50 % of respondents were either out of school, unemployed, or engaged in casual economic activity.

3.4. Mobility challenges in travel patterns

Table 2 reveals the Relative Importance Index (RII) of respondents’ mobility challenges in Accra. The RII ranks the respondents’ mobility based on the percentage of cases from the Likert scale questions. Three of the top five mobility challenges are related to the walking environment while heading to a transport terminal. These include the reckless behaviour of motorists, poor sidewalk conditions, and drivers’ refusal to stop for persons with disabilities to cross the street. The other two mobility challenges pertain to persons with disabilities’ boarding or deboarding experiences, due to unresponsive vehicular design and services (such as the lack of ramps or boarding aids), which exacerbated respondents’ commuter experience.

Analysis of the open-ended questions (qualitative data) provided

further insight into the nature of the mobility challenges that persons with disabilities face. In respect of the sidewalk condition (Fig. 3), the persons with disabilities revealed that:

There are open gutters, potholes and manholes that are present throughout the journey [52-year-old female physically challenged]

The nature of the walking space from my house to the bus stop is bad [62-year-old male, visually impaired]

Regarding drivers’ refusal to stop for them to cross, they observed that:

Some streets do not have zebra crossings, making it difficult for me to cross the street. This is even worse in situations where drivers do not even stop for me to cross unless I am travelling with an aide [58-year-old male with visual impairment]

Most parts of the city lack traffic lights and formal crossings, and bus drivers are constantly on the move. They rarely stop, but the situation is much better with private car operators [31-year-old female wheelchair user].

The other two top-ranked mobility challenges relate to the conditions of the buses in use (i.e., difficulty in boarding buses and lack of other assistive aids). Our physical inspection of a sample of buses using the auditing instrument revealed that the buses exceeded the maximum recommended floor height of 230 mm; the inspected buses had floor heights between 280 and 370 mm. This, coupled with the absence of ramps on buses (Fig. 4), presented challenges for wheelchair users, resulting in their dependence on transport operators and other commuters to board or alight from the buses. The difficulty in boarding buses was further explained in the following narratives:

The height of some buses is too high, so you must put in a lot of energy. If your effort does not match the height of the bus, then ‘wahala’! Especially the 207 buses are too high. So, you must need help to enter the car. [26-year-old physically impaired unemployed male].

I sit in a wheelchair and hardly get assistance in getting into the car. I really feel shy when people lift me into the car. It creates a lot of attention and I prefer to get into the car by myself. [35-year-old unemployed male wheelchair user]

Finally, the lack of assistive aids (smart screens, voice announcements, and push bells) on board buses was a significant concern among respondents with hearing and visual impairments. This is because current travel decisions, such as determining one’s location or notifying transport operators of an intended destination, had to be made through a proxy, including relying on aides and bus conductors. In the absence of wayfinding aids, visually impaired respondents used various methods to ascertain their location:

I know where I am because bus conductors call out my location. Conductors usually call out the names of destinations to draw commuters’ attention to their surroundings.

[25-year-old male with visual impairment, National Service Person]

I have been travelling on these routes for a long time. So, I take notice of the roughness of the road, the curves, the sloping or the nature of the road. [51-year-old male with visual impairment, a local craftsman].

4. Discussions

This study examined the experiences of persons with disability within the Accra urban transport system. Respondents’ travel patterns deviated significantly from the Ghana National Household Transport Survey, which identified trips to schools, healthcare facilities, and

Table 1
Vehicular audits.

Variable	Availability	Condition/ Type	Dimension (mm)	Pictorial evidence
1. Floor height			320 to 520 mm	
2. Disability signage on bus	Yes – 0 % No – 100 %			
3. Ramps or boarding platforms	Yes – 0 % No – 100 %			
4. Hand rails at entrance	Yes – 0 % No – 100 %			
5. Interior handrails	Yes – 0 % No – 100 %			
6. Priority seats or designated areas	Yes – 0 % No – 100 %			

(continued on next page)

Table 1 (continued)

Variable	Availability	Condition/ Type	Dimension (mm)	Pictorial evidence
7. Assistive technology (Bell pushes, audio Transmitters & Pictogram/ Smart Screen tablets)	Yes – 0 % No – 100 %			
8. Clearly labelled signage on bus (Destination bound signage)	Yes – 0 % No – 100 %			
9. Driver/conductor call out major stop	Yes – 100 % No – 0 %			
10. Drivers wait for all to alight before they take off	Yes – 90 % No – 10 %			

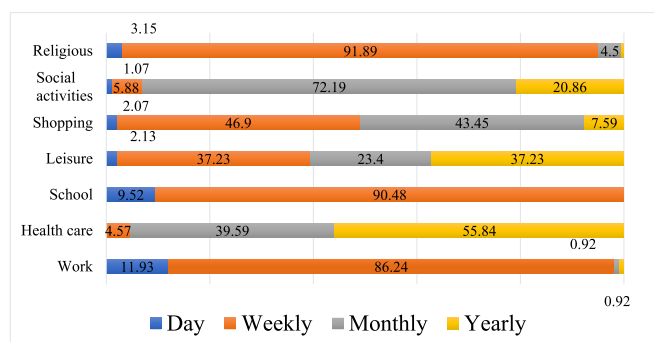


Fig. 2. PWD mobility pattern.

workplaces as typical for Ghanaians (Ghana Statistical Service, 2013). Odame (2022a, 2022b, 2022c) notes that reduced trips to these facilities among persons with disability are linked to limited opportunities arising from cultural, physical, economic, and social barriers. Additionally, Gyasi et al. (2007) attribute persons with disabilities' infrequent trips to healthcare facilities to the economic burden of medical expenses, including limited insurance coverage and higher costs of medication, which often delays access to healthcare among vulnerable populations. However, trips for social and religious activities were common among respondents, reflecting their importance for cultural identity - a pattern consistent with trends in other Sub-Saharan countries, such as Nigeria, Tanzania, and Rwanda (Foley et al., 2022).

The study highlighted the poor condition of sidewalks as a critical mobility challenge. As the first and last mile of every trip requires considerable walking, a poor walking environment unnecessarily restricts mobility and exposes persons with disability to the risk of traffic crashes (Karim and Azmi, 2013; Wang et al., 2012). In this context, a poor walking environment mainly consists of the absence or insufficient incorporation of sidewalks and pedestrian spaces in urban planning, which tends to be a common phenomenon across African cities, such as Nairobi (Basil and Nyachieo, 2023) and Lagos (Oluwakemi, 2018). As a result, modal conflicts do not only increase the risk of injury for vulnerable groups, including children and persons with disability

(Amoako-Sakyi, 2017; Odame and Amoako-sakyi, 2019), but also reduce the overall desirability for walking (Distefano et al., 2023). This holds particularly true as people resort to other modes of transport when they perceive walking spaces to be unfriendly, unsafe, and inconvenient.

Reckless behaviour by motorists significantly exacerbates the mobility challenges faced by persons with disability, who often require extra time and support to navigate urban roadways safely. In many cases, drivers fail to yield the right of way to pedestrians, disregarding traffic laws and endangering vulnerable road users, including persons with disability. This issue is particularly acute in cities with high vehicle densities, such as Accra, where rapid urbanisation and economic activity have increased traffic volumes (Hesse and Ofosu, 2014). Since reckless driving behaviour is dangerous to all road users, Pardo-Ferreira et al. (2020) maintain that commuters with hearing impairments stand a greater risk of injury since their disability does not allow them to anticipate traffic coming from behind. This situation, therefore, underscores the urgent need to address reckless driving to create safer mobility conditions for all, particularly for persons with disability.

The design of public transport buses also emerged as a significant barrier to the commuter experience. A primary challenge lies in the height of the entry and exit points, which frequently exceed the United Nations' recommended maximum floor clearance of 230 mm (Mitchell and Rickert, 2010). Such design choices inherently exclude or marginalise persons with mobility impairments, which is against existing legal frameworks aimed at ensuring inclusivity. For instance, Ghana's Disability Act (Act 715) mandates transport operators to preserve two seats for persons with disability. However, field studies reveal a persistent gap between policy and practice. For wheelchair users and persons with limited mobility, the elevated public bus transport floor height often necessitates external assistance, imposing physical inconvenience and having broader psychological and social implications (Odame, 2021). Nyame and Hague (2013) further argue that these sentiments reflect a deeper societal issue, one where the inability to access public transportation independently reinforces stereotypes of dependency and undermines the autonomy and self-worth of persons with disability. Sam et al. (2021) maintain that the lack of accessible transport infrastructure hinders the full participation of persons with disability in economic, social, and cultural activities, thereby perpetuating systemic inequalities.

Table 2

Relative Importance Index of persons with disabilities' mobility challenges in travel patterns.

Challenge (Variable)	Not a challenge	Minor Challenge	Major Challenge	Weight	RII	Rank
	1	2	3			
How will you describe your experience with recklessness behaviour of motorists?	40	100	90	510	0.739	1
How do you describe your experience with busy pedestrian crossings accessing transport services?	89	56	85	456	0.661	2
How do you describe your experience with sidewalks conditions while accessing transport public?	85	65	80	455	0.659	3
How will you describe your experience with (Boarding or exiting bus) when accessing transport in the city?	96	60	74	438	0.635	4
How will you describe your experience in using accessible equipment when accessing transport in the city?	99	56	75	436	0.632	5
How will you describe your experience with reserved seat (Lack) in vehicles accessing transport in the city?	104	48	78	434	0.629	6
How would you describe your experience with using assistive devices in accessing transport services	97	64	69	432	0.626	7
How will you describe your experience with (Attitudes of Bus drivers and conductors/mates) when accessing transport in the city?	84	98	48	424	0.614	8
How do you describe your experience with using uneven grounds accessing transport?	117	40	73	416	0.603	9
How will you describe your experience (Getting to a bus stop) when accessing transport in the city?	108	79	43	395	0.572	10
How will you describe your experience with the distance to bus stop when accessing transport in the city?	111	76	43	392	0.568	11
How will you describe your experience with missing your destination when accessing transport in the city?	136	66	28	352	0.510	12
How will you describe your experience in using spaces for wheelchair or crutches when accessing transport in the city?	157	28	45	348	0.504	13
How will you describe your experience with paying the fare while accessing transport in the city?	160	30	40	340	0.493	14
How will you describe your experience in reading or getting information about the transport services?	164	29	37	333	0.483	15
How will you describe your experience with (Attitudes of other passengers) when accessing transport in the city?	153	51	26	333	0.483	16
How will you describe your experience with communicating with vehicle operators accessing transport in the city?	174	40	16	302	0.438	17
How will you describe your experience in reaching a personal attendant required to pay fare accessing transport in the city?	198	26	6	268	0.388	18

**Fig. 3.** Sidewalk with parked cars.

Beyond the vehicular floor height, the lack of assistive technologies designed to help commuters determine their location or express their travel intentions remains a critical issue, particularly for visually and hearing-impaired commuters. [Sam et al. \(2021\)](#) observed the widespread absence of assistive technologies like audio and visual tools in *Matatus (Kenya)* and *Trotros (Ghana)*, resulting in a strong reliance on human aides and assistance, such as bus conductors, to navigate these challenges. For visually impaired commuters, the primary reliance on auditory cues from bus conductors to identify bus stops presents a considerable barrier. Although intended to inform passengers, [Odame](#)

[\(2021\)](#) notes that conductors' verbal announcements (auditory cues) are often influenced by logistical factors such as seat availability. As a result, announcements may be infrequent or delayed, placing visually impaired commuters at heightened risk of missing their designated stops. In the case of hearing-impaired passengers, the situation is further complicated as the lack of visual or alternative modes of communication impedes commuters' ability to make travel requests. This situation limits their access to essential information and reflects a broader inefficiency in the public transport system, which fails to provide equitable and inclusive services for all passengers.



Fig. 4. High-floor buses with no ramps.

5. Conclusion and policy recommendations

The study findings suggest that trips for social and religious activities are the most frequently undertaken trips among persons with disabilities in Accra. Despite the frequency of these trips, the study highlights significant barriers within the urban mobility framework that hinder accessibility and ease of travel for persons with disabilities. Chief among these challenges are unresponsive walking environments characterised by absent or poorly maintained sidewalks, reckless behaviour of motorists, and the presence of path-obstructing objects. Similarly, the lack of disability-friendly vehicular infrastructure, such as the prevalence of high-floor vehicles and the absence of assistive aids, further compounds the difficulties experienced by persons with disabilities.

The study findings carry several implications for policy and practice. Firstly, collaboration between city authorities and urban planning agencies will be crucial for creating inclusive urban design strategies. Additionally, the physical environment should be modified to incorporate key features that enhance the adaptability, usability, and accessibility of walking spaces for all commuters. Such strategies may include providing sidewalks where they are absent, repairing those in poor condition, and removing obstructions such as illegally parked cars or open gutters. These improvements would enhance the functionality of the urban transport system and make it more inclusive and attractive.

To address public transport accessibility and inclusion issues, key institutions such as the Ministry of Transport, the Driver and Vehicle Licensing Authority (DVLA), and the Ghana Private Road Transport Union should collaborate to ensure that drivers comply with the provisions of Ghana's Disability Act. This legislation is already in place and has significant potential to greatly enhance the travel experience of commuters with disabilities. Therefore, all public transport operators who fail to adhere to minimum standards (such as providing priority seating arrangements, assistive devices, and other disability-friendly features) should have their operating permits revoked or face the relevant sanctions.

6. Contribution to knowledge and policy implication

This study contributes to the ongoing discussion regarding the responsiveness of urban transport systems to the needs of vulnerable and marginalised groups, an area that has seldom been explored. It illuminates the challenges encountered by persons with disabilities when using public transport and provides insights into the extent of compliance by transport operators with Ghana's and the UN's disability-inclusive transport provisions and requirements. These findings carry significant implications for policy and practice, enabling policymakers to reexamine urban planning and public transport services while

devising strategies to enhance compliance with Ghana's disability act. Such strategies may include revising existing driver education programs to incorporate disability awareness and inclusive service delivery. Additionally, establishing rigorous monitoring mechanisms to identify and penalise reckless driver behaviour, such as failing to yield for persons with disabilities to cross the street, would be effective. Finally, implementing regular compliance audits to ensure transport operators adhere to the standards outlined in Ghana's Disability Act would improve the overall user experience for persons with disabilities.

7. Study limitations and recommendations for future studies

The study encountered hesitation among persons with disabilities regarding their participation in the survey, due to numerous prior commitments that they felt had not improved their well-being. Nevertheless, the study yielded valuable insights that highlighted the mobility challenges faced by vulnerable and marginalised groups in society. However, the study initially encountered resistance to the request for photographs of the buses assessed through the auditing scheme as evidence of their conditions. Consequently, some relevant issues were not discussed because we required physical evidence (pictures) to support them.

Despite this, we recommend that future studies explore the disability inclusiveness of various travel modes, such as shared 5-seater taxis or e-hailing services. Additionally, conducting similar studies in other African cities can yield comparable data for inter-country analysis.

CRedit authorship contribution statement

Prince Kwame Odame: Writing – original draft, Visualization, Methodology, Investigation, Formal analysis, Data curation, Conceptualization. **Enoch F. Sam:** Writing – review & editing, Writing – original draft, Methodology, Funding acquisition, Formal analysis, Data curation, Conceptualization. **Esther Yeboah Danso-Wiredu:** Writing – review & editing, Supervision, Methodology, Conceptualization. **Samuel Kweku Hayford:** Writing – review & editing, Supervision, Methodology, Formal analysis, Conceptualization. **Elizabeth Kanini Wamuchiru:** Writing – review & editing, Conceptualization. **Adams Osman:** Writing – review & editing, Methodology, Formal analysis, Data curation, Conceptualization. **Michael Munene:** Writing – review & editing.

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Declaration of competing interest

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Data availability

Data will be made available on request.

Figshare [PWD journey experience \(Original data\)](#)

References

- Abane, A., 2011. Travel behaviour in Ghana: empirical observations from four metropolitan areas. *J. Transp. Geogr.* 19 (2), 313–322. <https://doi.org/10.1016/j.jtrangeo.2010.03.002>.
- Abane, A., Amoako-Sakyi, R.O., Owusu, S.A., Agyemang, K.K., Odame, P.K., 2019. Transport and social exclusion in Ghana (Issue June). <https://doi.org/10.13140/RG.2.2.36086.45121>.
- Acheampong, R.A., 2017. Towards sustainable urban transportation in Ghana: exploring adults' intention to adopt cycling to work using theory of planned behaviour and structural equation modelling. *Transp. Dev. Econ.* 3 (2), 1–11. <https://doi.org/10.1007/s40890-017-0047-8>.
- Adam, I., 2019. Accommodators or non-accommodators? A typology of hotel frontline employees' attitude towards guests with disabilities. *Int. J. Hosp. Manag.* 82 (March), 22–31. <https://doi.org/10.1016/j.ijhm.2019.03.010>.
- Adam, I., Boakyie, K.A., Kumi-Kyereme, A., 2017a. Are we our own enemies? Leisure constraints of physically and visually disabled people in Ghana. *World Leis. J.* 59 (4), 272–293. <https://doi.org/10.1080/16078055.2016.1245213>.
- Adam, I., Kumi-Kyereme, A., Boakyie, K.A., 2017b. Leisure motivation of people with physical and visual disabilities in Ghana. *Leis. Stud.* 36 (3), 315–328. <https://doi.org/10.1080/02614367.2016.1182203>.
- Addo, G., 2014. Analysis of barriers to children with mobility impairment in basic education in Accra metropolis. Kwame Nkrumah University of Science and Technology. <http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.868.2719&rep=rep1&type=pdf>.
- Agyemang, E., 2015. The bus rapid transit system in the Greater Accra metropolitan area, Ghana: looking back to look forward. *Nor. Geogr. Tidsskr.* 69 (1), 28–37. <https://doi.org/10.1080/00291951.2014.992808>.
- Alimo, P.K., Agyemang, S., Agen-Davis, L., Hiseine, M.A., Sarfo, I., 2024. Lived transportation barriers for persons with disabilities: contextualizing the Ghana disability law through the lenses of Giddens' theory of structuration. *J. Transp. Geogr.* 118, 103924. <https://doi.org/10.1016/j.jtrangeo.2024.103924>.
- Amoako-Sakyi, R.O., 2017. School path walkability and pedestrian crashes in the Cape Coast Metropolitan Area. University of Cape Coast. <https://doi.org/10.1017/CBO9781107415324.004>.
- Bank of Ghana, 2021. Monthly Exchange Rates Indicators. Monthly Exchange Rates Indicators.
- Basil, P., Nyachio, G., 2023. Exploring barriers and perceptions to walking and cycling in Nairobi metropolitan area. *Front. Sustain. Cities* 4. <https://doi.org/10.3389/frsc.2022.775340>.
- Curtis, A., Monet, J.P., Brun, M., Bindoudou, I.A.K., Daoudou, I., Schaaf, M., Agbibi, Y., Ray, N., 2021. National optimisation of accessibility to emergency obstetrical and neonatal care in Togo: a geospatial analysis. *BMJ Open* 11 (7), 1–10. <https://doi.org/10.1136/bmjopen-2020-045891>.
- Danquah, J.A., Ahlido, R.K., Appiah, M., Roberts, C.O., Pappinen, A., 2019. Assessing smallholder farmers' understanding of environmental effects of modern agronomic practices in Ghana. *J. Exp. Agric. Int.* 29 (6). <https://doi.org/10.9734/JEAI/2019/45199>.
- Danso, A.K., Tudzi, E.P., 2016. Inclusive Access to Accra Shopping Malls. 6th West Africa Built Environment Research (WABER) Conference, August 2015.
- Disabled World, 2024. Disability News: Africa and South Africa. <https://www.disabled-world.com/news/africa/>.
- Distefano, N., Leonardi, S., Liotta, N.G., 2023. Walking for sustainable cities: factors affecting users' willingness to walk. *Sustainability (Switzerland)* 15 (7). <https://doi.org/10.3390/su15075684>.
- Dumedah, G., Eshun, G., 2020. The case of paratransit 'Trotro' service data as a credible location addressing of road networks in Ghana. *J. Transp. Geogr.* 84 (March), 102688. <https://doi.org/10.1016/j.jtrangeo.2020.102688>.
- Duri, B., Luke, R., 2022. Transport barriers encountered by people with disability in Africa: an overview. *J. Transp. Supply Chain Manag.* 16, 1–9. <https://doi.org/10.4102/jtscm.v16i0.826>.
- Dzisi, E., Obeng, D.A., Tuffour, Y.A., 2021. Modifying the SERVPERF to assess paratransit minibuses taxis trotro in Ghana and the relevance of mobility-as-a-service features to the service. *Heliyon* 7 (5), e07071. <https://doi.org/10.1016/j.heliyon.2021.e07071>.
- Foley, L., Brugulat-Panés, A., Woodcock, J., Govia, I., Hambleton, I., Turner-Moss, E., Mogo, E.R.I., Awinja, A.C., Dambisa, P.M., Matina, S.S., Micklesfield, L., Abdool Karim, S., Ware, L.J., Tulloch-Reid, M., Assah, F., Pley, C., Bennett, N., Pujol-Busquets, G., Okop, K., Randall, L., 2022. Socioeconomic and gendered inequities in travel behaviour in Africa: mixed-method systematic review and meta-ethnography. *Soc. Sci. Med.* 292 (October 2021). <https://doi.org/10.1016/j.socscimed.2021.114545>.
- Ghana Statistical Service, 2012. Disability in Ghana: Population and Housing Census.
- Ghana Statistical Service, 2013. Second National Household Transport Survey Report 2012. <http://www.statsghana.gov.gh/docfiles/publications/Second.NationalHouseholdTransportSurveyReport2012.pdf>.
- Ghanaweb, 2012. Disabled Federation Plans to Halt Highway Commissioning. <https://www.ghanaweb.com/GhanaHomePage/NewsArchive/Disabled-Federation-plans-to-halt-highway-commissioning-229983>.
- Groce, N., Kett, M., 2019. The disability and development gap. *SSRN Electron. J.* <https://doi.org/10.2139/ssrn.3385372>. November.
- Gyasi, M.E., Amoaku, W.M.K., Asamany, D.K., 2007. Barriers to cataract surgical uptake in the upper east region of Ghana. *Ghana Med. Journey* 41 (4), 727–741. <https://doi.org/10.4314/gmj.v41i4.55285>.
- Hesse, C.A., Ofosu, J.B., 2014. Comparative analysis of regional distribution of the rate of road traffic fatalities in Ghana. *Open Sci. Repository Math.* <https://doi.org/10.7392/openaccess.45011802>. Online(open-access), e45011802.
- Hotor, D.E., 2016. The Use of Public Transport Services by Residents in the Accra Metropolitan Area. University of Ghana. <http://ugspace.ug.edu.gh>.
- Imrie, R., Edwards, C., 2007. The Geographies of Disability: Reflections on the Development of a Sub-Discipline, 3, pp. 623–640.
- Karim, H.A., Azmi, D.I., 2013. Convenience and safety of walking experience in Putrajaya neighbourhood area. *Procedia Soc. Behav. Sci.* 101, 318–327. <https://doi.org/10.1016/j.sbspro.2013.07.206>.
- Kett, M., Cole, E., Turner, J., 2020. Disability, mobility and transport in low- and middle-income countries: a thematic review. *Sustainability (Switzerland)* 12 (2), 1–18. <https://doi.org/10.3390/su12020589>.
- Lomahozo, K., 2021. Demographic Profile of People Living With Disabilities in the City of Joburg. https://www.joburg.org.za/about/Documents/Issue_27_PWD_in_the_City_of_Joburg_Final.pdf.
- Magidimisha-Chipungu, H.H., 2024. People Living with Disabilities in South African Cities: A Built Environment Perspective on Inclusion and Accessibility. In: *Sustainable Development Goals Series*, pp. 1–8.
- Mitchell, C., Rickert, T., 2010. A review of international best practice in accessible public transportation for persons with disabilities. <http://www.my.undp.org/content/malaysia/en/home/library/poverty/PubPovRedPublicTransportation.html>.
- Naami, A., 2019. Access barriers encountered by persons with mobility disabilities in Accra, Ghana. *J. Soc. Incl.* 10 (2), 68–84. <https://doi.org/10.36251/josi.149>.
- Nyame, J., Hague, T., 2013. 'Are we men enough?' An intersectional analysis of lived experiences of men with physical disability in Accra-Ghana.
- Obeng-Atuah, D., Poku-Boansi, M., Cobbinah, P.B., 2017. Pedestrian crossing in urban Ghana: safety implications. *J. Transp. Health* 5 (2005), 55–69. <https://doi.org/10.1016/j.jth.2016.06.007>.
- Odame, P.K., 2017. Road transport infrastructure and mobility: Views of students with physical disability in the University of Cape Coast. University of Cape Coast. <https://erl.ucc.edu.gh/jspui/handle/123456789/3211>.
- Odame, P.K., 2021. Transport-related Social Exclusion Among Persons With Disability in the Accra Metropolitan Area. University of Cape Coast. <https://ir.ucc.edu.gh/xmlui/handle/123456789/10456>.
- Odame, P.K., 2022a. Recounting the blessings and curses of living with a disability: the experiences of persons with visual and physical impairment in Accra. *Glob. Soc. Welf.* 9 (4), 203–210. <https://doi.org/10.1007/s40609-022-00244-9>.
- Odame, P.K., 2022b. Recounting the blessings and curses of living with a disability: the experiences of persons with visual and physical impairment in Accra. *Glob. Soc. Welf.* <https://doi.org/10.1007/s40609-022-00244-9>.
- Odame, P.K., 2022c. Travel mode choice and its responsiveness to the needs of commuters with disability in the Accra Metropolitan Assembly. *TEMA - J. Land Use Mobil. Environ.* 15 (3), 431–445. <https://doi.org/10.6093/1970-9870/9062>.
- Odame, P.K., Amoako-sakyi, R.O., 2019. Sidewalk accessibility and pedestrian safety among students with physical disability in the University of Cape Coast. *Curr. Res. J. Soc. Sci.* 2 (2), 109–122. <https://doi.org/10.12944/CRJSSH.2.2.07>.
- Odame, P.K., Abane, A., Amenumey, E.K., 2020. Campus shuttle experience and mobility concerns among students with disability in the University of Cape Coast, Ghana. *Geo Geogr. Environ.* 7 (2). <https://doi.org/10.1002/geo2.93>.
- Okyer, S.A., Frimpong, L.K., Mensah, S.L., Oviedo, D., Amoako-Sakyi, R.O., Nieto-Combariza, M.J., Kita, M., 2023. Planning for walkable cities in Africa: co-producing knowledge on conditions, practices, and strategies. *Soc. Impacts* 1 (1–2), 100005. <https://doi.org/10.1016/j.socimp.2023.100005>.
- Oliver, M., 2013. The social model of disability: thirty years on. *Disabil.Soc.* 28 (7), 1024–1026. <https://doi.org/10.1080/09687599.2013.818773>.
- Oluwakemi, A., 2018. Of cycling and pedestrian facilities as impediments to sustainable transport in. *Glob. Sci. J.* 6 (7), 7–14.
- Pardo-Ferreira, M.C., Torrecilla-García, J.A., De Las Heras-Rosas, C., Rubio-Romero, J.C., 2020. New risk situations related to low noise from electric vehicles: perception of workers as pedestrians and other vehicle drivers. *Int. J. Environ. Res. Public Health* 17 (18), 1–16. <https://doi.org/10.3390/ijerph17186701>.
- Porter, G., Hampshire, K., Abane, A., Tanle, A., Esia-Donkoh, K., Amoako-Sakyi, R.O., Agblorti, S., Owusu, S.A., 2011. Mobility, education and livelihood trajectories for young people in rural Ghana: a gender perspective. *Children's Geogr.* 9 (3–4), 395–410. <https://doi.org/10.1080/14733285.2011.590705>.
- Pyrialakou, V.D., Gkritza, K., Fricker, J.D., 2016. Accessibility, mobility, and realized travel behavior: assessing transport disadvantage from a policy perspective. *J. Transp. Geogr.* 51, 252–269. <https://doi.org/10.1016/j.jtrangeo.2016.02.001>.

- Sam, E.F., Munene, M., Danso-Wiredu, E.Y., Hayford, S.K., Osman, A., Wamuchiru, E.K., Ondieki, E.O., Odame, P.K., 2021. Towards a Disability-Inclusive Urban Transport System in Accra and Nairobi: A Policy Practice Agenda (SITUATE).
- Sam, E.F., Odame, P.K., Amoah-Nuamah, J., 2023. Predictors of distractive activities to walking in Accra, Ghana. *Urban Plan. Transp. Res.* 11 (1). <https://doi.org/10.1080/21650020.2023.2220574>.
- Stjernborg, V., 2019. Accessibility for all in public transport and the overlooked (social) dimension-a case study of Stockholm. *Sustainability (Switzerland)* 11 (18). <https://doi.org/10.3390/su11184902>.
- Tudzi, E.P., Bugri, J., Danso, A.K., 2017. Towards accessible built environments in universities in Ghana: an approach to inclusiveness assessment. *Disabil. CBR Inclusive Dev.* 28 (1), 189–206. <https://doi.org/10.5463/dcid.v1i1.592>.
- UNCRPD, 2006. Convention on the Rights of Persons with Disabilities and Optional Protocol. <https://www.un.org/disabilities/documents/convention/convoptprot-e.pdf>.
- Vanderschuren, M.J.W.A., Nnene, O.A., 2021. Inclusive planning: African policy inventory and South African mobility case study on the exclusion of persons with disabilities. *Health Res. Policy Syst.* 19 (1), 1–12. <https://doi.org/10.1186/s12961-021-00775-1>.
- Voice Ghana, 2013. Report on end of election 2012 project survey conducted in the Agortime-Ziofe, Adaklu, Ho central and Weto constituencies in the Volta region. <http://webcache.googleusercontent.com/search?q=cache:Ui-RKyEAXM4J:www.voiceghana.org/downloads/End%2520of%2520Project%2520Survey%2520Report.pdf+%cd=1&hl=en&ct=clnk&gl=gh>.
- Wang, L., Jiang, Y., Li, Z., 2012. The walkability assessment of Lishan Road: a case study in Jinan, China. *Appl. Mech. Mater.* 178–181, 1838–1841. <https://doi.org/10.4028/www.scientific.net/AMM.178-181.1838>.
- World Health Organization, 2011. Understanding disability. In: WHO. *World Report on Disability*. WHO, Malta.