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Rural access, health and disability in sub-Saharan Africa; lessons for transport policy and practice from recent transport services research

Transport, health and disability are interlinked on many levels, with transport availability directly and indirectly influencing health, and health status influencing transport options. This is especially the case in rural locations of sub-Saharan Africa, where transport services are typically not only high cost, but also less frequent and less reliable than in urban areas. This special issue presents papers concerned with three different aspects of the transport/health/disability nexus – firstly the linkages between access to transport and obstetric emergencies, secondly those between disability, access to transport and service access (including health service access), and thirdly the linkages between transport and disability associated with road traffic injury.

The papers were all presented during a full day session on rural access issues at the UK African Studies Association's biennial conference at Leeds University in September 2012, sponsored by the UK Department for International Development [DFID]-funded Africa Community Access Programme [AFCAP]. The session, entitled, 'Making new connections: mobilities, roads and rural access in sub-Saharan Africa', was focused on presenting new and on-going research on rural access issues in sub-Saharan Africa. AFCAP funded the attendance of a number of Africa-based presenters, including authors of three of the four papers published here. Following this session, a further meeting was convened a few days later in London. This enabled an extended discussion of key themes presented at the conference, particularly transport and maternal health.

The first of the four papers in this special issue (by Miriam Orcutt), examines the potential of a transport services intervention to reduce obstetric emergencies and improve maternal mortality figures in eastern Zambia. This paper is a baseline study focused on conditions in the study area prior to a planned intervention (a

motorcycle-ambulance service). The second paper (Cathy Green, Fatima Adamu and Idris Abdul Rahman) is also focused on maternal health, but in this case it documents the role that a transport union is currently playing in increasing rural women's access to emergency maternal health care in northern Nigeria. The third paper (Nite Tanzarn), entitled 'Social identity, citizen voice and rural access in Uganda', is concerned with the varying accessibility needs of particular (potentially mobility-disadvantaged) population groups, with a specific emphasis on women and men with disability, pregnant women and pregnant women with disability. The way that disability affects access to transport in rural Africa has figured relatively rarely in transport studies. This paper, which emphasises how broader patterns of gender discrimination reinforce the constraints that disabled and pregnant women face in rural areas, will hopefully draw greater attention to and further research in the disability and transport field. The final paper in the collection (by Deepani Jinedasa, Karen Zimmerman, Bertha Maegga and Alejandro Guerrero) approaches health and disability issues rather differently, in this case from a road traffic injury perspective. It documents the disproportionately severe impact that road traffic crashes have on particularly vulnerable road users - pedestrians, bicyclists and motorcyclists- on three low-volume rural roads in Tanzania. The way these four papers contribute to recent and on-going transport services research in the health, disabilities and road traffic injury fields is (briefly) elaborated below, following preliminary comment regarding the development of both transport and health researcher interests in the field.

The specific role that transport can play in shaping access to health facilities has been evident to transport specialists for many years. It was clearly demonstrated in an early study of linkages between hospital utilization and transport in Kenya by Tony Airey (1992), though further in-depth research on the relevance of transport services (availability and type), travel time and travel costs to access to health facilities was rather slow to emerge. However, work - both by transport and health specialists

- has recently been gathering pace in diverse aspects of health care, from vaccination and child health to maternal health, contraception and ARV treatment. The important research gap in understanding linkages between mobility and health has been highlighted, above all, by growing concerns over reaching the MDG on reducing maternal mortality (by 75% by 2015), given the fact that Africa has some of the world's highest maternal mortality rates. The role of transport in emergency maternal health contexts, clearly identified in the Three Delays Model (Thaddeus and Maine 1994), is being pursued both in the transport sector (e.g. Babinard and Roberts 2006) and also increasingly by health specialists. Two papers in this special issue – both focused on improving maternal health and reducing maternal emergencies (Orcutt; Green et al.) - not only reflect this expanding interest but also demonstrate the benefits of close collaboration between health and transport researchers. Miriam Orcutt, working in the health field, collaborated with Developing Technologies (a transport-focused NGO), while Fatima Adamu came from a transport research background to work with Idris Abdul Rahman and Cathy Green, whose focus is primarily on health issues.

Distance to health facilities, associated travel time and cost issues are common themes in recent literature and are considered in some detail in the papers in this special issue by Orcutt and Tanzarn. Distance to health facilities per se is a key constraint where transport services are limited and high cost, such that women's lack of resources, in particular, may require them to walk. It is encouraging that the importance of travel time is now gaining greater recognition from health-focused researchers. Tanser et al. (2006), for instance, in a field study of physical access to primary health care in KwaZulu-Natal South Africa (a region where 65% of rural homesteads travel one hour or more to attend the nearest clinic), found a significant logistic decline in usage with increasing travel time (see also Gabrysch et al. 2011). The especial significance of this point for women, given their common time-poverty, but especially for pregnant and disabled women, is emphasised in the paper by Tanzarn, which stresses the

importance of listening to commonly excluded voices (and associated field observation). She points out how the physically disabled and infirm may take much longer to cover the same distance that a young fit person will take, citing walking speeds well below the average for a pregnant woman or Person With Disability (PWD), depending on the type of disability. Consequently, when confronted with health problems, these disadvantaged groups will often resort to self-medication, using medicines purchased from drug shops located within their communities.

Orcutt, whose work also demonstrates the importance of listening to local voices, describes how women about to give birth, in the Zambian villages which she studied, may have to walk up to 40 kms to reach the nearest clinic, in the absence of transport. Even where transport by ox-cart is available, many women prefer to deliver at home rather than risk travel due to the delays associated with the ox-cart slow speed of travel (up to 4-5 hours to reach the clinic, possibly longer if the oxen are working in the field and have to be brought to the village before moving with the woman). The value of bicycle-, motor cycle- and jeep- ambulances for speed of access to clinics seems to be widely recognised - but costs of usage may be prohibitive, depending on the rules prevailing at different health facilities. Other important constraints may also prevail, both in the home community and related to perceptions about treatment at the clinics, and can impact on journey decision-making. The significance of transport cost as a key constraint is strongly emphasised in Orcutt's paper in the context of pregnant women's delivery choices in her Zambian study villages. Many women deliver at home to avoid transport costs, even where adequate transport services can be made available. Travel cost may impose a significant barrier to care and treatment uptake in other contexts apart from maternal emergencies, a point also taken up in a number of recent studies of health-seeking behaviour, for instance regarding low patient uptake of antiretroviral (ARV) therapy in southern Africa (Zachariah et al. 2006 for rural southern Malawi). Importantly, Tanzarn suggests that, for disabled people, transport fares may

be set even higher than for others: she notes while transport cost obviously varies according to means of travel, location, condition of the road and season, for boda boda [motorcycle hire services] in rural Uganda, PWDs, particularly those using wheel chairs, are charged a substantially higher rate per kilometre, thus restricting their ability to work: physical handicap thus translates into economic handicap.

Given concerns both about transport cost and wider issues of distance to health facilities and rural access, the intervention in maternal emergency transport reported by Green et al. in northern Nigeria (this collection) has particular significance. This intervention, which is already helping to save the lives of rural women (and, remarkably, at modest cost), is based on a partnership between the Nigerian Road Transport Workers' Union, the state and local governments and local communities. In this region many women in the past stayed away from health centres in the case of maternal complications in part because of transport unavailability or high transport fares. Training is now provided to commercial taxi drivers who volunteer their services to women facing a maternal emergency in their village in return only for spiritual reward, community recognition, and some possible benefit at the motor-park (in terms of joining the front of the queue of drivers awaiting work). The transport scheme, which is embedded in a broad, multi-component 'increasing access' strategy, has to date achieved remarkable success in the villages where it has been implemented: as Green et al. report, there has been impact not only on the so-called 'second delay' but also to some extent also on the first and third delays (i.e. in the decision to seek care and treatment at the clinic). The prospects for scaling-up the project across Nigeria look positive (though security problems may reduce the scheme's effectiveness in the northern states) and the potential for application in other countries is likely to excite considerable interest. In its presentation of such a positive example of a planned transport intervention, this paper is likely to have considerable significance for transport specialists.

The fourth paper in this special issue, also based on action research, considers road traffic accidents and associated injury. Road safety is a major problem in most African countries, such that traffic accidents are the third leading cause of death (after malaria and HIV/AIDS) and a major cause of disability. Factors such as poor road conditions, inadequate safe spaces for pedestrians and IMTs, inadequate road safety training, inadequate enforcement of safety measures, old and badly maintained vehicles and transport equipment and excessive passenger and freight overloading, all contribute to this. Africa has the highest fatality rates per capita of any continent and, as the Sub-Saharan Africa Transport Programme's annual report for 2011 emphasises, this is a poverty issue. Over 65% of victims are 'vulnerable road users' – pedestrians, cyclists and users of IMTs and public transport (ibid p. 19). Rates for Kenya at the turn of the 21st century were c. 68 deaths per 1000 registered vehicles, i.e. 30-40 times the accident rate in highly motorized countries (Gwilliam et al. 2010: 221). Clearly then, road safety has to be a growing focus of attention across Africa and the specific problems associated with rural contexts need much more detailed attention. This paper contributes important data on road traffic injury and its effects in a rural context: while there is a growing literature on road safety, detailed field evidence is still remarkably sparse.

To conclude, this special issue presents papers which, while pursuing linked themes, offer a diversity of perspectives on health, disability and rural access issues which are highly relevant to transport policy and practice. In three of the papers (Jinedasa et al.; Orcutt; Tanzarn), new information is presented about current patterns of transport-related deprivation; they underline the vital importance of fully understanding context through gathering detailed baseline data – with full attention to socio-cultural, economic and environmental aspects- prior to making transport interventions. The fourth paper (Green et al.), is particularly encouraging, however, because it demonstrates that where context has been extensively explored and understood, and local actors fully engaged in finding solutions, the potential for ad-

dressing deep-seated problems in novel ways can be remarkable.

Gina Porter

Africa Community Access Programme/
Durham University

References:

Airey, T. 1992 The impact of road construction on the spatial characteristics of hospital utilization in the Meru district of Kenya. *Social Science and Medicine* 34,10: 1135-1146.

Babinard, J. and Roberts, P. 2006 Maternal and child mortality development goals: what can the transport sector do? Washington: World Bank, Transport Sector Board.

Gabrysch, S., Cousens, S., Cox, J., Campbell, O. M. R. 2011 The Influence of Distance and Level of Care on Delivery Place in Rural Zambia: A Study of Linked National Data in a Geographic Information System *PLoS Medicine* 8, 1: DOI 10.1371/journal.pmed.1000394

Gwilliam, K. et al. 2010 Chapters 9 and 10 in Foster, V. and Briceno-Garmendia, C. (ed.) *Africa's Infrastructure: a time for transformation*. Washington: World Bank.
Tanser, F., Gijsbertsen, B., Herbst, K. 2006 Modelling and understanding primary health care accessibility and utilization in rural South Africa: An exploration using a geographical information system *Social Science and Medicine* 63,3 :691-705.

Thaddeus, S., Maine, D. 1994 Too far to Walk: maternal mortality in context. *Social Science & Medicine*, 38(8), 1091-1110.

Zachariah, R., Harries, A. D., Manzi, M. et al. 2006 Acceptance of Anti-Retroviral Therapy among Patients Infected with HIV and Tuberculosis in Rural Malawi Is Low and Associated with Cost of Transport *PLOS ONE* 1,2: DOI 10.1371/journal.pone.0000121

Maternal Mortality in Eastern Zambia: Accessing Healthcare for Delivery and Obstetric Emergencies

Miriam J Orcutt, Durham University, UK¹

Abstract:

Improving maternal health and survival remains the most elusive of the Millennium Development Goals, and the global disparities in maternal mortality are vast, with lifetime risks still in excess of 1 in 10 throughout much of sub-Saharan Africa. The “three delays model”, developed by Thaddeus and Maine (1994), identifies delays in recognising need for care, reaching a care facility and then receiving care at the facility as crucial obstacles to improving maternal health outcomes. A new motorcycle ambulance-trailer transport intervention being introduced in Eastern Zambia seeks to address the second delay by improving access to emergency obstetric facilities and clinics.

However, interventions do not always translate into improved outcomes, since healthcare decision-making is a complex process drawing on multiple factors and perspectives. This paper reports on an anthropological study conducted in six villages in the Lundazi District, Zambia, with the aim of situating the intervention within a framework of current attitudes towards transport and use of transport, health-seeking decision-making processes and practices and barriers to service use. Based on in-depth interviews and focus groups with women of reproductive age and their families, combined with participant observation, this paper demonstrates that while poor transport is an important barrier, taking into account the economic and socio-cultural context is also crucial to improved maternal health. This underlines the importance of detailed qualitative research before project implementation and the benefits of inter-disciplinary collaboration between engineering and social sciences in improving health in the Global South.

Keywords:

maternal mortality, Zambia, motorcycle ambulances, health-seeking, access

The Role of a Transport Union in Increasing Rural Women’s Access to Emergency Maternal Care in Northern Nigeria

Cathy Green², Fatima Adamu³,
Idris Abdul Rahman⁴

Abstract:

This paper describes an emergency transport initiative in rural northern Nigeria which aims to save the lives of women affected by maternal complications. The Emergency Transport Scheme (ETS), implemented by the National Union of Road Transport Workers (NURTW), is a public-private partnership supported by the UKAid and Norwegian Government funded Programme for Reviving Routine Immunization in Northern Nigeria and the Maternal, Newborn and Child Health Initiative (PRRINN-MNCH). The scheme is providing a culturally appropriate, affordable, and timely solution to the severe physical access barriers faced by numerous pregnant rural women who need to be transferred promptly to a health facility. Many maternal deaths have been averted in the two and half years since the scheme’s establishment. The scheme has excellent prospects for being sustained at community level. If current efforts to deepen the institutional ownership of the ETS are successful, there is enormous scope for scaling up the initiative at national level in future. This paper looks at the achievements and challenges faced by the ETS so far and considers the steps that are needed to secure the scheme’s future.

Keywords:

emergency transport, Nigeria, transport union, taxis, maternal health

¹ This paper was prepared when the author was a postgraduate student in the Department of Anthropology, Durham University. Field work was conducted with support from Developing Technologies and the Africa Community Access Programme [AFCAP]. The author is currently a final year medical student at Newcastle University. Contact email m.j.orcutt@ncl.ac.uk.

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Social Identity, Citizen Voice and Rural Access in Uganda

*Nite Tanzarn*⁵

Abstract:

Social identity defines citizens' voice and their ability to exercise agency to demand for their right to access services and hold public bodies to account. Some identities are socially excluded on account of inter alia their sex, age, ethnic origin, religion, sexual orientation, disability, health/HIV status, social or economic standing, political opinion, and residence [rural/urban]. Others, such as persons with disability [PWDs] are stigmatised identities. Socially excluded identities are often denied rights, voice and resources.

The paper is primarily based on rural citizens' voices with a particular focus on PWDs and women who, owing to their social identities, experience restricted mobility and encounter unique accessibility challenges. The paper explores how accessibility influences their subsistence and domestic needs, employment opportunities, access to and utilisation of social services, as well as engagement in commodity and producer markets. It also analyses how responsive transport services are to gender equality and social inclusion in relation to access, inclusion and participation, opportunity, empowerment and protection.

The paper demonstrates that for some socially excluded identities, and in particular for the PWDs, just a few physical steps may present an insurmountable barrier. This imposes restrictions on their economic choices, access to and utilisation of services. And yet these identities are seldom identified or consulted by planners and are thus hindered from exercising agency to demand for their rights to equitable accessibility. Furthermore, they experience socially constructed perceptual biases from transport service providers.

Transcending the accessibility barriers of these socially excluded identities, in part, requires allowing them consumer voice to engage with the state and other actors in order to claim for their right to equitable transport. This necessitates adopting inclusive planning approaches which

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enhance their entitlements, reduce their vulnerability and isolation as well as improve their access. Likewise, addressing the prejudices of the service providers, through, inter alia, promotion of the right to freedom of movement and accessibility is essential.

Key words:

Rural Access, Restricted Mobility, Socially Excluded Identities, Citizen Voice, Persons With Disability [PWDs]

Road Traffic Injury Characteristics on Low-Volume Rural Roads in Tanzania

*Deepani Jinadasa*⁶, *Karen Zimmerman*⁶, *Bertha Maegga*⁷, *Alejandro Guerrero*⁶

Abstract:

Road traffic injuries (RTIs) constitute a major public health problem. The aim of this study is to describe the characteristics of road traffic injuries on low-volume roads in a rural African setting in order to develop a comprehensive injury prevention program.

Data was collected using a household survey technique along three rural roads. The sampling technique aimed to collect data on all households within 200 meters of each of the three study roads.

This study found a rural road traffic injury incidence of 3.3 per 100 person years. Of 49 road traffic injury victims, 63% were in the 15 – 44 year age category and 82% were male. Over half of the injuries involved a motorcycle and a third occurred on dirt roads. The average length of disability was 24±25.9 days. These study results represent baseline data to be used in the creation of a multi-modal injury prevention program, for comparing with other studies and to serve as the first step in a formal program evaluation.

Key Words: road traffic injuries, rural communities, low volume roads, Tanzania, Africa

⁵ This paper was reviewed by two anonymous experts. Their comments and suggestions are greatly appreciated.

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Maternal Mortality in Eastern Zambia: Accessing Healthcare for Delivery and Obstetric Emergencies

Miriam J Orcutt, Durham University, UK

Background

Maternal mortality rates in sub-Saharan Africa (SSA) are the highest in the world. Women have a 1 in 39 lifetime risk of maternal mortality, compared with 1 in 3800 in developed regions (World Health Organisation, 2012), making it the greatest global disparity of any public health measure (Ronsmans & Graham, 2006; Shen & Williamson, 1999). The WHO defines maternal mortality as “the death of a woman while pregnant or within 42 days of termination of pregnancy”(World Health Organisation, 2012, p. 14). In 2010, 56% of the 287,000 maternal deaths worldwide were in SSA (World Health Organisation,

of women deliver at home with no access to skilled attendants (UNICEF, 2012a). Transport is also a major difficulty in rural areas, with fewer than 30% of women living within 15km of an emergency obstetric care facility (Gabrysch, Simushi, & Campbell, 2011). Quality and speed of care also contribute directly to chances of survival (Ronsmans & Graham, 2006). The “three delays model” (Thaddeus & Maine, 1994) suggests a framework to understand the barriers to receiving maternal health services: deciding to attend a healthcare facility, reaching the facility and being treated at the facility.

Over the last decade increased importance has been given to improving infrastructure and transport links to reduce maternal mortality (Babinard & Roberts, 2006; Goodburn & Campbell, 2001; Sachs et al.,

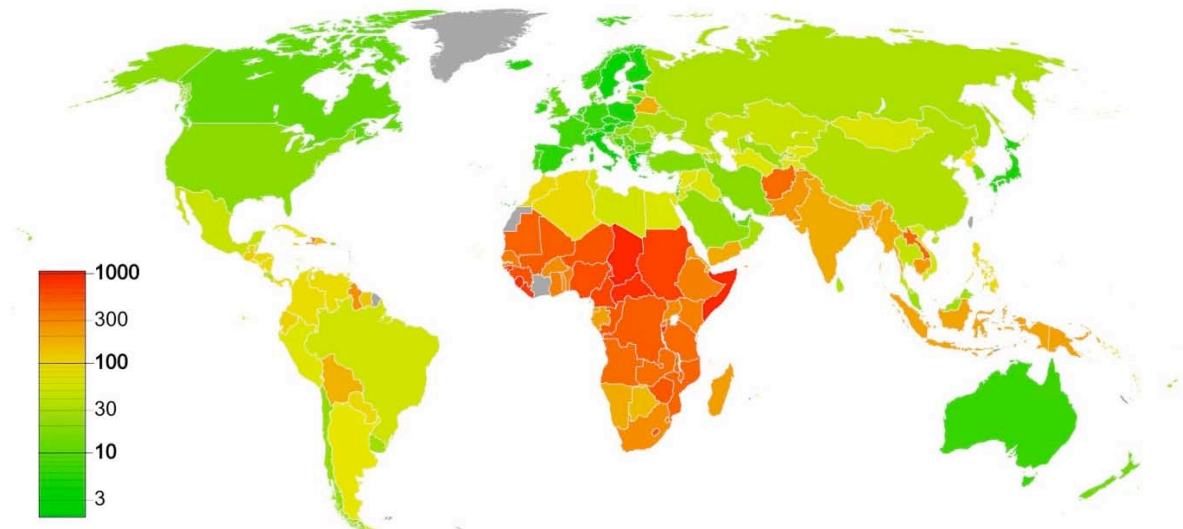


Figure 1: Map of Worldwide Maternal Mortality Rates per 100,000

(Wikimedia Commons, 2012)

2012). MDG5 aims to reduce the maternal mortality ratio (MMR)² by 75% from 1990 rates by 2015 and achieve universal access to reproductive health services (U.N., 2012). Although there has been a 47% global reduction in MMR since 1990, many countries, especially in SSA, will not meet MDG5. These figures pose urgent questions about how best to reduce maternal mortality in the region.

Zambia is one of the least developed countries in the world, ranked 164/187 in the Human Development Index (United Nations Development Programme, 2011). It faces many health challenges, including some of the highest rates of maternal and infant mortality. In Zambia 53%

2004; Sub-Saharan Africa Transport Program, 2005). Transport and distance to healthcare facilities directly affect access to emergency and preventative maternal health services. 75% of maternal deaths are from direct causes, such as sepsis, eclampsia (AbouZahr, 2003), and obstetric haemorrhage, which is the most common cause of maternal mortality worldwide (Ronsmans & Graham, 2006). Most of these obstetric complications can be prevented by rapid medical attention (Thaddeus & Maine, 1994). However, barriers to accessing healthcare include not only lack of infrastructure but also absence of emergency transport (Transaid, 2008) and

² Defined as the “global ratio of maternal deaths to live births” (Ronsmans & Graham, 2006, p. 1).

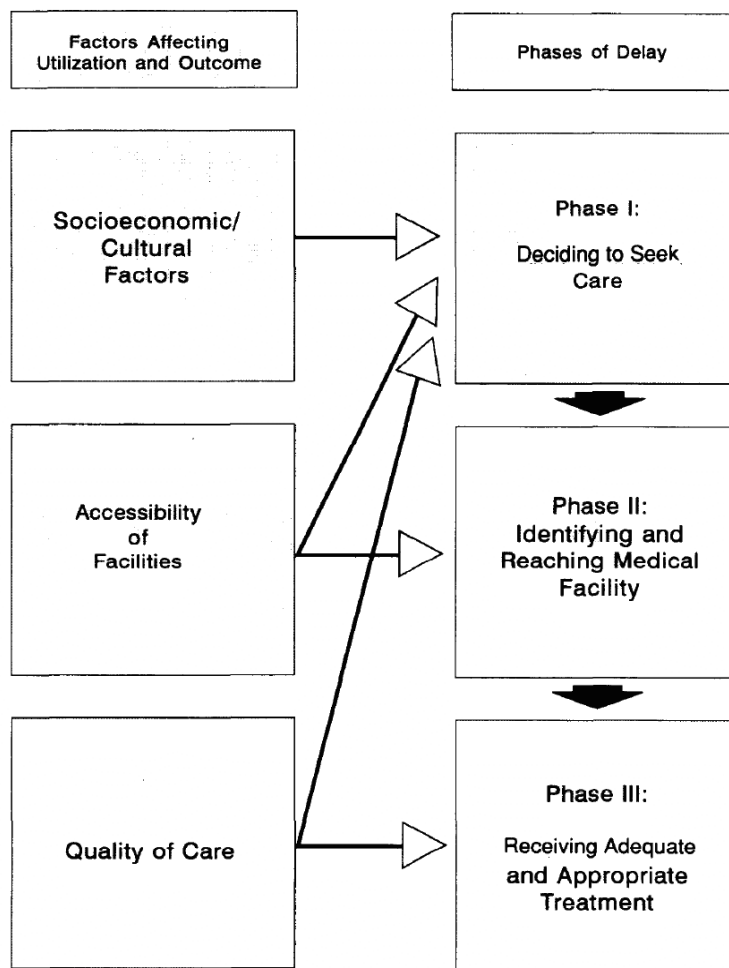


Figure 2: The Three Delays Model by Thaddeus and Maine Source: Thaddeus, S. & Maine, D., 1994. *Too far to walk: maternal mortality in context. Social Science & Medicine, 38(8), page 1093*

inability to afford transport (Razzak & Kellermann, 2002).

Numerous interventions address maternal access to healthcare facilities. For instance, a novel transport solution in Nigeria created partnerships with local transport owners (Shehu, Ikeh, & Kuna, 1997), demonstrating how health access can be improved before large-scale infrastructure projects have been completed; and in Sierra Leone, a combination of improved communication systems and investment in transport resulted in a 50% decrease in maternal mortality (Razzak & Kellermann, 2002). In rural regions of Africa, organisations have introduced vehicles, including motorcycles, to ensure healthcare delivery independent of terrain (Coleman, Howard, & Jenkinson, 2011). However, analysis of feasibility across regions is difficult as most are individual community-based interventions (Babinard & Roberts, 2006). While accepting that transport,

communication and infrastructure all have a role to play, most authors believe that maternal death is a result of an extended sequence of events and delays (Bhutta, Darmstadt, Hasan, & Haws, 2005; Cham, Sundby, & Vangen, 2005; Stekelenburg, Kyanamina, Mukelabai, Wolffers, & van Roosmalen, 2004).

Issues surrounding maternal mortality must be understood within the context of larger societal barriers which constrain agency and cause structural violence (Farmer, 2001; Galtung, 1969). Many papers have demonstrated the impact of economic and political factors on maternal mortality (Gil-González, 2006; Jamisse, Songane, Libombo, Bique, & Faúndes, 2004; C. Janes & Chuluundorj, 2004; Spangler, 2011). Poor infrastructure not only contributes to high MMR, but significantly impedes a country's development and economic growth (Limao & Venables, 2001; Sachs et al., 2004). Tropical SSA has under 0.1 km per 1000 population of paved roads, as compared with an average of 4.2 in the developing world (Sachs et al., 2004). Therefore, uneven distribution of health technology, services (C. R. Janes & Corbett, 2009) and infrastructure continue to perpetuate global imbalances in maternal health.

Women's reproductive experiences and decisions also exist within a complex web of socio-cultural, economic and political issues (Lewis & Kieffer, 1994). Gender inequality and gender-based discrimination mean that women are less able to access education and healthcare (Porter, 2011), make decisions during emergency obstetric referrals (Pembe et al., 2008) or use family planning and contraception (Wegs, Feyisetan, Alaii, Cheeba, & Mbewe, 2011). Women's low economic status and educational achievements result in a cycle of further discrimination and limited choices. It has been argued that progress towards MDG5 depends on addressing these fundamental socio-economic issues alongside

healthcare improvements (Foley, 2007; Inhorn, 2003; C. Janes & Chuluundorj, 2004; Lawoyin, Lawoyin, & Adewole, 2007).

Research Focus and Aims

In 2011 Developing Technologies³, in partnership with The Africa Community Access Programme and funded by the UK Department for International Development, started a programme to improve rural maternal healthcare access in Eastern Zambia through the introduction of motorcycle-ambulance trailers (MATMATs). The programme aims to improve emergency access to health services, particularly for emergency obstetric cases, from rural Tumbuka and Chewa⁴ villages. This anthropological study was conducted prior to the MATs’ introduction in August 2012.

ture challenges.

- ii. Explore the interacting factors which affect women’s pregnancy and delivery care.
- iii. Situate maternal mortality within the ethnographic context of the beliefs and practices relating to health and childbirth.
- iv. Understand the impact that transport interventions might have on maternal mortality.

Research Methods and Context

Fieldwork Location and People

Zambia is a sparsely populated, landlocked country in Southern Africa bordered by eight countries including Democratic Republic of Congo, Zimbabwe and Malawi.

The country’s population is concentrated

The overall aim of the study was to understand how the burden of maternal mortality in Zambia could be reduced through increasing access to healthcare facilities.

The objectives of this study were to:

- i. Identify current access to healthcare facilities for delivery and obstetric emergencies, including transport and infrastruc-

Population (2010): 13,089,000
GNI per capita (2010): US\$1070
Life expectancy at birth (2010): 49 years
Under-5 mortality rate (2010): 111
Maternal mortality ratio (2008): 470
Estimated adult HIV/AIDS prevalence (2009): 13.5%

Table 1: Zambia Country Statistics (UNICEFa 2012)

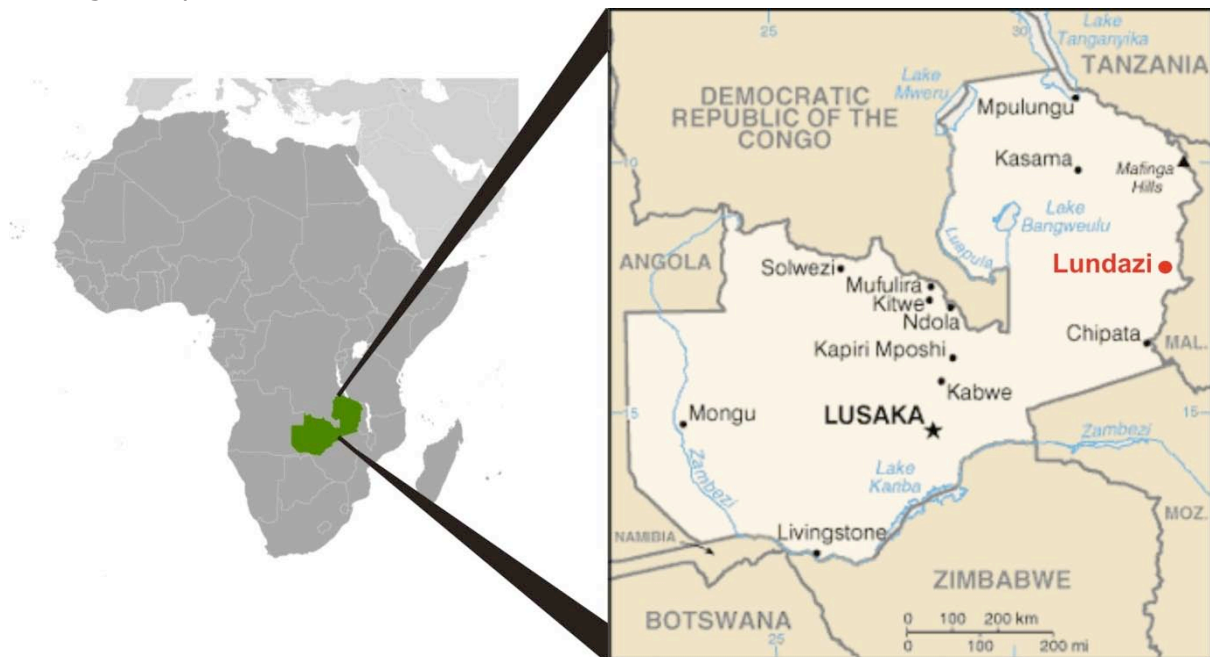


Figure 3: Reference Map of Republic of Zambia
(Edited from the CIA Factbook, Washington DC: Central Intelligence Agency 2009)

³ A UK engineering charity.

⁴ Tumbuka and Chewa are the two major ethnic groups in this area of Eastern Zambia.

around the capital, Lusaka, and the Copperbelt. Fieldwork was conducted in the rural Lundazi District, in Eastern Zambia. Lundazi is isolated from the nearest large town, Chipata, by 170 km of unpaved dirt road. The main tribes in the Lundazi District are Tumbuka, Chewa and Ngoni and the language most commonly spoken is

Tumbuka⁵. The land in the area has mostly been cleared of trees for subsistence farming to grow crops such as corn and cotton. The region is prone to flooding and food insecurity, especially in January, the month of highest rainfall. In the villages there is no electricity, running water or waste disposal system. Research Design

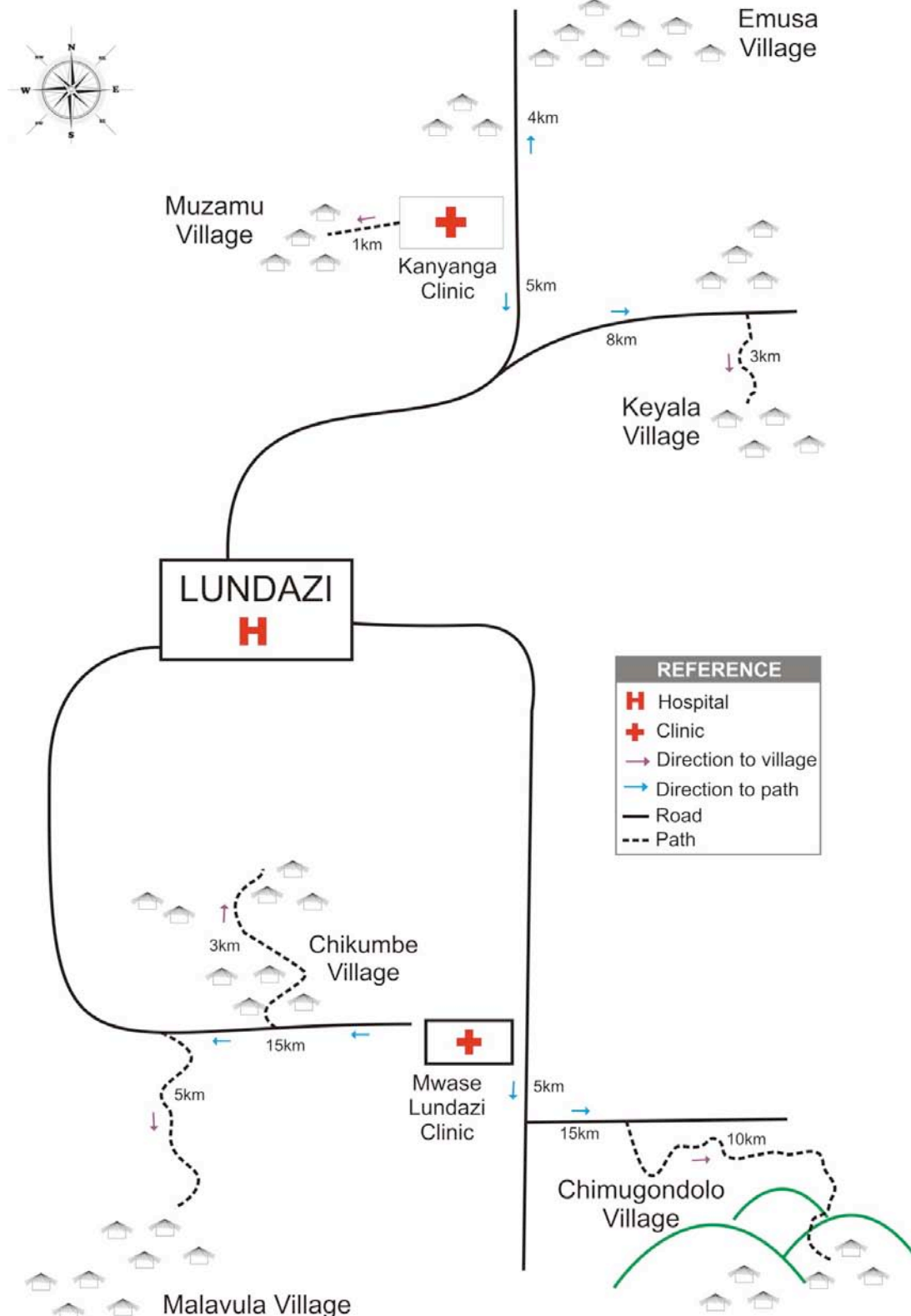


Figure 4: Map of Study Villages in Lundazi District

⁵ Tumbuka is only used as a predominant language by 2.5% of the population in Zambia (Marten & Kula, 2008).

Research Design

i. Site Selection

A qualitative anthropological study was conducted for four weeks from June to July 2012, in six Tumbuka and Chewa tribal villages in Mwase-Lundazi and Kanyanga, two rural health areas where the motorcycle ambulances were to be introduced. The villages were chosen to encompass a range of characteristics at

different distances from the clinic, with varying populations, modes of transport and accessibility. The six villages chosen were: Malavula, Chikumbe, Chimugondolo, Keyala, Emusa and Mesula. I spent four days living in each of the first three villages and the other three villages were visited on day or overnight trips from the Kanyanga clinic.

<u>Village/Clinic</u>	<u>Transport, Infrastructure and Communication</u>
<i>Malavula</i>	20 km from the clinic. Accessible on the unpaved main road and then a narrow path. There was no access to bicycle ambulances. The main forms of transport used to reach the clinic were ox-cart and walking. No method of communication available, apart from one mobile phone which was irregularly charged.
<i>Chikumbe</i>	15 km from the clinic. Accessible on an unpaved main road and then a ten-minute walk. Two bicycle ambulances were based in the village. The main forms of transport used to reach the clinic were bicycle ambulance and walking. Approximately four people had access to mobile phones.
<i>Chimugondolo</i>	30 km from the clinic. Accessible through a narrow mountain path and over a narrow bridge which floods in the rainy season. There was no access to bicycle ambulances. The main forms of transport used to reach the clinic were bicycle and ox-cart. Due to remoteness of the village most women give birth at home. No method of communication, apart from one mobile phone in the neighbouring hamlet.
<i>Keyala</i>	13 km from the clinic. Accessible on the unpaved main road and then along three kilometres of sandy path. There was no access to bicycle ambulances. The main form of transport used to reach the clinic was bicycle. The jeep ambulance sometimes collected women from the village. The community health workers had access to mobile phones (four within the village).
<i>Muzamu</i>	One kilometre from the clinic. Located directly behind the clinic. The bridge over the river between the clinic and village often floods in the rainy season. The only form of transport used to reach the clinic was walking.

<i>Emusa</i>	<p>Four kilometres from the clinic.</p> <p>Located beside the main unpaved road and with some access to vehicles from a small town nearby.</p> <p>The main forms of transport used to reach the clinic were walking, bicycle and vehicle.</p> <p>The community health worker had access to a mobile phone.</p>
<i>Mwase-Lundazi Clinic (Government-run clinic)</i>	<p>Eleven health posts and 20,000 people within the clinic catchment area.</p> <p>Facilities: mother's shelter, women's and men's wards with six beds each, obstetric ward.</p> <p>Approximately 25 to 40 maternal cases were seen each month.</p> <p>The clinic is 31 km from Lundazi District Hospital, along a graded dirt road (approximately one hour by vehicle).</p> <p>The clinic had access to one jeep ambulance.</p>
<i>Kanyanga Clinic (Government clinic run by Catholic Mission)</i>	<p>Six clinics and health posts within the catchment area, serving 25,000 people.</p> <p>Facilities: operating theatre, mother's shelter, women's and men's wards with ten beds each, paediatric ward, obstetric ward.</p> <p>Approximately 70 to 200 maternal cases were seen each month.</p> <p>The clinic is 40 km from Lundazi District Hospital along an ungraded dirt road (one to two hours travel time by vehicle).</p> <p>The clinic had access to one functioning jeep ambulance, the other two ambulances were out of service.</p>
<i>Lundazi District Hospital</i>	<p>150 bed hospital serving a catchment area of 100,000 people.</p> <p>Only two doctors worked at the hospital.</p>

Table 2: Infrastructure and Transport Options in Each Village

Sample Selection and Data Collection

The first introduction, and offering of foodstuff as gifts, was to the headman to ask his permission to live and carry out research in the village; all the headmen agreed to this. Participant observation was conducted throughout in order to gain a deep understanding of the community (Frey & Fontana, 1994). Participants were recruited through the headmen; they would send a message to the hamlets to inform them of the first focus groups. Subsequently snowball recruitment (Hennink, Hutter, & Bailey, 2011) was utilised to identify women who would be suitable and willing to participate in interviews. A total of twelve focus groups were carried out, one to three in each village and surrounding hamlets. The composition of focus groups has been found to affect interactions (Hennink, 2007; Krueger & Casey,

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2009; Morgan, 1997), therefore separate focus groups were carried out with women of reproductive age and men. While running the first men's focus groups, I found they preferred to talk about sensitive issues with my male partner who accompanied me during the field research period. Therefore, in the subsequent three, my partner conducted the men's focus groups in a different location to ensure that gender-sensitive issues could be discussed⁶. Through the focus groups I was able to gain insight into the social context of ideas and decisions (Kitzinger, 1994) through collection of "rich experiential data" (Asbury, 1995, p. 414) in a short amount of time (Frey & Fontana, 1994).

⁶ These focus groups were voice recorded so that I was able to analyse the data afterwards.

Critical incident interviews were conducted with twenty-five women of child-bearing age and past child-bearing age to collect personal narratives (Hennink et al., 2011) and elicit reproductive histories, pinpointing key stories regarding use of transport, childbirth or obstetric emergencies. They were based on a semi-structured interview guide. Interviews were also conducted with family members of women of child-bearing age and past child-bearing age, with four community health workers, one nurse and two midwives. I carried out four interviews with my translator on Tumbuka traditions and cultural practices. Notes were taken during most interviews and focus groups; in some larger focus groups I utilised a voice recorder and transcribed afterwards. The data was subsequently coded and analysed; while analysing the data I was aware of the importance of self-censorship and maintaining the integrity of the respondents' viewpoint (Fontana & Prokos, 2007). Using three different methods of collecting data ensured triangulation of methods (Johnson, 1997) and enabled me to gain a greater objective and subjective understanding of the community. Ethical approval was granted from the Durham University Anthropology Department before the project commenced. All participants were informed of details of the study before research started and verbal consent was gained from everyone involved.

Village Life

Tumbuka society is a polygamous, socio-centric one and there are larger community social structures which limit society members to particular roles. Therefore, each individual member of the community must carry out work every day to provide food for the extended family by working in the fields. There is little notion of separate units of the community and all families support each other in fulfilling daily roles. Power relations, roles and divisions of labour are defined by gender; the separation of women and men is at the centre of daily life. A woman's worth within society is defined by the amount of physical work that she is able to do. The ideal is to have many children in order to be able to expand the influence of one's family and village. If a woman is not fulfilling her role of being a good wife, which includes being hard

working, looking after her husband well and providing her husband with children, there will be repercussions; for example her husband may take a new wife.

Transport and Clinic Access

Transport Modes and Use

Table 3 summarizes views relating to transport during pregnancy, expressed in almost every interview and focus group in each village. There was little variety in perspectives on these topics and villagers of all ages and genders agreed on the main points.

Most villages only have access to a couple of modes of transport and many women must still walk between one to forty kilometres to reach the clinic. If women do have a choice of which transport to use, their comfort, speed and reliability are key factors in decision-making. For example, many women commented on the disadvantages of going by bicycle or ox-cart when they are pregnant:

"Bikes are not good as they are bumpy and uncomfortable. In pregnancy women can't sit for a long time on a bike." (WFG⁷, ten women, 16km from clinic)

"Most people walk to the clinic, but it is very far. Ox-carts and bicycles are not very effective for pregnant women and are risky to use in pregnancy because there are lots of bumps and breakdowns." (WFG, eighteen women, 30km from clinic)

Although many women were unable to choose the fastest forms of transport due to cost and availability, speed was seen as an important factor:

"The bicycle is better than the ox-cart because it is faster. By ox-cart the child might even die because you give birth on the way." (WFG, ten women, 16km from clinic)

⁷ Women's Focus Group

<u>Mode of transport</u>	<u>Advantages</u>	<u>Disadvantages</u>
<u>Walking</u>	<p><i>Reliability:</i> Walking was deemed to be more reliable than other modes of transport.</p> <p><i>Expense:</i> There is no expense incurred.</p> <p><i>Infrastructure:</i> It is possible to walk on any path or road, regardless of condition of the road.</p>	<p><i>Speed:</i> It takes a long time for women to reach the clinic, especially when they are heavily pregnant or in labour.</p> <p><i>Comfort:</i> It can be uncomfortable and difficult for women to walk such long distances when they are often already in labour.</p>
<p><u>Bicycles</u></p> <p><i>Owned by individual families and used mainly by men or boys to do chores in nearby villages.</i></p>	<p><i>Expense:</i> Some families own their own bicycle.</p> <p><i>Speed:</i> It is quicker to reach the clinic on a bicycle than by walking.</p> <p><i>Infrastructure:</i> It is possible to use a bicycle on most roads and paths, although there may be some paths which are too narrow or rocky.</p>	<p><i>Comfort:</i> The surface of the roads are uneven and the pregnant woman will be sitting sideways on the back of the bike so it can be uncomfortable and difficult for her to sit for such a long time. Women find they are unable to use the bicycle effectively once they are in labour.</p> <p><i>Rider:</i> Someone needs to be free to ride the bike, this will usually be the woman's husband but they may need to wait until he returns from the field.</p> <p><i>Reliability:</i> Bicycles regularly get punctures on the rocky paths and roads between the villages.</p>
<p><u>Ox-carts</u></p> <p><i>Owned by individual families and used on a day to day basis in the fields, for example to collect corn.</i></p>	<p><i>Comfort:</i> Women are at least able to sit down in the back of the ox-cart.</p>	<p><i>Expense:</i> The cost of borrowing an ox-cart if the family does not own one can be 5,000 to 10,000 Kwachas (70p to £1.40).</p> <p><i>Comfort:</i> The surfaces of the roads are uneven and there are no mattresses for the woman to lie on in the cart, therefore it can be uncomfortable.</p> <p><i>Speed:</i> The ox-carts are slow and therefore may not be suitable if the woman is already in labour; from many of the more remote villages it can take four to five hours to reach the clinic in an ox-cart.</p>

		<p><i>Reliability:</i> The ox can be uncooperative and it may take longer to get to the clinic than expected.</p> <p><i>Availability:</i> The ox-cart will often be in use in the field and therefore will have to be brought back to the village, taking valuable time.</p> <p><i>Infrastructure:</i> Although it is possible to use an ox-cart on most roads and paths, there may be some paths along which an ox-cart cannot travel. During the rainy season bridges and paths may be impassable.</p>
<p><u>Jeep ambulances and vehicles</u></p> <p><i>Jeep ambulances are based at the clinics. Vehicles may sometimes be found in some slightly larger towns nearby.</i></p>	<p><i>Speed:</i> This can be the fastest mode of transport, depending on the condition of the roads.</p> <p><i>Comfort:</i> This is the most comfortable of all modes of transport.</p> <p><i>Reliability:</i> Vehicles and jeep ambulances are usually reliable, and should reach the clinic.</p> <p><i>Availability of vehicles:</i> Although families in the villages do not own cars, there are taxi drivers who work in the towns where the clinics are based. However, they often cannot reach some of the most remote villages, so this may not always be an option.</p>	<p><i>Expense:</i> These are the most expensive modes of transport.</p> <ul style="list-style-type: none"> • To book a vehicle from a village 5 km away will usually cost 30,000 Kwachas (£4.16). • The cost of using the ambulance in the Kanyanga district is 60,000 (£8.32) Kwacha per journey if the passenger has not been referred from a health-post. Therefore most women who are going for delivery will have to pay the full fee, even if it is an emergency case. <p><i>Communication:</i> With little access to mobile phones it may be difficult for most villagers to book a vehicle or contact the jeep ambulance.</p> <p><i>Infrastructure:</i> Roads and paths may not be wide enough or in sufficiently good condition for a vehicle to pass. Lack of fuel, oil and breakdowns can always cause difficulties and in the rainy season paths and bridges may be impassable.</p>

		<p><i>Availability of jeep ambulances:</i> Each clinic has access to only one or two jeep ambulances and they have to serve a large catchment area. It therefore might not always be free when initially called.</p>
<p><u>Bicycle ambulances</u></p> <p><i>Donated recently by NGOs to some of the villages and entrusted to one of the community health workers who is then in charge of collecting any maternity <u>Bicycle ambulances</u></i></p> <p><i>Donated recently by NGOs to some of the villages and entrusted to one of the community health workers who is then in charge of collecting any maternity cases and bringing them to the local clinic.</i></p>	<p><i>Expense:</i> There is no expense incurred by the women using the bicycle ambulances.</p> <p><i>Speed:</i> These are quicker than walking and ox-carts. Additionally they are quicker than normal bicycles as now the women are lying in a trailer at the back, rather than sitting sideways.</p> <p><i>Comfort:</i> Women lie on a stretcher in a trailer behind the bicycle; this is therefore more comfortable than other modes of transport listed above.</p> <p><i>Availability:</i> The rider is a trained</p> <p><i>Expense:</i> There is no expense incurred by the women using the bicycle ambulances.</p> <p><i>Speed:</i> These are quicker than walking and ox-carts. Additionally they are quicker than normal bicycles as now the women are lying in a trailer at the back, rather than sitting sideways.</p> <p><i>Comfort:</i> Women lie on a stretcher in a trailer behind the bicycle; this is therefore more comfortable than other modes of transport listed above.</p> <p><i>Availability:</i> The rider is a trained volunteer so is usually available. However, they may already be collecting another woman or working in the fields, so it may take some time to reach the woman.</p>	<p><i>Availability:</i> There is one bicycle ambulance in some villages in each catchment area.</p> <p><i>Reliability:</i> Bicycle tyres can sometimes get punctures on the rocky roads and during the rainy season paths and bridges may be impassable.</p> <p><i>Infrastructure:</i> The bicycle ambulances have been designed to work on paths and roads which are uneven but they may not be able to reach all hamlets.</p> <p><i>Availability:</i> There is one bicycle ambulance in some villages in each catchment area.</p> <p><i>Reliability:</i> Bicycle tyres can sometimes get punctures on the rocky roads and during the rainy season paths and bridges may be impassable.</p> <p><i>Infrastructure:</i> The bicycle ambulances have been designed to work on paths and roads which are uneven but they may not be able to reach all hamlets.</p>

	<p><i>Communication:</i> The bicycle ambulances and riders are based in the villages so it is easier for women to contact them.</p>	
<p>Motorcycle ambulances</p> <p>Two motorcycle ambulances were introduced to the Mwase-Lundazi and Kanyanga clinic areas in August 2012. These views were therefore expressed before introduction of the MATs.</p>	<p><i>Reliability:</i> The drivers are fully trained so will be able to repair any breakdowns. However, during the rainy season paths and bridges may be impassable</p> <p><i>Expense:</i> There is no expense incurred by the woman.</p> <p><i>Speed:</i> This is one of the fastest modes of transport, and may even be faster than a vehicle as it can drive down smaller paths.</p> <p><i>Comfort:</i> This should be one of the most comfortable modes of transport for the women, as there is a trailer at the back of the motorcycle with a stretcher inside.</p> <p><i>Rider:</i> Riders have been specifically trained for the job.</p>	<p><i>Communication:</i> Villagers often do not have mobiles to be able to communicate with the motorcycle ambulance.</p> <p><i>Availability:</i> There is only one motorcycle ambulance for each clinic catchment area so it may not be available to collect each patient.</p> <p><i>Infrastructure:</i> The roads and paths are often very uneven and thus may be unsuitable, or even dangerous, for the motorcycle ambulance, making some of the villages inaccessible.</p>

Table 3: Transport Modes and Use

The bicycle ambulances, which have been recently introduced into some villages, were mainly viewed positively by both men and women:

"The bike-ambulance is more comfortable than a bicycle" (Interview, 26y woman)

However, most villagers also thought there were too few of them:

"There are too few bicycle-ambulances, as many people are pregnant at the same time. It would be better with two or three bicycle-ambulances and maybe another form of transport apart from bicycles." (MFG⁸, 15 men, 20km from clinic)

Transport, Infrastructure and Communication

Access to clinics is hampered by poor transport, infrastructure and communication. Current cultural and health-related practices are commonly also vital in decision-making processes about whether to visit the clinic. Case study 1, from an interview, summarises some of the main barriers women faced in reaching the clinic, in particular: cost; distance; poor infrastructure; and reliability of transport.

This echoes the views held by many women in each village: that there was little point in trying to reach the clinic, due to numerous barriers. Women in a focus group 16 kilometres from the clinic typified this perspective, saying:

⁸ Men's Focus Group

CASE STUDY 1 – TRANSPORT TO THE CLINIC

Mrs Nyambambu was a fifty-five-year-old from a remote village who delivered seven children at home, four of whom are still alive. Her five grandchildren were all born at home with the help of a traditional birth attendant. "Giving birth at home is better because of transport costs and lack of transport, but now we have to pay if we don't give birth at the clinic. The ox-cart is the only transport available. Other transport such as bicycles cannot reach here. You have to hire the ox-cart for 10,000 to 20,000 Kwachas (£1.40 to £2.80) to reach the clinic. It takes about three hours to get there. So people here don't trouble themselves to go to the clinic as it is a long way; it is better to have bed rest at home. If there are complications at home, women contact people who know about traditional medicine in the area. If the transport was better women would prefer to use the clinic. It is a very big health problem that the villagers cannot reach the clinic. It would be best to have a vehicle for going to the clinic, but the road network is poor and it would be difficult with fuel and oil. If the bridge was better maybe a bicycle ambulance could reach. But you can never trust a bicycle. I am asthmatic and last week I was admitted to the clinic. I tried to go to the clinic earlier but the bicycle I travelled on had a puncture so I had to stay at home with the asthma attack for two days. Bicycles are not reliable transport."

*"The reliability of transport is really bad. Sometimes we give up hope."
(WFG, ten women, 16km from clinic)*

Many women mentioned lack of transport as the key barrier to delivering at the clinic; for example one woman who delivered her last child at home said:

"If the transport was better I would deliver from there [the clinic]" (Interview, 30y woman, 30 km from clinic)⁹

One woman even went as far as saying that in her village:

"The main cause of death is lack of transport" (Interview, 40y woman, 30km from clinic)

Cost was the primary limiting factor in accessing the clinic in many villages, particularly those closer to roads. At one of the clinics, the jeep-ambulances operated a system of selective charging, where they did not charge for any referral cases from health-posts, but did charge to pick up directly from villages. The charge was 60,000 Kwachas (£8.30) for one way transport, even in health or obstetric emergencies.

Many women found the cost of transport prohibitive:

"My husband supports delivering at home to avoid transport costs" (Interview, 20y woman, 30km from clinic)

All women felt they could not afford jeep ambulance transfer. Families therefore had to prioritise to decide whether they felt the woman actually had to visit the clinic.

Poor infrastructure and communication were also major barriers to clinic access. Villages furthest from the main road faced the most obstacles, but even villagers closer to the clinic could experience difficulty:

"In the rainy season we cannot cross over to the clinic and we have to come back. There is no way of getting over the river." (WFG, eight women, 1km from clinic)

The condition of the roads made it particularly difficult to reach the clinic by bicycle or ox-cart and most villagers felt that this

⁹ This woman had had five children all delivered at home, apart from one who was delivered whilst travelling to the clinic.

not only increased the discomfort, but also lengthened the journey and meant women were more likely to deliver by the road. Even if villagers have access to adequate infrastructure and transport, one of the impediments was lack of communication. None of the villages had electricity and frequently no one owned a mobile phone, so inhabitants struggled to arrange appropriate transport. One participant commented:

"The biggest problem is not being able to contact or call transport." (WFG, 30km from clinic)

Clinic and Pregnancy Perceptions

Most women felt worried during pregnancy because they perceived it as dangerous. They were aware that complications can occur and had heard of maternal death in surrounding villages. There were also perceptions about poor treatment and high mortality at the clinic. Some women expressed concern about the lack of staff and supplies:

"The operations in the hospital [caesarean sections] are very risky and dangerous... often the baby dies. The electricity can go off during the operation and also there are too few doctors, so you are always waiting for the doctor." (Interview, 38y woman, 30km from clinic)

"It would be very good if there was more transport and staff at the clinic. The clinic is a problem because we travel far and then there is no staff. Therefore we prefer to use traditional medicine." (WFG, twenty women, 15km from clinic)

There were also various stories about women being treated badly at the clinic due to discrimination:

"The nurses at the clinic can be stern with patients, or rude to people from the village. This can prevent women from going to the clinic, and they may prefer to give birth at home." (Interview, 28y woman, 30 km from clinic)

All of these factors may dissuade women from visiting the clinic, and present an

additional barrier to the existing lack of transport and infrastructure.

A recurring theme was the distance from the village to the clinic, with most participants commenting that the clinic was very far away and difficult to reach. This perception did not vary according to actual distance, as women who were only one kilometre from the clinic expressed the same opinions as those thirty kilometres away. Equally, there were always women in every village who reported delivering by the road on the way to the clinic (irrespective of distance):

"The clinic is very far away. Most people deliver on the way." (Mixed FG, 15km from clinic)

Midwives at the clinics confirmed that this was a very frequent occurrence.

One reason women may deliver on the way was because of leaving the decision to visit the clinic until the last moment:

"We don't go before to wait at the clinic because it is difficult to leave family and children. So we go immediately we feel labour pains." (WFG, twenty women, 20km from clinic)

Women may also perceive the clinic as further away than it actually is, because their daily mobility is limited. Although most women went to the clinic when they felt labour starting, some delayed until it was too late:

"I delivered all my children at home. The clinic was a bit far, by the time I was saying we should go to the clinic I was already delivering." (Interview, 35y woman, 15 km from clinic)

Delays in going to the clinic, transport, cost barriers and decision-making are all demonstrated by case study 2:

CASE STUDY 2 – DECISION-MAKING

Mrs Nyachirwa was a thirty-five-year-old woman from a village twenty miles from the clinic. She had married into the village when she was fifteen and had six children and three previous miscarriages. Four of her children were delivered at the clinic and two at home, because she delayed going to the clinic. In her second pregnancy she had an obstructed labour and after ten hours of labour went to the clinic. She always travels to the clinic by foot, which takes an hour and a half, and decides to go when she feels labour starting. When she travels to the clinic for delivery, she goes with her mother-in-law and husband and has to leave her children at home alone. "That is why I only go as soon as labour starts. If I had someone to leave the children with I would go earlier to wait there." She thinks the distance to the clinic is very far but that it is important to go to the clinic so they can check the labour is going well and look after any complications. She does not know how many more children she will have. She would like to stop having children but needs permission from her husband, and he does not want to stop and does not want to use contraceptives.

Discussion

In Eastern Zambia women's ability to access healthcare is restricted by a variety of social, cultural, economic and political factors.

Gender Inequality and Society

Both societal structure and cultural beliefs influence women's decision-making and access to healthcare facilities. Just as Good has argued that illness is linked to "underlying social relations or relations of power" (Good, 1990, p. 57), pregnancy perceptions and experience will also relate to these (Foley 2007). Women's social identity and power-relations are determined by their roles in the patrilineal society. Women in this respect are unequal to men, who are viewed as the heads of the family and community and hold power in decision-making. Therefore, when considering women's decision-making during pregnancy, gender inequality can be seen to lead to reduced agency (Farmer, 2001). During pregnancy and labour, time and freedom to present at the clinic are of ut-

most importance. There may therefore be friction between a woman's gender role within the community and the autonomous role that she needs to take on in order to protect her health. Without support from her husband or other community members, women may struggle to break out of their everyday roles in order to be able to visit the clinic, and will often prioritise the immediate need to provide enough food for their families over reaching the clinic. As has been noted in other contexts, women often prioritise the health and nutrition of their family over their own (Lewis & Kieffer, 1994).

This is particularly evident if we look at the broader context in which these villages are placed. Surviving on subsistence farming and with no other sources of income, they have little money circulating and are also dependent on rainfall and crops which may vary each year. There is no guarantee of adequate food for the year, and every year the region experiences shortages in staple foods. With no waste disposal systems, infectious diseases, and especially diarrhoeal disease, are particularly common

and this reduces productivity (United Nations Secretary-General, 2010) and leads to high rates of infant mortality. The villagers' logic is therefore understandable: they need to have bigger families so that, if some of the children die, they will still have enough children to help them on the land. These harm-reduction strategies have been demonstrated to exist in all cultures (Nichter, 2003). Conversely, this results in more pregnancies and deliveries and leads to an increased likelihood of complications and death. Women in Eastern Zambia are therefore born into circumstances which constrain agency and mean they are at high risk of dying in pregnancy or labour.

Local Perceptions and Community Structures

Local perceptions towards mobility and the clinic play a role in women's decision-making about when and how to present to the clinic, if at all. However, these secondary factors exist upon a base of gender inequality and societal expectations. An understanding and appreciation of villagers' social worlds, traditions and culture will aid in developing culturally-sensitive health and transport interventions, whilst addressing the individual needs of the communities. Working with local people to identify their needs and implement relevant programmes, using existing community structures, would ensure the sustainability of any long-term health gains (Costello, Azad, & Barnett, 2006). Additionally, working with local communities should reduce the power-differentials which are often created when organisations "carry out" interventions or research "for" the local people. Not only can this impede collaboration, but issues of consent may also surface where locals feel obliged to take part in the study or intervention. Community elders, herbalists and husbands already play a large role in any woman's experience of pregnancy in the village. Rather than marginalising and isolating them through implementation of clinical or public health interventions without discussion, they should be consulted and active participation encouraged (Lawoyin et al., 2007; Pembe et al., 2008). The definition of community in each village, and how the characteristics of community relate to health, should also be considered, in or-

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der to effectively implement health interventions (Wayland & Crowder, 2002). By using the existing community health network, interventions will, in the process, gain a larger and more disseminated informal healthcare workforce already based in the community. Therefore, it is essential to work with, rather than against, the existing community structures and pregnancy perceptions.

Health and Access Inequalities

Economic factors at government level lead to poor infrastructure, road quality and road distribution at district-level and have direct trickle-down effects at clinic level. Infrastructure in Eastern Zambia limits possible improvements in maternal health. Even within Eastern Zambia there are access inequities, with the six villages visited all exhibiting varying degrees of access. Each villager therefore faces unique difficulties in reaching the clinic, in terms of road quality or access to transport and communication. One of the major challenges is improving access universally as well as responding to the unique access challenges faced in each individual village. During pregnancy and labour, when women may experience life-threatening complications, rapid transfers from village to clinic are essential. Introduction of affordable and appropriate modes of transport may help to address this. Understanding health infrastructure in the area is also vital. Health posts, clinics and hospitals in Eastern Zambia, as in other countries in Africa (Mogobe, Tshiamo, & Boweloc, 2007), function with extremely low levels of funding and therefore also low levels of staff (Gabrysch et al., 2011), supplies, medicines and ambulances. Women's use of the clinic and transport choices will be affected by these factors, creating additional economic barriers to receiving healthcare, in conjunction with the existing physical access barriers. This highlights the difficulties in service provision in these remote areas where healthcare services are over-stretched and under-funded.

Poor Infrastructure and Cost

Communities in the area are dependent on subsistence farming, have little or no monetary income, and therefore women trying to reach the clinic in time for de-

livery are restricted by the expense of transport. The constraint of cost in use of transport has been demonstrated in other research in Africa (Pembe et al., 2008; Shehu et al., 1997). These limitations are universal across Eastern Zambia. However, as noted in previous chapters, villages were affected by different factors to varying extents. For example, women living in more remote villages had their agency constrained most by the lack of infrastructure, roads and communication; while in villages with access to slightly more infrastructure, women were constrained most by cost, both of transport and staying at the clinic. Decisions to access healthcare for women in both circumstances are therefore not based on free choice, as these were often the last in a chain of multiple factors which constrained their agency. In villages constrained most by infrastructure or cost there therefore exists, by Paul Farmer's definition, a "differential political economy of risk" (Farmer, 2001, p.79). Gradations of poverty and varied distribution of risk for maternal mortality between villages have been created through unequal access and unequal provision of access opportunities. For example, the most remote areas have the least access to bicycle or jeep ambulances, so with fewer transport opportunities, fewer women will present to the clinic for delivery, antenatal or postnatal care and there are more likely to be complications and higher maternal mortality.

Differential risk created by variations in access can be seen using the example of one remote village where the only available transport was an ox-cart or walking, while in comparison the next village, twenty minutes away, was situated closer to a road and the path leading through the village towards it was wider and more navigable. It was easier for women from this village to reach a rural health-post from which they could be referred via ambulance to the health clinic, and because they had been referred, the ambulance was free of charge. Villagers who were more impoverished were therefore disadvantaged most by the current situation: those living in remote villages with no roads or transport could not reach a clinic or a rural health-post, were therefore not entitled to free transfers and could not af-

ford to pay the fee for the ambulance to collect them from the villages. Therefore, improving transport and access is only one aspect of larger economic challenges and it is vital to carry out qualitative research before implementation of any health intervention in order to understand these issues fully.

Conclusions

Social, cultural, economic and political factors in Zambia restrict women's access to healthcare facilities and result in delays at all levels of the three delay model (Thaddeus & Maine, 1994): in deciding to attend a healthcare facility, reaching the facility and being treated at the facility. The decision to attend a healthcare facility is strongly influenced by the cultural context:, not only attitudes towards child-birth and pregnancy, but also local beliefs and practices and perceptions of clinic and transport. It is important to understand each aspect of women's experiences and decision-making during pregnancy. However, these individual factors and circumstances should be understood within the broader context of the structural forces which may constrain women's agency: for example, inequality and poverty, or women's social identity as defined by power-relations and gender-roles within a patrilineal society. In reaching and being treated at a healthcare facility, women also encounter broader economic constraints, affecting not only transport and access to the clinic, but treatment experience at the clinic. Therefore, to understand women's decisions to access clinics, both broad societal issues and local, individual factors must be considered.

Reaching healthcare facilities is challenging in Eastern Zambia due to poor infrastructure and roads, limited transport resources, high cost of transport and lack of communication. Gradations of poverty and varied distribution of risk for maternal mortality between villages have been created through unequal health access and unequal provision of access opportunities. Improving transport and health infrastructure in Eastern Zambia to achieve universal access to healthcare facilities is, therefore, of the utmost importance in reducing maternal mortality. Whilst this approach is vital to improve maternal health

in the long-term, options to improve the present situation, such as the introduction of affordable and appropriate modes of transport to facilitate rapid transfers to the clinic, should also be considered. Qualitative research should be carried out before implementation of any transport health intervention in order to understand the unique infrastructure challenges faced in each village, how to achieve universal access across all villages in the region and the best way to prioritise transport resources.

Maternal mortality shows the greatest global disparity of any public health mea-

sure (Ronsmans & Graham, 2006; Shen & Williamson, 1999) and worldwide progress in reaching MDG5 is slow (U.N., 2012). Maternal mortality cannot be addressed with uniform approaches between countries or within countries; each intervention must be context-specific. By applying both an in-depth ethnographic and qualitative perspective to any public health intervention, maternal mortality and lack of access to healthcare may be addressed in a more sustainable way. Further inter-disciplinary collaboration between engineering and social sciences is therefore necessary in order to improve health in the Global South.



Figure 5: Recommendations

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Bibliography

AbouZahr, C. (2003). Global burden of maternal death and disability. *British Medical Bulletin*, 67(1), 1–11. doi:10.1093/bmb/ldg015

Asbury, J.-E. (1995). Overview of Focus Group Research. *Qualitative Health Research*, 5(4), 414–420. doi:10.1177/104973239500500402

Babinard, J., & Roberts, P. (2006). Maternal and child mortality development goals: what can the transport sector do? The World Bank Group.

Bhutta, Z. a, Darmstadt, G. L., Hasan, B. S., & Haws, R. a. (2005). Community-based interventions for improving perinatal and neonatal health outcomes in developing countries: a review of the evidence. *Pediatrics*, 115(2 Suppl), 519–617. doi:10.1542/peds.2004-1441

Cham, M., Sundby, J., & Vangen, S. (2005). Maternal mortality in the rural Gambia, a qualitative study on access to emergency obstetric care. *Reproductive health*, 2(1). doi:10.1186/1742-4755-2-3

Coleman, B. J., Howard, E., & Jenkinson, A. (2011). The difference transport makes to child mortality and preventive healthcare efforts: Riders for Health. *Archives of Disease in Childhood*, 96(2), 197–9.

Costello, A., Azad, K., & Barnett, S. (2006). An alternative strategy to reduce maternal mortality. *The Lancet*, 368(9546), 1477–9. doi:10.1016/S0140-6736(06)69388-4

Farmer, P. (2001). *Infections and Inequalities: The Modern Plagues*. University of California Press.

Foley, E. E. (2007). Overlaps and Disconnects in Reproductive Health Care: Global Policies , National Programs , and the Micropolitics of Reproduction in Northern Senegal. *Medical Anthropology: Cross-Cultural Studies in Health and Illness*, 26(4), 323–354.

Fontana, A., & Prokos, A. H. (2007). *The Interview From Formal to Postmodern*. Left Coast Press.

Frey, J. H., & Fontana, A. (1994). Interviewing: The Art of Science. In N. Denzin (Ed.), *The Handbook of Qualitative Research* (Vol. i, pp. 361–76). SAGE Publications.

Gabrysch, S., Simushi, V., & Campbell, O. M. R. (2011). Availability and distribution of, and geographic access to emergency obstetric care in Zambia. *International Journal of Gynecology and Obstetrics*, 114(2), 174–9. doi:10.1016/j.ijgo.2011.05.007

Galtung, J. (1969). Violence, peace, and peace research. *Journal of Peace Research*, 167–191.

Gil-González, D. (2006). Knowledge gaps in scientific literature on maternal mortality: a systematic review. *Bulletin of the World Health Organization*, (05), 903–909. Retrieved from http://www.scielo.org/scielo.php?pid=S0042-96862006001100016&script=sci_arttext

Good, B. J. (1990). *Medicine, rationality and experience an anthropological perspective*. Cambridge University Press.

Goodburn, E., & Campbell, O. (2001). Reducing Maternal Mortality In The Developing World : Sector-Wide Approaches May Be The Key. *British Medical Journal*, 322(7291), 917–920.

Hennink, M. (2007). *International Focus Group Research: A Handbook for the Health and Social Sciences*. Cambridge University Press.

Hennink, M., Hutter, I., & Bailey, A. (2011). *Qualitative Research Methods*. SAGE Publications.

- Inhorn, M. C. (2003). Global infertility and the globalization of new reproductive technologies: illustrations from Egypt. *Social science & medicine* (1982), 56(9), 1837–51. Retrieved from <http://www.ncbi.nlm.nih.gov/pubmed/12650724>
- Jamisse, L., Songane, F., Libombo, a, Bique, C., & Faúndes, a. (2004). Reducing maternal mortality in Mozambique: challenges, failures, successes and lessons learned. *International journal of gynaecology and obstetrics: the official organ of the International Federation of Gynaecology and Obstetrics*, 85(2), 203–12. doi:10.1016/j.ijgo.2004.01.005
- Janes, C., & Chuluundorj, O. (2004). Free markets and dead mothers: the social ecology of maternal mortality in post-socialist Mongolia. *Medical Anthropology Quarterly*, 18(2), 230–57.
- Janes, C. R., & Corbett, K. K. (2009). Anthropology and Global Health. *Annual Review of Anthropology*, 38(1), 167–183. doi:10.1146/annurev-anthro-091908-164314
- Johnson, R. B. (1997). Examining the validity structure of qualitative research. *Education*, 118, 282–286.
- Kitzinger, J. (1994). The methodology of Focus Groups: the importance of interaction between research participants.
- Krueger, R. A., & Casey, M. A. (2009). *Focus Groups: A Practical Guide for Applied Research*. SAGE Publications.
- Lawoyin, T. O., Lawoyin, O. O. C., & Adewole, D. a. (2007). Men's perception of maternal mortality in Nigeria. *Journal of public health policy*, 28(3), 299–318. doi:10.1057/palgrave.jphp.3200143
- Lewis, N. D., & Kieffer, E. (1994). The Health of Women, Beyond maternal and child health. In D. R. Phillips & Y. Verhaselt (Eds.), *Health and Development* (pp. 122–137).
- Limao, N., & Venables, A. J. (2001). Infrastructure , Geographical Disadvantage , Transport Costs , and Trade, 15(3), 451–479.
- Marten, L., & Kula, N. (2008). Zambia: 'One Zambia, One Nation, Many Languages'. In A. Simpson (Ed.), *Language and National Identity in Africa* (pp. 291–313). Oxford: Oxford University Press. Retrieved from <http://endeavour.essex.ac.uk/1142/1/Zambia.pdf>
- Mogobe, K. D., Tshiamo, W., & Boweloc, M. (2007). Monitoring Maternity Mortality in Botswana. *Reproductive Health Matters*, 15(30), 163–171.
- Morgan, D. L. (1997). *Focus groups as qualitative research* (Second., Vol. 16). SAGE Publications.
- Nichter, M. (2003). Harm Reduction: A Core Concern for Medical Anthropology. In B. H. Harthorn & L. Oaks (Eds.), *Risk, Culture, and Health Inequality* (pp. 13–33).
- Pembe, A. B., Urassa, D. P., Darj, E., Carlstedt, A., Olsson, P., Pembe, B., Urassa, P., et al. (2008). Qualitative Study on Maternal Referrals in Rural Tanzania: Decision Making and Acceptance of Referral Advice acceptance. *African journal of reproductive health*, 12(2), 120–131.
- Porter, G.(. (2011) 'I think a woman who travels a lot is befriending other men and that's why she travels': Mobility constraints and their implications for rural women and girl children in sub-Saharan Africa. *Gender, place and culture* 18 (1), 65-81. DOI: 10.1080/0966369X.2011.535304
- Razzak, J. a, & Kellermann, A. L. (2002). Emergency medical care in developing countries: is it worthwhile? *Bulletin of the World Health Organization*, 80(11), 900–5. Retrieved from http://www.pubmedcentral.nih.gov/articlerender.fcgi?artid=2567674&tool=pmc_entrez&rendertype=abstract
- Ronsmans, C., & Graham, W. J. (2006). Maternal mortality: who, when, where, and why. *Lancet*, 368(9542), 1189–200. doi:10.1016/S0140-6736(06)69380-X
- Sachs, J. D., McArthur, J. W., Schmidtraub, G., Kruk, M., Bahadur, C., Faye, M., Mccord, G., et al. (2004). Ending Africa's Poverty Trap. *The Brookings Institution*, (1), 117–216.

- Shehu, D., Ikeh, A., & Kuna, M. (1997). Mobilizing transport for obstetric emergencies in northwestern Nigeria. *International Journal of Gynecology and Obstetrics*, 59(2), 173–180.
- Shen, C., & Williamson, J. B. (1999). Maternal mortality, women's status, and economic dependency in less developed countries: a cross-national analysis. *Social Science & Medicine*, 49(2), 197–214. doi:10.1016/S0277-9536(99)00112-4
- Spangler, S. a. (2011). "To Open Oneself Is a Poor Woman's Trouble": Embodied Inequality and Childbirth in South-Central Tanzania. *Medical Anthropology Quarterly*, 25(4), 479–498. doi:10.1111/j.1548-1387.2011.01181.x
- Stekelenburg, J., Kyanamina, S., Mukelabai, M., Wolffers, I., & van Roosmalen, J. (2004). Waiting too long: low use of maternal health services in Kalabo, Zambia. *Tropical medicine & international health : TM & IH*, 9(3), 390–8. Retrieved from <http://www.ncbi.nlm.nih.gov/pubmed/14996369>
- Sub-Saharan Africa Transport Program. (2005). *Sub-Saharan Africa Transport Policy Program Annual Report* (pp. 1–64). doi:06/06/AR05
- Thaddeus, S., & Maine, D. (1994). Too far to Walk: maternal mortality in context. *Social Science & Medicine*, 38(8), 1091–1110.
- Transaid. (2008). *Zambia Bicycle Ambulance Project, Technical Case Study*. London. Retrieved from www.transaid.org
- U.N. (2012). *The Millennium Development Goals Report 2012*. New York.
- UNICEF. (2012a). *Zambia Fact Sheets: Maternal, Newborn and Child Health*. New York. Retrieved from http://www.unicef.org/zambia/5109_8457.html
- UNICEF. (2012b). *UNICEF Zambia Statistics*. New York. Retrieved from http://www.unicef.org/infobycountry/zambia_statistics.html#93
- United Nations Development Programme. (2011). *Human Development Report 2011 Sustainability and Equity: A Better Future for All*. Washington DC: United Nations Development Programme.
- United Nations Secretary-General. (2010). *Global strategy for women's and children's health*. *J Obstet Gynaecol Can*. New York: The Partnership for Maternal, Newborn and Child Health. Retrieved from http://jogc.ca/abstracts/full/201012_Guest-Editorial_1.pdf
- Washington DC: Central Intelligence Agency. (2009). *The World Factbook 2009*. Retrieved from <https://www.cia.gov/library/publications/the-world-factbook/index.html>
- Wayland, C., & Crowder, J. (2002). Disparate views of community in primary health care: understanding how perceptions influence success. *Medical Anthropology Quarterly*, 16(2), 230–47. Retrieved from <http://www.ncbi.nlm.nih.gov/pubmed/12087630>
- Wegs, C., Feyisetan, B., Alaii, J., Cheeba, P., & Mbewe, F. (2011). *Social and Behavior Change Communication to Address Family Planning Uptake in an Integrated Program in Zambia*. Washington, DC: C-Change/FHI 360.
- Wikimedia Commons. (2012). *Maternal Mortality Map*. Retrieved September 5, 2012, from http://en.wikipedia.org/wiki/File:Maternal_mortality_rate_worldwide.jpg
- World Health Organisation. (2012). *Trends in maternal mortality: 1990 to 2010*, WHO, UNICEF, UNFPA and The World Bank estimates. Geneva: Department of Reproductive Health and Research.

The Role of a Transport Union in Increasing Rural Women's Access to Emergency Maternal Care in Northern Nigeria

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Introduction¹

This paper looks at the experience of an emergency transport scheme (ETS) which was established to help save pregnant women's lives in three states in rural Northern Nigeria. The scheme is being implemented by a public-private partnership comprising a transport union, state and local governments, and local communities, with the support of a donor-funded health programme. The Emergency Transport Scheme was established in late 2009 with support from the UKAid and Norwegian Government-funded Programme for Reviving Routine Immunization in Northern Nigeria and the Maternal, Newborn and Child Health Initiative (PRRINN-MNCH)². The ETS, which is being implemented as one component of a comprehensive strategy to increase access to maternal, newborn and child health services, has been operational for two and a half years. In that time it has proved capable of filling a large gap in the health referral chain linking patients to the appropriate level of health care.

There is growing recognition in the international development sphere of the importance of addressing household and community level barriers ('demand-side' barriers) that prevent timely utilisation of health services and which negatively affect health outcomes in low-income country contexts (Ensor and Cooper, 2004). Among the range of demand-side barriers, physical access constraints such as long distances to health facilities, poor terrain and lack of transport options can play an important role in delaying or preventing the use of health services. Physical access barriers often work in tandem with concerns about the affordability of transport. They may also be integrally linked to barriers that derive from household or community preferences, attitudes and social norms. For example, in Muslim contexts restrictions on women's mobility or cultural constraints that prevent interaction

with males outside the immediate family may prevent women from using commonly available modes of transport, even in an emergency. Hence it is important to understand how physical access barriers manifest in particular social, cultural and economic contexts (Green, 2004; Babinaard and Roberts, 2006).

Despite the important relationship between physical access barriers and maternal health outcomes, the published literature on specific transport-related interventions is very limited. Much of the case study material that could potentially contribute to a better understanding of maternal health and transport linkages is only available as grey literature. A good deal of this material is not very detailed, and focuses rather narrowly on particular transport interventions without reference to the institutional arrangements that need to be in place for the schemes to work, and most of it focuses on relatively small-scale initiatives. Hence, this paper aims to add to the knowledge-base by giving a detailed overview of an emergency maternal health transport scheme which is being implemented in a particular socio-cultural, economic and institutional context. The paper explores: why an emergency transport scheme was needed in northern Nigeria; how it works; what it has achieved since its establishment; implementation challenges and how these have been addressed; the prospects for sustaining the ETS in the medium- to long-term; and the scope for scaling up the scheme in future.

Background

The PRRINN-MNCH-supported Emergency Transport Scheme was designed for implementation in three states of Northern Nigeria. These were Katsina and Zamfara in the North West and Yobe in the North East. The scheme was designed against a backdrop of extremely low utilisation of ma-

¹ This paper was first presented at the ASAUK biennial conference, Leeds, September 2012. We wish to thank two anonymous reviewers for their helpful comments.

² The programme is being implemented on behalf of the UK Department for International Development and State Department of the Norwegian Government by a partnership of organisations comprising Health Partners International, Save the Children UK and GRID Consulting Nigeria.

ternal health services. Not only was consumer confidence in the quality of health services in general very low, many women were staying away from health centres and hospitals in the event of a maternal emergency due to concerns about affordability, and because of the severe physical access barriers that made their journeys difficult and sometimes impossible. Partly as a result of these factors, and partly due to a range of service delivery failures, maternal and newborn health indicators in the implementation states remained stubbornly poor at a time when improvements were being seen in other low income countries. A study undertaken by PRRINN-MNCH in 2012 found a maternal mortality ratio of 1,271 maternal deaths per 100,000 live births (Doctor, Findley and Afenyadu, 2012). This can be compared to an MMR of 12 in the UK, 48 in Thailand, and 440 in Zambia (WHO, 2012). Hence women's lifetime risk of dying during pregnancy in the north of Nigeria is extremely high.

Qualitative baseline studies undertaken by PRRINN-MNCH during the programme's inception phase found widespread and deep-seated concerns at community level about the poor physical access to health facilities. Even communities that were connected to passable roads faced a range of transport-related challenges: delays associated with flagging down commercial drivers; the reluctance of some commercial drivers to transport seriously ill passengers; the high charges levied by some drivers who saw an opportunity in an emergency; and the lack of transport options and concerns about the lack of security when travelling at night. Even if a woman with a maternal complication reached a health facility, there was a strong prospect that she would be referred onwards. This often resulted in additional delays and additional costs to the woman's family.

Some communities faced special challenges: some because of their geographical isolation; others because of poor terrain, which reduced their connectivity; others still faced seasonal problems such as being cut off by fast-flowing rivers, or dirt tracks becoming impassable after heavy rain.

".. at certain times of the year you have to wait for the river to stop flowing before you can cross. If it is urgent to cross, you have to carry a woman on your shoulders or back. If the river is fast-flowing there are hefty men who help people cross the river.... We have had three instances in 2007 and 2008 when people were swept away. Once you have crossed the river, you need to hire a car or motorbike...." (Qualitative baseline survey respondent, Katsina) (Green, Abdulkadir and Wada, 2009).

Getting timely help in the event of a maternal emergency is vital. The estimated average interval between onset of an obstetric complication and death in the absence of medical intervention is just two hours in the case of a post-partum haemorrhage (bleeding after delivery), 12 hours for an antepartum haemorrhage (bleeding after 24 weeks of pregnancy and before delivery), and one day for a ruptured uterus. This meant that the widely available forms of transport such as oxen and carts and bicycles were usually too slow (and often too uncomfortable) to use. In too many instances, the lack of suitable transport options for transferring women with maternal complications had tragic consequences:

"There was a time when a woman in labour had delivered the head and the shoulders stuck, we did not have car to transport her from Tagadi to Gummi. She was mounted on a motorcycle, but the baby's head was crushed before they reached Gummi." (Qualitative baseline survey respondent, Zamfara) (Garba and Larai, 2009).

The capacity of the health system to respond to these physical access challenges was also very low. In all three states ambulance services were partial and severely under-funded. Although one of the states – Katsina – had initiated a mobile ambulance service, this scheme was operating on a relatively small-scale and could cover only a tiny proportion of the communities in the state.

Hence it was vital to identify a transport solution that was reliable; an option that was available '24/7'; which reduced transfer times; was affordable; and which was culturally appropriate in a Muslim Hausa context.³ In relation to the latter, restrictions on women's physical mobility and the enforcement of physical segregation of the sexes not only affected women's movement outside the family compound and their interaction with men from outside the immediate family, but sometimes also delayed the flow of information between spouses, or between a family and other community members who might be able to assist them in the event of an emergency. Moreover, decisions about moving a woman to a health facility for treatment could not be made without reference to a husband or another senior male member of the family, whose responsibility was to fund the transfer. This resulted in delays in decision-making, particularly in situations when men were absent from the community.

There were also concerns at community level about the high costs associated with dealing with a maternal complication. These were communities that were heavily reliant on subsistence farming, with some petty trade, and most people categorised themselves as poor or very poor.

A study into the financial burden of paying for emergency maternal health services implemented by PRRINN-MNCH and its state partners in 2009 found that, on average, households spent Naira 15,400 when seeking treatment for a maternal emergency (equivalent to £62).⁴ The average cost of a maternal complication, including transport costs, was more than the monthly income of 78 per cent of household heads in the three states. Hence 'fire sales' of vital assets, borrowing from relatives, friends and money-lenders, and diminishment of savings, all of which reduced the capacity of households to meet their day-to-day financial obligations, were common.

"My daughter-in-law...suffered a retained placenta.... Her husband wasn't around, or her father, so there was no-one to make the decision. We also had to wait for a car. We waited at the main

road and tried to negotiate for a driver. We had to pay the driver Naira 2000 to get to the hospital. When she got to the hospital the placenta was removed. She was given blood. It cost us Naira 8000. Just one pint of blood cost Naira 4500. Complications like this cost us a lot. You have to sell assets like a goat or your farm. The sales may all be for nothing because you may not be able to cover all the costs with what you have gathered." [Male respondent, Jidda, Mani LGA, Katsina] (Green, Abdulkadir and Wada, 2009).

Hence finding an emergency transport option that was affordable, and which reduced the overall cost of a maternal emergency was essential.

The Intervention

ETS Model

The ETS model supported by PRRINN-MNCH builds on an earlier pilot scheme implemented in Kebbi State in the early 1990s by the Sokoto research team from the Prevention of Maternal Mortality Network (PMM) (see Shehu et al, 1997), and on an adapted version of the Kebbi scheme implemented in Jigawa and Kano states under the UK Department for International Development-funded Partnership for Transforming Health Systems Programme (PATHS 1) between 2002 and 2008 (see Green et al, 2008). Lessons learned and good practices from these earlier initiatives helped to shape the current initiative.

The core ETS model utilises a locally-available mode of transport – passenger transport vehicles driven by commercial drivers, all of whom belong to the NURTW. Many rural communities in the three implementation states have at least one car and driver in their midst and those that do not tend to draw on the services of drivers in neighbouring communities. Some of the drivers own their vehicles; some hire them.

³ All three states have minority Fulani populations. Yobe also has a number of minority ethnic groups, including the Kanuri//Manga, Fulani, Karai-Karai, Bolewa, Ngizim and Bade.

⁴ There are 250 Naira to one UK pound.

When an emergency occurs, the ETS is activated. A trained ETS driver is notified by the woman's family or another member of the community such as a community health volunteer. The woman is carefully helped into the car and encouraged to sit or lie depending on what position is most comfortable. The driver leaves the community as soon as possible, taking both the woman and her carers to the nearest health facility that is equipped to deal with maternal emergencies. The drivers wait at the health facility for further instructions – which could be to transfer her onwards to another facility or to take her back to the community after treatment.

The cost of the transfer is kept to an absolute minimum; drivers are encouraged to seek recompense for the cost of the fuel only. In many cases, the family of the woman experiencing a complication pays for the fuel; in some cases, ETS drivers are reimbursed from emergency maternal health care savings schemes that have been established in the intervention communities. The importance of minimising costs to patients is emphasized in the driver training, and adherence to this principle is monitored by the NURTW.

The ETS is operational '24/7', with transfers taking place during the night if a woman experiences a complication at that time. The drivers are expected to keep fuel in the community at all times in order to reduce transfer delays. Drivers are given identification (in the form of t-shirts, identification cards, and car stickers) to assist their passage through road blocks or security check-points.

Both the community and NURTW officials are involved in the driver selection process. Four drivers, drawn from different sections of each community (north, south, east and west), are selected for participation in the scheme. This helps to ensure that everyone in the community can access a driver when required. In practice, however, drivers tend to substitute for each other if one or other driver is on a job that requires their absence overnight.

Once selected, the drivers are trained by a core group of trainers comprising NURTW

personnel from the local government NURTW branch and from the state NURTW office. The training introduces the drivers to the scale of the maternal health problem in their state and to the 'three delays' that prevent pregnant women from getting the care they need in a timely way: the delay in the decision to seek care; delay in getting to the health facility; and the delay in receiving care once at the health facility.⁵ The drivers learn about their critical role in reducing the second delay. They also learn how to lift and carry a woman with a complication in an appropriate way (from both medical and cultural perspectives) and the importance of treating the woman and her family with respect at all times. Other parts of the training focus on planned preventive maintenance of vehicles, road safety and keeping a record of transfers in a logbook.

Throughout the training significant emphasis is placed on the fact that this is a volunteer scheme and that the drivers will not receive any financial rewards, but will gain in other ways, for example via a sense of purpose derived from being able to provide a humanitarian service; respect from their families and the wider community; and spiritual reward. The Hausa slogan *ceton mai nakuda farilla* (saving women in labour is a religious obligation) is used to frame the discussions. A further incentive is offered by the NURTW in that ETS drivers can take their ETS logbooks to the motor-park and there they are authorised by the on-site NURTW officials to join the front of the queue of drivers waiting for work. ETS drivers may also be given lucrative jobs, such as transporting customers or goods to Lagos or Abuja.

NURTW officials from the local government branch of the union are involved in the process of selecting the ETS drivers. This process takes place at a community forum and the presence of the officials gives weight to the proceedings. NURTW officials from both the state and local government branches of the NURTW are involved in training the ETS drivers. The NURTW at different levels (branch offices, LGA offices, state offices) is also responsi-

⁵ The Three Delays Model was developed by the Columbia University School of Public Health (Maine *et al* 1997).

Box 1: Training of ETS Drivers: Messages on Volunteerism

People offer their services, time and money in volunteer capacity for services and projects in their communities. The driving force behind volunteerism for community services and projects is services to humanity and the desire to contribute to the development of the community. Financial reward is not expected in volunteerism. People do not volunteer because of the expectation of financial reward or reward in kind.

Volunteerism has its divine benefits. For example, one good turn deserves another; you help a woman today, someone else may help your sister, your wife or your mother needing an emergency.

Volunteerism could earn you community and society recognition.

Drivers participating in the ETS should not expect financial rewards from the Union or their Government Partner Organizations. They should also not expect to be paid by the communities or the families of pregnant women. The drivers will however be paid for the cost of the fuel by the community or the families of pregnant women.

Volunteering in the ETS is honourable because it is contributing to saving lives. Volunteer drivers are expected to have the following special qualities: they are concerned with preserving life; kind; patient; considerate; and not given to exploitation.

ble for collating data on ETS transfers, and for reporting these figures "up the system". Lastly, NURTW officials are expected to provide monitoring and coaching support to the ETS drivers during intermittent visits to participating communities. These four roles: inputs to driver selection; training of drivers; provision of monitoring and coaching support; and data collection and reporting are all fundamentally important to building institutional ownership of the scheme.

In practice, different variants of the ETS model exist in different localities. For instance, in a few communities that cannot be reached by car, motorbike riders from the Amalgamated Commercial Motorbike Riders Association of Nigeria (ACOMORON), which is constitutionally under the NURTW (although the ties between the two unions are very loose in Northern Nigeria), were selected as ETS drivers in place of NURTW car drivers. Although this mode of transport is not appropriate for all types of transfers, some women with a complication can be transferred in this way and hence a decision was made to make the best of what was available in the absence of other options. In some instances, motorbike ETS riders transfer women part of the way to the health facility and then transfer the woman to an ETS car driver.

A further variant of the core model is a rapid awareness-raising initiative targeted at drivers in motorparks. This clarifies the aims of the ETS and emphasizes the role that drivers can play in assisting women with a complication. This initiative was introduced as a way of extending the reach of the ETS to areas outside the intervention communities. Although it is not possible to measure accurately the impact of this subsidiary ETS scheme, the modest investments involved represent good value for money if a single maternal death is averted.

ETS in Wider Context

Rather than being a stand-alone initiative, the ETS is part of a comprehensive 'Increasing Access' strategy which is being implemented by PRRINN-MNCH and its partners in an effort to tackle the range of barriers at household and community level that are contributing to the delays in utilisation of maternal health services. The core components of the strategy are:

- A community mobilisation process which is designed to promote community-wide shared responsibility for the health of women and children, and which is facilitated by community health volunteers trained by the programme;
- The establishment of community

emergency response systems to address the key barriers that are preventing timely use of maternal health services (ETS is one of these systems);

- The establishment of other community support structures such as facility health committees which are responsible for channelling community voices on health issues and demanding accountability for service delivery failures;
- A community monitoring system which allows communities to track their own progress in reducing the maternal and new-born health burden;
- A system for coaching and mentoring the volunteers so that they maintain their knowledge, skills and motivation;
- In selected sites, a community-based service delivery initiative which is bringing health services 'to the doorstep.'

The different components of the Increasing Access strategy are illustrated in Figure 1 below

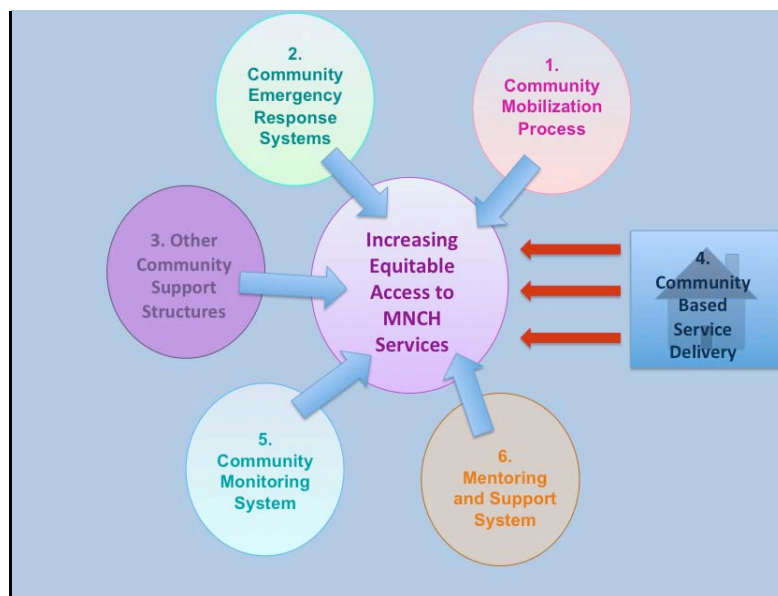


Figure 1: Six Components of the Increasing Access Strategy

At community level, emergency savings schemes, a system of mothers' helpers, and community blood donor groups have been established alongside the ETS. Together these schemes comprise the community emergency response systems component of the Increasing Access strategy.

The different components of the Increasing Access strategy are synergistic – they support and depend on each other to achieve the desired outcomes. For instance, it is highly unlikely that the community would

be receptive to the ETS in the absence of the community mobilisation process. At best, the ETS would be utilised only by those known to the ETS drivers, leaving many women uncatered for. The community volunteers make sure that everyone in the community knows about the ETS, knows who the drivers are and how to contact them, and are therefore essential to building trust in the scheme. In addition, because the majority of community members have participated in community discussion groups about the maternal health problems facing the community and how these can be addressed, they understand the need to act quickly as soon as a maternal complication presents itself – and are therefore more likely to send for an ETS driver. Second, the mentoring and coaching support system is crucial to maintaining driver motivation. Receiving an occasional visit from officials from outside the community is highly motivating and often enough for drivers to know that their work

is respected and valued. Third, the ETS and other systems established by the community to tackle the maternal health problem are supported and facilitated by the local Facility Health Committee whose role is to help trouble-shoot implementation problems. Fourth, the community monitoring system is essential to tracking performance with the ETS. Without this data communities cannot easily see what they have achieved over time – and convincing others of the scheme's efficacy is much more challenging.

The embeddedness of the ETS within a broad, multi-component Increasing Access strategy is a key feature of the scheme, and has important implications for both its sustainability and the speed at which the scheme can be successfully scaled up.

Results and Achievements

As of August 2012, the ETS was being implemented in 747 intervention sites in 44 Local Government Authorities (LGAs) in three states. The population of these communities was 1.6 million. These were

sites that had received a comprehensive package of support from PRRINN-MNCH and which were implementing at least five components of the Increasing Access strategy.⁶ In addition to supporting their own communities, the community volunteers in these sites were encouraged to roll out their activities to as many neighbouring communities as possible. This local dissemination effort resulted in the inclusion of a further 1,717 communities in the Increasing Access initiative. Some of these 'community engagement light communities' established their own ETS, while others utilised the ETS drivers in the original sites. Hence by August 2012 the population covered by ETS was an estimated 4.4 million. ETS drivers have also been known to help pregnant women in neighbouring LGAs or states, especially during market days. Still others have been known to transport women with complications to neighbouring states if their relatives prefer a health facility there. For example, in Yobe state ETS drivers in Baure LGA sometimes take patients to health facilities in the neighbouring Jigawa state.

In terms of the scale of work, in the PMM-supported research initiative in Kebbi state community-level ETS activities were piloted in a single LGA (Maiyama), while in the PATHS 1 programme, ETS was functional in just under 200 communities in two states by the time the programme ended in 2008, although there were plans for further scale-up. Hence the scale of the ETS initiative within the PRRINN-MNCH programme is many times greater than the two earlier initiatives. However, it is important to remember that without the experience gained from these two earlier initiatives, the current ETS scheme would not be functioning on anything like the scale it is at present.

As expected, the arrival of the ETS marked a shift in preferences for different types of transport when dealing with medical emergencies, with far less emphasis on slower or less reliable forms of transport. For example, before the ETS was introduced, 20 per cent of respondents said

that they walked and 33 per cent said that used public transport when transferring a woman with a complication to a health facility. By January 2011 when an end-line Knowledge, Attitudes and Practices (KAP) survey was implemented, this had changed to 4 per cent and 9 per cent respectively (PRRINN-MNCH 2011b).

"There are rural communities around Yardaje that were using ox and cart to transport women with a maternal emergency to a health facility because community members could not afford to hire vehicles. In the process, many lives were lost. Now with the ETS drivers in place they travel to rural communities around and transport women in need with minimal payment the community can afford." [Village Head, Yadaje, Zango LGA, Katsina State]

Health Impacts

Between January 2010, when the ETS was established, and August 2012, 7,526 ETS transfers were recorded by the community monitoring system in the intervention sites. This is equivalent to 7,526 potential maternal deaths averted. This figure averages out at 235 ETS beneficiaries per month over the 32 months of implementation (Figure 2).

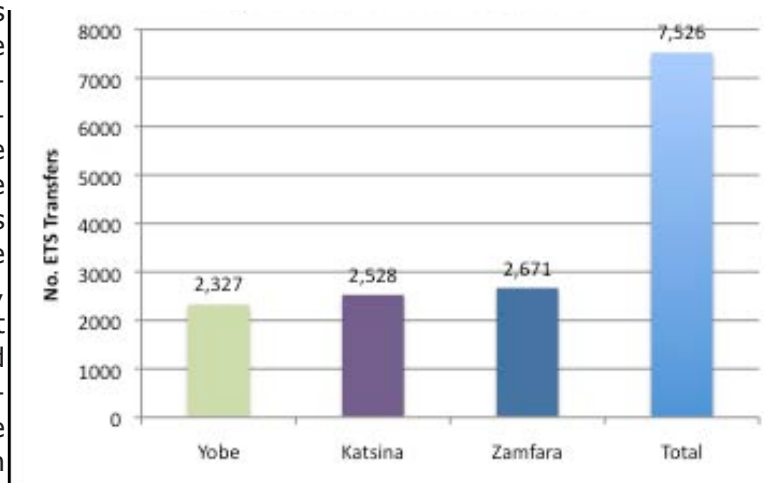


Figure 2: ETS Transfers, Katsina, Zamfara and Yobe January 2010 to August 2012

It is important to determine, however, whether the same number of women would have travelled to a health facility for treatment in the event of a maternal

⁶ At this time only a small number of sites were implementing the door step health services component.

complication before the ETS was set up. The KAP baseline survey implemented in late 2009 identified that, across the three implementation states, 47 per cent of reported complications were transferred to a health facility, compared to 94 per cent by the time of the end-line survey (Table 1). The biggest increase in transfers was in Zamfara where transfers increased from 21 to 86 per cent. These results indicate that, in the absence of the ETS, far fewer women would have been transferred for treatment. On this basis alone, the scheme can be said to have been hugely successful. However, it is also important to

note that, before the ETS, the women who were transferred to a health facility relied on slower forms of transport, with important implications for the eventual health outcomes (PRRINN-MNCH 2011b). A review of the ETS scheme carried out in May 2012 gathered case study material from families who had benefitted from the scheme. A selection of these stories can be found in Box 2 below. These stories are potent reminders of just how important the ETS scheme is to poor people in rural areas who lack the means to respond to health emergencies.

	Zamfara %		Yobe %		Katsina %		Average %	
	Baseline	Endline	Baseline	Endline	Baseline	Endline	Baseline	Endline
Health facility attendance	21	86	49	100	72	96	47	94

Table 1: Health Facility Attendance by Women with Reported Maternal Complications in Three State at Baseline and Endline KAP Surveys

Box 2: ETS Beneficiaries – Their Stories⁷

Case Study 1: Zamfara State
 “My wife was sick. Her problem was that she was pregnant and was very weak, she couldn’t even walk. I went to inform the chair of the community volunteers. He came with me to my house, looked at my wife and said she should be taken to hospital. He called one of the trained bike riders, Lawan, and he came. Lawan is also my neighbour; he lives next to my house. It took him not more than five minutes to pick up my wife. All of this happened at midnight...He took her to Bugundu General Hospital; the examination took twenty minutes and they said she needed blood...They gave her four pints of blood after which she went into labour and delivered a dead baby. She spent one week in the hospital... I paid Naira 16,500 for everything; I gave the bike rider Naira 400 but he accepted only Naira 100. The bike rider left us after we confirmed that my wife was going to be admitted; that was at 2am. The ETS drivers respond quickly as soon as they see there is problem and for us this is the reason for fewer deaths in the community.” [Husband of ETS Beneficiary, Bugundu LGA, Zamfara State]

Case Study 2: Katsina State
 “At 10pm last Saturday, labour pains started. We waited until 9am the following morning, but she [his wife Khadijat] was still in pain. We then took a decision that we should go to the hospital...I went to talk to the ETS driver. I explained to him what was happening and he said we should go. Both of us got into his car immediately, went to pick up my wife and transported her to Baure General Hospital...She came out of the vehicle and the health workers immediately took her to the labour ward.....The health workers then came out to say that she had delivered....The driver was Alhaji Sani, one of the ETS drivers...I gave him Naira 500 when we returned from the hospital, but he said no he won’t collect the money.” [Husband of ETS Beneficiary, Zango LGA, Katsina State]

Case Study 3: Yobe State
 “In Kurnawa community, there was a time an ETS driver loaded passengers and goods and was heading to the market. His attention was called to help a woman with prolonged

⁷ The case study material in this box and elsewhere in this paper is from Abdulrahman and Soyoola (2012) unless otherwise stated.

labour. He excused the passengers and said to them, this is his special assignment. He then offloaded the passengers. He travelled back to the community and immediately put on his Haihuwa Lafiya cap [hat for ETS drivers] and his t-shirt and rushed her to the hospital within 30-40 minutes. The woman delivered with the assistance that she got in the facility." [Local government Officer, Busari LGA, Yobe State]

Case Study 4: Katsina State

"Marariya Isa delivered at home and had a retained placenta: the husband was away from home. The Chairman of the community volunteers was informed and he facilitated taking the woman to hospital. The Chairman called an ETS driver and community volunteers accompanied the woman to Daura General Hospital. This was the first beneficiary of the ETS work." [Village Head, Yardaje, Katsina State]

ETS driver in Yobe State argued:

Equitable Access to the Scheme

Between January 2010 and August 2012, 97 per cent of all reported maternal complications in the three implementation states benefitted from the ETS. These results indicate that not only is ETS in high demand, but that the majority of women who need the scheme are benefitting from it.

The key caveat here, however, is that if either women or their families are excluded from the mainstream of the community, their plight is likely to go unreported. This is especially important in a context where it has been established that a minority (20 per cent) of women experience 80 per cent of the child deaths (and most likely a disproportionate number of the maternal deaths) (PRRINN-MNCH, 2011a). This fact has changed the way PRRINN-MNCH and its partners are working, in that far more emphasis is being placed on the need to reach and support the least-supported (defined in the programme intervention sites as women who perceive that they lack the respect and support of their husbands, families and the wider community) within all components of the Increasing Access strategy than was previously the case. A future survey or evaluation process could usefully assess the social and other characteristics of those who use and those who do not use the ETS. This would help establish the actions required to ensure access for all.

There are many examples of how a concern for the excluded and unsupported is beginning to play out in practice at community level. One community member in Zamfara argued: "Everyone gets the ETS services regardless of any factor", while an

"Whoever resides in this community must be related to someone. That is the line of ETS support. If it is the poorest we know them so we use whatever we have to help. If there are people who need support we know them...the husbands don't have even breakfast to feed his family.... After farming we take food to them. Since we are supporting the husband we have to support the wife.... I carried one such woman, the husband called me it was in the afternoon and I helped." [ETS Driver, Bursari LGA, Yobe State]

Some of the intervention communities are actively assisting people from neighbouring Fulani communities, which have traditionally been marginalised from mainstream communal life, in a way that was not apparent before the programme:

"Last year, one Fulani man and his wife came here to stay during the dry season and if not because of the group the woman would have been dead... The problem was prolonged labour. The family are poor with no relatives in the community. They cannot pay for the transport or medical bills. This was known to all in the community. The community volunteers supported the family. The family were assisted with funds from the community savings and an ETS driver transported the woman to the health facility." [Interview with community member, Bursari LGA, Yobe State]

These examples suggest that social capital has been strengthened in the intervention sites. They also suggest a commitment to ensuring that everybody, whatever their

situation, is able to access the ETS. Interestingly, in some communities the ETS is beginning to be perceived as being “for the poor”, since higher status individuals are more likely to choose alternative ways to deal with a maternal emergency.

Other Impacts

Reduction in Maternal Delays

When the ETS scheme was first established, the idea was that it would provide a means to address the second maternal delay: the delay in getting to the health facility once a complication has been identified. In practice, the scheme has helped to reduce the two other delays in interesting ways. The first delay is the delay in making a decision to seek care. As the quotation below illustrates, some ETS drivers have stepped in when families have been unable or unwilling to act quickly:

“The husband was around but insisted that she would deliver at home, claiming that it is normal to pass through the stage she was in that period. She was in labour for two days and on the second day the health provider advised that she needed to be referred to the hospital. We took the woman despite the refusal of the husband.” [ETS Driver, Bursari LGA, Yobe State]

Box 3: Alhaji Bukar’s Story

This story was recounted by Alhaji Bukar and a fellow ETS driver. Both drivers are based in Busari LGA in Yobe State.

ETS Driver

“.....one day a Fulani man came to this community and was looking for vehicle to hire and take a woman to the hospital. I said to him, I am a trained ETS driver with no vehicle now but I called Alhaji Bukar who did the transfer to hospital”

Alhaji Bukar

“Yes, I transported her to the hospital. I collected a card and took her to the labour ward. I claimed to be her husband and I was asked to buy two hand gloves. After some few minutes the provider came out and said to me she had delivered, that I should give them something to ‘wash their hands’. The husband brought out Naira 1, 000. I told him that was too much and he said they have tried to save the life of his wife and the newborn. I said yes but he should give them Naira 200. Finally we agreed to give Naira 500.”

posed to a “family problem”. In the past, a husband’s right to decide what would happen to his wife was paramount; this is now being challenged by concerns about woman’s right to survive pregnancy.

The third delay is the delay in getting appropriate care once at the health facility. Even with this delay, some of the ETS drivers have made a difference by helping to facilitate women’s access to treatment and by guiding and advising their husbands and carers so that they are able to find their way around a hospital (which to many is unfamiliar territory), and can adhere to hospital ‘protocol’. In addition, community members tend to see ETS drivers as “exposed” and familiar with the hospital environment, which, for some, reduces their anxiety about going to the hospital (Box 3).

Other ETS drivers go beyond the call of duty by supporting the women they carry financially. For example, one driver in Yobe State reported that:

“We use our money to buy drugs for the women we transport.”

Not only are actions like this helping to address one of the critical maternal delays, they are also helping to re-cast maternal deaths as a “community problem” as op-

Reduction in Transport Costs

The ETS scheme, in conjunction with the community emergency savings schemes, has helped to reduce the financial bur-

den associated with dealing with maternal emergencies. In the past, community members often paid extortionate sums of money to use a taxi in the event of maternal complication. The requirement for large sums of money usually meant that husbands and other family members had to go door-to-door to raise funds before an attempt was made to flag down a car, which resulted in additional delays in transferring women to the health facility. In theory the cost of an ETS transfer equates to the cost of the petrol used, but in practice, many ETS drivers waive these payments, thereby using their own cash to subsidise other members of the community (Box 4). An assessment of the cost of transport to the local emergency obstetric care health facility, before and after the introduction of the ETS in 39 intervention communities in Yobe State, found cost reductions ranging from 22% to 80%, with the average reduction equivalent to 49% of the original cost (PRRINN-MNCH, 2012b).

antees (as far as possible) that a driver will be reimbursed; and it does away with the need for families to search for funds before they set out to the health facility, thereby reducing transfer delays.

Strengthening of Social Capital

The ETS scheme and other components of the Increasing Access strategy are helping to strengthen social capital in the intervention communities. What were once seen as individual or family problems are now being conceptualised as “community problems”. This is evident in the way that some ETS drivers and community volunteers are willing to challenge husbands who disapprove of their wife being taken to a health facility.

“Before the programme, if for example our wife is sick, it would be your own personal problem. But now such cases are viewed as a whole community problem.” [Community member, Busari LGA, Yobe State]

Box 4: Transfers to Health Facilities Are More Affordable

- “There was a recent ETS case where a driver transported a pregnant woman first to the facility in the village and then to a bigger facility in Gusau. The woman was in her eighth month of pregnancy and was bleeding. The woman spent a couple of days in Gusau and the same driver was asked to transport her back to the village. The family offered the driver Naira 2,500, but he refused to accept the money.” [community member, Maru LGA, Zamfara State]
- “Usually before one can pay as much as Naira 4,000 to Gashua, but now Naira 1,000 is charged for the same travel.” [Traditional Leader, Bursari LGA, Yobe State]
- “Everyone knows that Naira 500 is the cost to be paid to use the ETS and that is cheap compared to other drivers that one can pay an average of Naira 2,000 to.” [Female community volunteers, Zango LGA, Katsina State.]
- “Before the ETS scheme the drivers would request money before transporting a woman. With the ETS scheme even with Naira 500 for fuel the drivers will accept to transport women.” [Community volunteers, Bursari LGA, Yobe State.]
- “I went to Alhaji Bukar and gave him Naira 2,000. He accepted and thanked me.... If such things happened before the ETS, we would have been in trouble. We were living in darkness. Then we would have hired a vehicle and also bargained. It would have cost at least Naira 10,000.” [ETS Beneficiary, Yobe State].

In many of the intervention sites, the community emergency savings schemes and ETS scheme are working effectively together, with the former used to reimburse families the cost of fuel. This system works well for two key reasons: it guar-

Embeddedness of ETS

At community level it is widely perceived that the ETS scheme is integrally linked to, and to a large extent dependent on, the effective functioning of a series of other

emergency maternal care activities and processes at community level. As previously mentioned, the ETS is integrally linked to the community emergency maternal care savings schemes in that the emergency savings are used to reimburse the drivers. However, the community volunteers who facilitate the community mobilisation process also help to sustain the ETS by linking patients with drivers and ensuring that everyone in the community knows about the scheme, how it works and who the drivers are:

"The ETS drivers need the support of the community volunteers; drivers are always on move and families rely on the community volunteers to get the ETS drivers when they are not around." [Traditional Leader, Bursari LGA, Yobe State]

The potential that utilisation of the ETS could fall if the community volunteers stopped their activities was voiced by some respondents in the ETS review:

"Without community mobilisation ETS usage will be limited because few people will know of their existence." [Traditional Leader, Bungudu LGA, Zamfara State]

"There could be problems with the ETS if people are not mobilised around MNCH. At the start, people are few, you don't get much co-operation and you don't feel secure. But if you know lots of people around you are doing the same thing, you feel confident because you know you will get help quickly. For example, in the case of a man's wife who was sick, he went to the chairman of the community volunteers because he knew he was involved and could call other people who will quickly help and this includes the ETS drivers." [Community member, Bugundu LGA, Zamfara State]

However, in a few intervention sites, community members once mobilised are taking it upon themselves to track down ETS drivers when needed. In these sites, ongoing reliance on the community volunteers to facilitate access to the drivers is less evident.

A further example of the linkages between the ETS and other parts of the Increasing Access strategy is that the female community volunteers often accompany women with complications to the health facility in the event of an ETS transfer, playing the role of a 'mother's helper.' This demonstrates that in practice communities are co-operating as members of a 'community health team' rather than acting alone.

Challenges

Failure to Activate ETS

Along with the many achievements of the ETS scheme, there have also been considerable challenges, and also examples of how things can go wrong. The ETS review identified a few instances where community members had failed to activate the ETS system for one reason or another. For example, a community volunteer in Zango LGA in Katsina state had approached an ETS driver in his community after finding out that his pregnant wife was bleeding profusely. He was told: "I should just get one of the commercial drivers around." His wife went on to lose her baby. It is not known whether the driver's refusal to assist contributed to this outcome. It is vital that every example of where the ETS has failed is reported to the NURTW branch and jointly reviewed by NURTW officials, the Facility Health Committees, community volunteers and ETS drivers, so that similar negative outcomes are avoided in future.

Insecurity

Other failures can be attributed to external factors, such as the growing insecurity in the north of Nigeria and in Yobe State in particular. Anecdotal feedback from the intervention sites suggests that in the first half of 2012 one woman died in an ETS vehicle that had been held up at a security checkpoint in Yobe. Although the details of this case need to be verified, it is a reminder of the need to ensure that the emergency transport role of the ETS vehicles is recognised by the federal armed forces that have been drafted in to deal with the security problems. This is an instance where donor assistance may be needed.

NURTW Ownership

The main challenge facing the ETS scheme in the PRRINN-MNCH supported intervention sites is the lack of integration of the scheme in the day-to-day activities of the NURTW in selected LGAs. While ownership of the ETS is strong in some areas, and there are some very committed officials who visit the intervention communities to give encouragement to the ETS drivers, in other areas the scheme is functioning more or less independently of the NURTW branches. This is partly to do with issues relating to staff turnover, and a resultant loss of institutional memory about the initiative, and partly to do with a lack of incentives at LGA level to share results with NURTW offices at state and federal level. Indeed, few of the branches visited during the ETS review could produce any data on ETS activity in their area. In addition, many LGA NURTW officials are not making regular coaching and mentoring support visits to the intervention sites to see first hand how the scheme is performing. This, too, needs to be addressed since these interactions are essential to the future sustainability of the scheme.

Threat of Contamination

There is considerable interest internationally in developing a greater understanding of incentives in the health sector and how these can contribute to the achievement of health targets and goals. To this end, PRRINN-MNCH is implementing a McArthur-funded initiative which is testing different payment models for emergency transport schemes in some of its intervention sites. However, there are already worrying signs that the well-intentioned desire to undertake globally-focused research on incentives may be jeopardising the voluntary ethos of the ETS in some areas. In some intervention sites discussions about and actual provision of driver incentives as part of the McArthur-funded project are beginning to change driver attitudes, and there is a risk that the project may impact negatively on the sense of volunteer spirit that is intrinsic to the ETS approach. One LGA Chairman in Yobe State argued:

“There has never been a complaint from the drivers, but [at] the recent meeting we went to the drivers said people in Geidam are getting incen-

tives, so this is the start.” [LGA Chairman, Bursari LGA, Yobe State]

This is an example of how different strands of work within a single programme can unintentionally work against each other.

Data Collection and Reporting

One of the challenges reported by the Sokoto PMM team in their ETS research in Kebbi State in the early 1990s was the poor record keeping by ETS drivers. The main reason for this was that many of the drivers were illiterate. This remains a problem in the PRRINN-MNCH intervention sites, and partly explains why drivers are not passing records of their transfers on to the NURTW offices. However, the programme has found a way to address this. The community monitoring system established in each of the intervention sites captures data on ETS transfers. Hence information on the performance of the ETS is available at community level. These records are kept by community volunteers who can read and write. The challenge is to find a way to ensure that these data reach the NURTW branches. If the incentives for sharing the data with the NURTW LGA branches were stronger, it is likely that the drivers would produce it. Knowing that the branches use the data to track performance would most likely be the biggest incentive, especially if it led to recognition of the work of high performing drivers.

Linkage Between Unions

A further challenge facing the scheme is the absence of a formal agreement between the two unions involved in the ETS. As mentioned previously, although ACORMORON is constitutionally under the management of NURTW, the tie is very loose in Northern Nigeria and the two bodies tend to operate as different organs. Although the ACORMORON motorbike riders are trained by NURTW officials at the same time as the car drivers, officials from the motorbike union are not visible in the initiative. This may be due to the assumption that motorbikes are not the most appropriate form of transport for women suffering a maternal complication and hence a desire to downplay the role of these drivers. However, in practice the motorbike riders fill an important gap in emergency transport provision in sites that are not

accessible by cars. These riders also have a role to play in notifying ETS car drivers that they are needed, should the latter be absent from the community when needed. Hence it will be important to encourage the involvement of ACORMORON in leading and supporting this scheme in future.

Prospects for Sustainability

The ETS initiative has excellent prospects for being sustained at community level once PRRINN-MNCH withdraws. The scheme is well-known at community level. For instance, the end-line KAP survey implemented in some of the first phase implementation sites in January 2011 found that 81 per cent of respondents were aware of the ETS scheme. In addition, 75 per cent of end-line survey respondents knew of someone who had benefited from the ETS scheme (PRRINN-MNCH, 2011b). A high level of community support for the scheme is also evident, with widespread recognition of the scheme's value, its role in saving lives, and its reliability as a safety net for pregnant women:

"Now families take their sick ones to the hospital because they have structures in the community they can rely on." [Community member, Yobe State]

Many of the drivers have maintained their interest in participating in the scheme over time since they can see first-hand that it makes a difference. The linking of commu-

nity service to the fulfilment of religious obligation is a very significant driver behind the scheme's success.

ETS driver retention rates have remained high since the start of implementation. Although a small number of drivers dropped out after the initial training, once it became clear that there would be no monetary reward for their efforts, these were isolated cases. The recent review of the ETS scheme identified considerable enthusiasm for the scheme among ETS drivers who had been involved in the scheme since its inception (see Box 5).

Common factors that appear to motivate the ETS drivers are:

- The links being made between community service and fulfilment of religious obligations;
- Perceptions of the inter-connectedness of communities – "we are all family";
- Receiving thanks and prayers from beneficiaries;
- Being respected by the community;
- Having a good and respectful relationship with health providers;
- Interest in the scheme from "outsiders" e.g. programme staff, NURTW officials, local government officials.

Financial reward is not among the factors deemed critical to the maintenance of

Box 5: ETS Drivers – Highly Motivated and Committed

- "Usually the drivers do the work and do not expect any form of payment from the beneficiary."
- "What we enjoy most is for families to come to us and ask for help. We thank the Almighty for that."
- "The community show their appreciation whenever we help patients and they also pray for us: these really encourage us."
- "Whoever you assist in this community is related to you in a way. The person may be your sister, mother, daughter..."
- "The health providers relate with us very well. They respect us."
- "I believe that since I am helping people, God will reward me."
- "We are motivated to help women because we are aware that people who are not of the same faith and culture are using their resources to help us. We feel it is our obligation also to help with our time and energy even if no money is available."

driver interest and motivation. This is an interesting finding at a time when current thinking within the international development sector gives precedence to financial over other forms of incentives as a stimulus to change. This finding is also highly significant in that the Nigerian Federal Ministry of Health is currently considering the most appropriate ways to intervene in order to create demand for essential health services. Some of these discussions are focusing on the provision of financial rewards for community health volunteers.

Despite their apparent lack of concern for financial reward, some ETS drivers do benefit materially from their activities, as the quotation below indicates:

“Our practice in this community is to ensure that goods we are taking to the market are transported by the ETS drivers only.” [Traditional Leader, Busari LGA, Yobe State]

Interestingly, none of the drivers interviewed in the ETS review mentioned being placed in the front of the queue at the NURTW motorpark as a major incentive. Further work is needed to determine whether or not this incentive is working and adds value to the ETS scheme.

From the perspective of financial sustainability, the cost of establishing ETS in a single community is approximately Naira 18,000 (£73). This figure, which covers the cost of training the ETS drivers, is modest considering the health and other benefits to poor rural communities. However, this paper has argued that it will be difficult for ETS to function effectively in the absence of a community mobilisation process and other components of the Increasing Access strategy. Based on PRRINN-MNCH's experience so far, the cost of implementing both the community mobilisation process and the ETS scheme in a single community is Naira 85,000 (£340). This sum is still low considering the very substantial benefits to be derived from the investment. Despite the fact that state health budgets are very stretched, this investment should be affordable to government.

The biggest threats to the sustainability of the ETS initiative are the gap in insti-

tutional ownership of the scheme by the NURTW and the lack of clarity about how the partnership between the NURTW and government at different levels should work in practice. Although both parties recognise and value the role of the other, formal mechanisms that would concretise the partnership have not been established in all three states. Important steps were recently taken to address this issue. A Memorandum of Understanding (MOU) has been signed by the Federal NURTW, Ministry of Health and PRRINN-MNCH regarding the future development of ETS. The MOU aims to strengthen the role of the NURTW in delivering ETS nationally. It also commits the NURTW at the federal level to ensuring that all PRRINN-MNCH states report formally on ETS performance. As part of the MOU process, the NURTW national office has agreed to establish a National Planning Team for ETS. A priority for PRRINN-MNCH is to support this team to become established and build its capacity to play a vital leadership role in relation to the ETS, but also to build a meaningful partnership with government.

Conclusion

The experience in the three states supported by PRRINN-MNCH is that very severe physical access barriers can be successfully addressed with a relatively modest financial investment, and a large amount of goodwill from host communities. In 32 months of implementation, ETS drivers have transferred 7,526 women experiencing a maternal complication to a health facility, thereby increasing their chance of survival.

In a country where the population comprises over 170 million persons, the ETS as a life-saving transport initiative has the potential to save literally hundreds of thousands of lives. The key question, therefore, is not whether the initiative should be scaled up, but when and how quickly. In this paper we have argued that ETS will not work as a stand-alone scheme at community level. To be effective, ETS requires a community that has been mobilised on maternal and newborn health issues and a 'community health team' to promote and support the scheme. Hence scaling-up discussions need to begin with a strategy for

increasing access to and use of emergency and other MNCH services and conceptualise ETS as just one part of this broader strategy. Despite the pressure within the development sphere to find 'magic bullets' that can solve key problems, the truth of the matter is that finding effective, equitable and sustainable solutions to complex development problems may take time and solutions are not always reducible to single interventions.

Vitally important to the future sustainability of the ETS will be to strengthen the linkages between the different actors within the public-private partnership, particularly the relationship between government and NURTW. The compilation of a national and state maternal transport policy in which ETS is presented as an essential component of an emergency referral chain would provide a clear policy and institutional framework for this partnership to thrive.

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References:

Abdulrahman, I., and Soyoola, M., 2012, 'Review of ETS Scheme: Field Notes', produced on behalf of the PRRINN-MNCH programme, May (unpublished)

Babinard, J., and Roberts, 2006, Maternal and Child Mortality Development Goals: What Can The Transport Sector Do?, Washington DC: World Bank

Doctor, H., Findley, S., and Afenyadu, G., 2012, 'Estimating Maternal Mortality Level in Rural Northern Nigeria by the Sisterhood Method', International Journal of Population Research, Volume 2012, Article ID 464657

Ensor, T., and Cooper, S., 2004, 'Overcoming Barriers to Health Service Access: Influencing the Demand Side', Health Policy and Planning, 19 (2): 69-79

Garba, A.G., and Larai, K.U., 2009, 'Report of a Rapid Demand Side Assessment of Barriers to Use of MNCH Services and Care, Zamfara State, Nigeria', Prepared on Behalf of the Programme for Reviving Routine Immunization in Northern Nigeria and the Maternal, Newborn and Child Health Initiative, April

Green, C., 2004, 'Increasing Access to Maternal Health Services: Lessons Learned From Nigeria, Sub-Saharan Africa, and Elsewhere: Paper Prepared for a Safe Motherhood Roundtable, July 2004', produced on behalf of the Partnership for Transforming Health Systems Programme (unpublished)

Green, C., Abdulkadir, F., Wada, U.F., 2009, 'Report of a Rapid Demand Side Assessment of Barriers to Use of MNCH Services and Care, Katsina State, Nigeria', Prepared on Behalf of the Programme for Reviving Routine Immunization in Northern Nigeria and the Maternal, Newborn and Child Health Initiative, January

Green, C., Hughes, C., Soyoola, M., and Thomas, D., 2008, PATHS Technical Brief, Increasing Access to Safe Motherhood Services: Kano, Partnership for Transforming Health Systems Programme

Maine, D., et al, 1997, The Design and Evaluation of Maternal Mortality Programs, Center for Population and Family Health, School of Public Health, Columbia University

National Planning Commission and Macro International, 2009, Nigeria Demographic and Health Survey 2008, Abuja: National Planning Commission, Federal Republic of Nigeria and Calverton, Maryland, USA: ICF Macro

PRRINN-MNCH, 2009, 'Financial Burden of Emergency Maternal Health Care Survey', Kano: PRRINN-MNCH (unpublished)

PRRINN-MNCH, 2011a, Policy Brief: Adjusting Health Strategies to Include Women and Children With Least Social Support, Klouda, T., Adamu, F., with Green, C., Kano: PRRINN-MNCH

PRRINN-MNCH, 2011b, Engaging With Communities to Increase Demand for MNCH Services: Summary of Results From the Endline MNCH KAP Survey in Katsina, Yobe and Zamfara States, written by Cathy Green, November

PRRINN-MNCH, 2012a, Mid-term Household Survey Results, Kano: Unpublished

PRRINN-MNCH, 2012b, 'Emergency Transport Scheme Data Before and After ETS: Yobe State', Unpublished

Shehu, D., Ikeh, A.T., Kuna, M.J., 1997, 'Mobilizing Transport for Obstetric Emergencies in North Western Nigeria', International Journal of Gynecology and Obstetrics, 59 Supplement 2: S173:S180

WHO, 2012, Trends in Maternal Mortality: 1990 to 2010, Geneva: World Health Organisation

Social Identity, Citizen Voice and Rural Access in Uganda

Nite Tanzarn

Introduction

Access which refers to the physical proximity or ability and ease of reaching desired locational destinations [Bryceson et al. 2003] is fundamental to economic, social and civic activity. Accessibility is important because it enables the citizenry to exercise their right to freedom of movement; facilitating access to people, places and new opportunities. The paper looks at accessibility in its entirety and how this defines citizens' mobility in terms of who travels, when, why, the means of transport, the distances travelled and the location of the spaces frequented. Social identity defines citizens' voice and their ability to exercise agency to demand their rights to access quality services and hold public bodies to account. Some identities are systematically disadvantaged or discriminated against on account of inter alia their sex, age, ethnic origin, religion, sexual orientation, disability, health/HIV status, social or economic standing, political opinion, and residence [rural/urban]. Others, such as persons with disability [PWDs] are stigmatised identities. Socially excluded identities are often denied voice, rights, opportunities, participation, resources and some experience restricted mobility.

This paper makes four specific contributions. First, while many studies have demonstrated over the years that women and men have different travel and mobility patterns and varying transport needs, [e.g. Duchène 2012, Porter 2011, Tanzarn 2008, Malmberg-Calvo 1994, Bryceson and Howe 1993], this paper's point of departure is that women and men are not homogenous categories. The paper explores the varying accessibility needs of different social identities with a particular emphasis on women with disability and men with disability, pregnant women and pregnant women with disability, all of whom face mobility constraints associated with specific physical attributes. The paper also points to the way that, for women, these impediments are further reinforced by broader patterns of gender discrimination which commonly constrain their mobility. Disability as used in this paper refers to what Burnett and

Baker [2001] define as a restriction or lack of ability, resulting from an impairment to perform an activity. The focus on PWDs is important because, despite their evident physical mobility constraints, their travel and movement behaviour and how this influences their capacity to exploit the broader menu of opportunities has been little researched [see Chakwizira et al 2010]. How does transport take account of the needs of the different social identities?

Second, the paper moves the discussion of mobility and rural access from the purely technical and instrumental point of view to that of a transformative agenda. It illuminates the issue of citizenry's rights and the notion that they can hold the State and other actors accountable for their acts and omissions. The paper particularly focuses on universal access as a basic right for women and PWDs who, according to the 2009/2010 Uganda National Household Survey, constitute 51.2 and 16 percent of the national population of 30.7 million people, respectively. Does transport policy, planning and service delivery emphasize accountability and culpability?

Third, while there has been a growing recognition of the significance of participation and promoting gender equality for achieving equitable transport [see World Bank 2005], there is not much clarity about how this has translated into sensitivity to the prioritised interests of disadvantaged women and PWDs. The paper thus explores how rural female and male citizenry are involved in making decisions regarding their mobility and accessibility needs. How effective are their voices?

Finally, the paper explores the supply side of the equation. Addressing gender and disability injustice is a policy reality in the country. Uganda has signed and ratified all the relevant major human rights and gender equality enhancing instruments and key principles are reflected in the 1995 Constitution and domesticated in various national laws and policies. In 2008, the government endorsed the Convention on the Rights of Persons with Disabilities [CRPD] and the Optional Protocol. The Convention requires partner states to facilitate access to quality mobility aids and devices including encouraging entities

that produce these assistive technologies to take into account all aspects of mobility for PWDs.

Furthermore, the government has put in place various operational, institutional and legal mechanisms to promote citizen voice. Notionally, decentralisation introduced new forms of participatory decision making and accountability. One of the objects of the devolution of government was to enhance the participation of the citizenry in the exercise of the powers of the State. Another was to provide proximate, easily accessible services besides ensuring equitable sharing of national and local resources.

Additionally, the decentralisation policy states an obligation to gender equality and social inclusion. The 1997 Local Governments' Act [amended 2001] provides for representation of women, PWDs and youths at all sub national political levels. Under decentralisation, the responsibility for service delivery lies with the sub-national governments. The overall institutional framework for decentralisation is predicated on popular participation and bottom up planning. The prioritised access needs of the community are supposed to be filtered through from the village to the district level during the statutory annual planning and budgeting cycles.

In financial year 2003/04, the government adopted gender and equity¹ budgeting as a fiscal policy issue. Sectors, departments and agencies at both national and sub national levels are required to be responsive to gender and equity concerns in their annual plans and budgets. As regards disability issues, each district is allocated an annual special grant of UGX 30 million to support the socio-economic development and employment of PWDs. A Budget Monitoring and Accountability Unit, which incorporates a gender audit function, established in 2008, is responsible for conducting physical verification of service delivery against the money released by the central government.

The question is, to what extent have these policy commitments been translated into substantive equality between women and men, and more specifically for PWDs and

pregnant women with and without disability, in terms of resources, voice, opportunities and entitlements? The paper examines how transport planning and service delivery meet the rights, needs and interests of these different socially excluded identities.

The paper is primarily based on rural citizens' voices with a particular focus on PWDs and women who, owing to their physical or gendered social identities, experience restricted mobility and thus limited accessibility. Voice, as used in this paper, refers to the capacity of the citizenry to express their views and interests and to the exercise of this capacity [see O'Neill et al 2007]. The PWDs are relatively immobile due to lack of mobility assistive devices and women largely on account of their time poverty and limited decision-making power. Women usually have to seek permission from their husbands, especially where they have to travel long distances (Porter 2011).

Moreover, owing to income poverty [and limited household decision-making power], women and PWDs are disadvantaged as regards access to transport services backed by purchasing power. The 2006 national Demographic and Health Survey reports that married women, particularly in rural areas, frequently have to give up income to their husbands and many [45%] lack the ability to decide independently how resources in the home can be spent. This is particularly significant considering that, despite its key role in facilitating access, transport services are not subsidized by the government.

Methodology

Using a case study approach this paper explores how accessibility influences the research participants' subsistence and domestic needs; employment opportunities; access to and utilisation of social services; as well as engagement in commodity and producer markets. In addition, based on the participants' experiences, the paper analyses how responsive transport is to gender equality and social inclusion in relation to access, participation, opportunity, empowerment and protection. Furthermore, it offers insights into the potential

¹ Includes social inclusion concerns such as disability, poverty and regional exclusions

drivers for achieving accountable transport for excluded social identities.

The paper focuses on rural communities which constitute more than 85 percent of the population in Uganda and on road transport which carries over 95 percent of the country's goods and 99 percent of the country's passenger traffic. The research was undertaken in Iganga and Gulu districts, located in the eastern and northern parts of the country respectively. The study participants were drawn from several communities located within a radius of 10 km from the district local government headquarters. All the participants live within two kilometres of an all-season road, the defining distance for "adequate access" as per the World Bank RAI-Rural Access Index [Roberts et al 2006].

Quota sampling was used to select the 24 adult research participants who included four of each of the following groups: women and men; female and male PWDs; pregnant women with and without disability. In-depth interviews were conducted using an iterative guide which allowed for questions to be adjusted according to the participants' responses. One of the key challenges to the research was reaching PWDs. Not only are they geographically dispersed within the study areas but some were unwilling to be interviewed in the belief that their views were marginal: "What do I know?" "I am not important and thus my view does not count". "Do you really want to seek my opinion?" These initial barriers of confidence were overcome through a detailed clarification of the purpose of the study and how this could potentially bring their unique accessibility needs to the attention of policy makers and planners.

In order to explore issues of accountability at the sub national government level, semi-structured interviews were conducted with the following officials from the two districts: the Chief Administrative Officer, District Chairperson, District Engineer, District Planner as well as the District Community Development Officer who is charged with gender equality and social inclusion issues.

The primary data was complemented by

information gathered from earlier community-level research work as well as a secondary analysis of the 2008 National Services Delivery Survey [NSDS]. One challenge was that the NSDS survey data were inadequately disaggregated by sex or other socially excluded category. All data were transcribed and then analyzed word for word based on the guiding questions.

The Dynamics of Citizens' Access to Economic Opportunities and Social Services

The study established that social identity shapes mobility, which in turn influences citizens' access to economic opportunities. The participants' sources of livelihoods included office work, farming, carpentry, market vending and petty trade. Nearly all the participants indicated that they predominantly walk to work, a distance ranging from 0.5 to 5 km. The transport cost varied according to means of travel, location, condition of the road and season, ranging between UGX² 300/= and 800/= per kilometre for boda boda [motorcycle hire services]. PWDs, particularly those using wheel chairs, are charged a higher rate of UGX 1000/= or more per kilometre. This, perhaps, explains why 87 percent of PWDs aged 14–64 in the NSDS survey reported that their ability to work was affected by their restricted mobility [NSDS 2008]. Thus physical handicap clearly translates into economic handicap.

It was evident from the interviews that the prohibitive transport costs coupled with limited ownership of means of transport impose restrictions on women's and PWDs' choices regarding their participation in the labour force. Most pointed out that they opted to seek employment closer to home while others were engaged in home-based income generating enterprises. One female PWD market vendor revealed that most of her profit goes into hiring a boda boda which costs her UGX 1,500/= one way. However, she is sometimes forced to crawl the 3 km to the market when the sales are poor, and thus takes close to 4 hours.

² At the time of the study 1 USD≈2200

The participants also indicated that poor accessibility affects their agricultural productivity on account of the time lost in travel. This has particular significance given the central role of agriculture in rural livelihoods. Women and PWDs sometimes opt to farm marginal lands near their individual homesteads, but outputs here tend to be low as the following quotation from a 40-year-old pregnant woman in Gulu district suggests. She undertakes her farming a few metres away from her house while her husband who owns a bicycle travels to their more productive land which is located 14 km away. "I used to walk to the farm but now that I am pregnant, I can no longer do so. The soils are infertile and the yields will most likely be poor."

The 2008 NSDS survey reports that inadequate transport ranks high [41%] amongst the constraints to the effective demand for, as well as the delivery of agricultural services: 86 percent of the farmers do not use agricultural inputs due to inadequate access attributed to, in part, long distances on poor road networks. Furthermore, that 14 percent of the 75 percent of the farming households are visited by an extension worker. An even lower proportion [6.8%] of the female headed farming households report that they have access to agricultural services. While the NSDS [2008] does not provide data on PWDs, their situation is likely to be similar to or worse than that of households headed by women.

The research participants in this study suggested that the existing road infrastructure and transport services limit their input supply and output marketing and serve as a disincentive to increased production. Most of the participants walk to the nearest [roadside] markets or kiosks, largely to buy food and other basic household necessities. These are the same road-side markets where the participants who are involved in farming sell their surplus produce, usually at a relatively lower rate than the market price prevailing in major market centres. Shop owners and others involved in income generating activities visit better-established weekly or bimonthly markets which are located a considerable distance away from their business enterprises. These usually hire a

boda boda or a bicycle to carry their loads from the road-side markets to these major market centres. Poor accessibility also constrains agro processing and value addition as exemplified below:

"We take off our clothes while crossing River Agwar. The river, which is about 500 metres wide, traverses the community access road that leads to the grinding mill, about 3½ hours away. That is the same river that the Head Teacher of our primary school has to cross naked on a daily basis...many times with his pupils! "
*Women Focus Group Discussion [FGD],
Apii Oguru Village, Lira District*

The study also indicated that distance combined with cost and quality of transport, as well as access to transport services, affect health seeking behaviour [see Russell 2008]. The research participants specified that they travelled varying distances, using different means depending on the gravity of the illness. They, particularly the PWDs and women, pointed out that they prefer to seek care from health providers nearest their home. Accordingly, some admitted that their first choice is self-medication using medicines purchased from drug shops located within their communities. In cases of serious illness, the participants seek care from the nearest health facility, a distance ranging from 0.5 to 20 km. The participants usually travel the shorter distances on foot and hire boda bodas [motorcycle taxis] for the longer journeys or when they are critically ill.

Inadequate access caused delays in seeking care up to a point where simple illnesses sometimes become emergencies – especially evident in the case of maternal health- as illustrated below.

"The health centre with a maternity wing is across the river...12 kilometres away. It takes a day or two for the few women who choose to seek formal maternity services [depending on whether their husbands own bicycles or not]. They frequently spend a night with relatives. The majority of the women use traditional birth attendants. In case of complications, they are "rushed" to the

health centre, on a local stretcher [carried by four men]. Most of the women die on the way. In fact, there was a month when five women died due to pregnancy-related complications.”
Women FGD, Apii Oguru Village, Lira District

The participants pointed out that the health facilities which provide antenatal care and maternity services are often located a considerable distance from their homes. A few of the pregnant participants mentioned that they do not seek the recommended minimum [four times] of antenatal services due to either high cost of transport or distance to the health facility. For the same reason the participants reported that, among such women, births were less likely to be attended by a professional caregiver or to take place in a health facility.

“We use different facilities depending on the sickness. My wife is pregnant almost every two years and the children fall sick all the time. My wife delivers from the main hospital which is about 5 km away from our home. Since we rarely have money, when the children fall sick, my wife takes them to the nearby clinic which can also provide treatment on credit. I use my bicycle on the rare occasions that I fall sick but most times, my wife and children walk to the clinic. However, when the children are in a critical condition, I hire a boda boda to take them to the government main hospital. However, sometimes the doctors are away or they are out of drugs and yet the queues are too long because it is a “free” service.”
Male, Iganga District

Disability also affects access to education. In the 2008 NSDS survey, 90 percent of the PWDs aged 6 to 24 years indicating that their restricted mobility affected their school attendance. This study did not focus on children, but virtually all the participants raised the issue of access to schools:

“There is a wide swamp across one of the roads. Children going to school are charged UGX 200/= each way to cross by ‘canoe’. Children whose parents

cannot afford the daily UGX 400/= either risk drowning by swimming across or just don’t go to school during the rainy season. Last year, many children missed school because it rained almost throughout the schooling seasons [8 months].”

Women FGD, Apii Oguru Village, Lira District

“Some places are inaccessible during the wet season due to the overflow of water from the swamp. The water goes up to neck level...Many children have drowned in those spots so we fear sending them to school during the wet seasons.”

Female, Iganga District

Responsiveness to Rural Accessibility Needs of Selected Social Identities

As the foregoing sections indicate, walking is the near universal mode of mobility for rural citizens. And while some [see Sharma 2012] regard walking as one of the most equitable and egalitarian modes of mobility, this study established differences in rates of travel among the different groups studied. The section below presents indicative travel rates on foot for the different groups, with and without loads and also while they are sick. The figures come only from research participants’ estimates of their travel times and are not statistically valid. The intention is simply to highlight the fact that distance and road condition should not be the only defining factors when measuring accessibility.

The male participants indicated that they walk faster than their female counterparts at an average rate of 4.5 km/hr and 3.3 km/hr, respectively. This difference can, in part, be attributed to the varying gender roles. In Uganda, an estimated 70 percent of agricultural produce is carried by head loading, a task which is predominantly undertaken by women. Furthermore, most [67%] rural women walk for more than 30 minutes to a clean water source...located an average of less than a kilometre away...an activity which is sometimes performed more than once per day [Uganda Gender Policy 2007]. Unsurprisingly, the research participants also indicated that they walk at relatively lower rates when they are sick or are carrying a load. In the words of one

female participant:

"I cannot walk as fast as my husband. No...not because I am weaker but because I am usually carrying a sick child to the clinic or some other load from the garden or to the market."

At an average rate of 2.6 km/hr, pregnant women estimated that they walk slightly slower than other women. PWDs walk or crawl at even much slower rates. But even then, there are differences depending on the type of disability. For instance, a deaf woman is slightly faster [1.7 km/hr] than a female PWD who crawls. A pregnant woman with physical disability with an advanced pregnancy cannot crawl. It follows, therefore, that to these identities, the first metre matters. Distances that are generally considered as presenting adequate accessibility to transport, health or other service may pose a significant barrier, particularly under extreme conditions of terrain or climate, to those with restricted mobility.

The above-mentioned underscores the significance of taking into consideration women's and PWDs' needs in transport planning, the former because of women's socially ascribed role of carrying loads including pregnancies, children, firewood, water, etc. and the latter owing to restricted mobility associated with specific bodily handicaps. To echo Duchène's [2011] argument, the constraints experienced by women, and one may add, other disadvantaged groups, with regard to their mobility and access are a form of social exclusion which affects all aspects of their lives. It exacerbates their marginalisation and deprives them of economic as well as social opportunities.

As regards responsiveness, the participants asserted that, for the most part, transport was not sensitive to their accessibility and mobility needs. Amongst other things, the participants highlighted issues of affordability and efficiency of the public transportation services, barriers to access and ownership of personal means of transport, as well as personal security/safety. The foremost concern for all participants was the high cost of public transportation which makes access to most services, spe-

cifically health, unaffordable. The women and PWDs, in particular, reported that they lack their own means of transport and that their earnings are too low to afford public transport services. As indicated earlier, most often walk and only pay for transport in cases of emergencies or when journeys are very long.

"My income is too low to afford any means of transport [including a wheel chair] so I am forced to walk. I walk with a lot of difficulty and pain. As a woman...with disability carrying a sick child without assistance is difficult. And yet the roads are dusty and full of potholes. This makes it even more difficult for me to walk and many times I end up with injuries. The situation becomes worse during the rainy season when the roads become slippery and the gullies are filled with water."

Female PWD, Iganga District

Anecdotal evidence suggests that the increasing number of boda bodas coupled with the emerging mobile phone services has significantly contributed to the improvement of transport services in the rural areas³. The research confirmed that whereas boda boda transport services make a considerable contribution to national public transport [see Bryceson et al 2003], these are unaffordable to most of the rural poor because they cost up to 10 times more than bus fares depending on the terrain, traffic levels, time of day, and the users' physical ability.

Lack of safety on the road was highlighted as an additional key constraint, particularly for PWDs whom other road users perceive as not having a right of access. The participants argued that roads are neither built nor used in a manner that promotes the safety of road users. The roads are narrow, shared by vendors, used as parking lots for boda bodas and have no appropriate provisions for cyclists and pedestrians making them unsafe for the users. The research participants also reported that most cyclists seem not to be aware of national traffic rules and the authorities³. The number of motorcycle boda bodas in the country has significantly increased from nearly zero percent of the motorized vehicle fleet in the country, in the early 1990s, to slightly over 51 percent in 2008 [Ministry of Works and Transport 2011].

do not enforce safety regulations making roads unsafe. Female participants also reported experiencing sexual harassment when travelling on the road or while using public transportation.

"I rarely used mini buses due to the lack of respect from the touts. They insult us on account of being pregnant and disabled...the prevailing misconception is that PWDs do not engage in sex or should not be sexually active."
Pregnant PWD, Iganga District

"I rarely use a bicycle or a boda boda for fear of falling off. Some are too high and difficult to climb especially if wearing a dress or a skirt or in case of an advanced pregnancy. Boda boda riders are very fast and reckless and many of them are not properly trained...they cause accidents on an almost daily basis. Many people have lost their lives or are nursing serious injuries as a result. I opt for minibuses when the journey is long. However, these are generally congested with real possibilities of sexual harassment. The only comfortable seat for a pregnant woman is the one next to the driver."
Pregnant Woman, Iganga District

When asked their views about the foregoing citizens' perceptions about accessibility, the district government officials argued that transport planning is still very basic and the resources available do not allow for the provision of pavements, road crossings and other appropriate furniture. Furthermore, they observe that the government is yet to come out with a transport policy providing for universal door-to-door access for PWDs. Accordingly, the resources allocated by the central government do not provide for retrofitting universal access features into existing transport infrastructure. As one district official put it, "We are yet to designate 'pink' coaches for women let alone regulate on things such as priority seating for PWDs in public service vehicles". Indeed, the Ministry of Works and Transport draft Strategic Plan [October 2011] which will guide investment in the sector over the next five years is silent on gender equality, PWDs as well as other issues of social inclusion. Implementation of current government

disability-related policy commitments to PWDs is lacking as many PWDs cannot afford the cost of mobility aids. Some of the PWDs pointed out that they cannot access public transport systems, even when they can afford to pay. This is either because of the steep stairs to the passenger vehicles, or the absence of steps in the case of the pickup vans which are the second most common means of transport in the rural areas, next to boda bodas. This is besides lack of traveller information for passengers with vision and hearing disabilities, who may also be unable to count the correct amount of money for their fare.

"I need a guide but I cannot afford one. I cannot hear the sound of approaching vehicles and neither can I communicate to the transport providers. I rarely travel...I work from home."
Female PWD, Gulu District

The roads are bad and are not wheel chair-friendly. Climbing a bus is very difficult... and yet the conductors are usually unwilling to assist...they are reluctant to take us. We pay extra for our wheel chairs. We are charged a fee for storage and sometimes extra for loading. In addition, other road users, particularly boda bodas and mini buses, are very insensitive to us. They "scare" and force us off the "narrow, potholed" roads without any consideration. That is how one of our colleagues broke his wheel chair. When he took it for repair, it was welded so it can no longer fold and thus takes up a lot of space in the bus which he cannot afford to pay for. He thus has to wheel himself everywhere.
Male PWD, Iganga District

The research also identified various broad gender-imposed barriers to mobility, echoing earlier research in this field. These include regressive cultural norms and values which restrict women from owning and operating means of transport, using public transportation, traveling long distances or making independent decisions as regards travel. None of the female research participants owned a means of transport although the married ones suggested that their husbands possessed either a bicycle or a boda boda.

Perhaps unsurprisingly, body politics and women's sexuality emerged as issues that restrict women's mobility and access. As a female research participant in Iganga intimated: "A good woman is not expected to sit with her legs apart". This possibly explains why, in some cultures, women are not allowed to ride bicycles. It is also probably for the same reason that women are expected to sit sideways when being carried on a bicycle or boda boda, a position which, according to the research participants, is extremely uncomfortable especially when travelling for long trips and/or on bumpy roads. Whereas these cultural taboos are slowly dying out, nearly all the female participants interviewed in Iganga district revealed that they would not be seen riding bicycles. Considering that riding involves body contact with the [mostly male] operators, the male research participants were, in general, uncomfortable with their wives being carried on bicycles or boda bodas.

The research findings also echo Tanzarn's [2008] argument that women experience greater physical restrictions in public transportation than men owing to their inability to struggle for space with a baby on the back, a load on the head or when carrying a pregnancy. These gender imposed barriers mean that women largely rely on walking to meet their transport needs, often carrying very heavy loads. This suggests that whereas boda bodas may be transforming the transport services landscape in the rural areas, women's time poverty has not been overcome by these faster and more easily accessible modes of travel, not least because they are unaffordable. Women research participants with disability, in particular, suffer further constraint :

"Using some of the most common means of transport such as bicycles and boda bodas is almost not an option for a PWD, especially one who is pregnant...it is an extremely uncomfortable and a very unpleasant experience".

Accountability, Invisible and Voiceless Citizenry

The foregoing sections demonstrated accessibility-related policy and attitudinal bi-

ases, intended or unintended, for various socially excluded identities. In part, addressing these biases depends on the relative ability of the disadvantaged identities to express their views and shape transport policy and planning effectively. In order to achieve this, they need to gain voice and exercise it to be heard and make a difference. Addressing the socially construed biases and resulting disadvantages is also important.

Promoting citizen voice is significant on various counts. First, since voice is about citizenry expressing their views and interests in an effort to influence government priorities, it is essential to the process of realising rights. Second, voice promotes active citizenry engagement and encourages the government and other actors to provide quality and accountable services.

While the concept of participation, as provided for in the Local Governments Act, allows for inclusiveness, the NSDS [2008] reports that nearly half of the rural households [47.7%] are not involved in sub national government decision making processes at all. Research participant perspectives support this data. Women and PWDs remarked that exercising voice is a challenge because: "Nobody ever provides us with information or invites us to the planning meetings...Who are we to be listened to? ...that is for big 'men'...It is too far for us to walk...There are no interpreters...They never listen to us...We do not have the time...".

Even when they are invited to meetings, women often cannot effectively articulate their demands for accountable and responsive service delivery because society dictates that they submit to a male patronage; they are not supposed to speak in public and in the presence of men. This suggests that their ideas and interests are typically omitted during the process of identification, prioritisation and design of transport interventions. The participants maintained that because they do not actively participate in planning and budgeting meetings, they cannot easily hold their leaders accountable.

Evidence from the field indicates that without affirmative action for women's

and PWD's representation in local councils, their rates of participation in the decentralised governance structures would be substantially lower than they are currently. Nonetheless, even though affirmative action has created the politics of presence, in terms of numbers some of the research participants argued that women and PWDs are strategically absent from decision making. Accordingly, it is likely that their voices are not effectively influencing sub national transport policy, plans, budgets and service delivery. This may well be attributable, in part, to their inability to prepare and read documents prior to meetings, due to practical constraints of time, in addition to their limited capacity to interpret the technical elements of planning and budgeting [see Tanzarn 2006].

The study established that, in terms of service delivery, there are a variety of mechanisms through which the citizenry can express their views and raise their concerns to the local authorities. Formal channels include community planning and budgeting meetings, local council meetings, [road user] sector committees, citizen's parliament [barazas] and through elected representatives. Informal avenues include the mushrooming community radios as well as organised protests and demonstrations.

All the research participants were aware of their right to demand for a good quality road and to hold the service providers accountable for any lack. Nevertheless, the majority were not aware of any informal or formal mechanisms to express their views. Only a couple pointed out that they could demand for accountability through their local councilors. Others said they could do so informally through writing anonymous letters or through community radios. Many argued that their leaders were so powerful that it was futile for them to demand for accountability. And yet others said they feared reprisal from their leaders. One of the participants thought that demanding for accountability was the responsibility of the president! The research participants suggested that due to their marginalized social identities women and PWDs have even more limited ability to communicate equally or effectively thus rendering them near voiceless.

Nearly all the government officials interviewed argue that whereas they invite all the members of the community to agricultural advisory services and technology dissemination meetings, women and PWDs "refuse" to participate. The study, however, established that their non-participation is owing to their restricted mobility.

Effective voice requires easy access to relevant knowledge as well as clear and easily understood information. The government officials argued that the relevant information, specifically that pertaining to transport planning and budgeting information, is freely available to the citizenry. Nonetheless, the research participants, particularly the women and PWDs pointed out otherwise. This could, perhaps be explained by their relatively low literacy levels which deprive them of access to written information prepared in the English language. For instance, the 2009/10 National Household Survey reports that more than one third [39%] of the adult women in the country are illiterate, compared to only 19 percent of the men. And going by the 2002 Population and Housing Census, only 2.2 percent of PWDs attain post-secondary level education.

Brown et al [2008] argue that an accountable relationship is one in which voice is met by the responsiveness of public officials and other actors. The local government officials interviewed were, in general, aware of the statutory obligation for the citizens to influence public choices, and hold public institutions accountable. The government officials suggested that while their primary interest was to improve the road network, they were also aware of the importance of citizen participation achieved through information sharing and community consultation of the citizenry. However, nearly all had a limited understanding of the dynamics and divergent interests of the different social identities and the need to take these into consideration during planning and budgeting. Furthermore, they argued that they could not be held fully accountable considering that they neither have control over the relevant resources nor adequate access to them.

Collective, rather than individual, voice offers greater potential for promoting responsiveness, key to downward accountability [see Brown et al 2008]. Civil society organisations offer a 'third space', the space of engagement which mediates between citizenry and the government. Whereas nearly all the research participants belong to one community group or another, there are apparently no user associations or nongovernmental organisations mobilizing around transport issues in either study districts.

This, in the words of one of the participants, is: "Probably because we do not perceive transport in the same light as the other services such as health and education". The research participants maintain that even though good infrastructure such as health facilities, schools and roads are important, their priority concern is accessible quality services, adding that: "While we can engage the local government officials in relation to the delivery of health and education services, there is no comparable option as regards transport services". The research participants with disability argued that their being dispersed across the communities makes it particularly difficult for them to organise claim making and to foster protests against transport policy or any form of injustice for that matter.

To summarise, the lack of organised groups around access and mobility suggests that the transport needs of the socially excluded citizenry become marginal in government priorities and policies due to the following. First, there is no collective voice for lobbying and advocacy around these issues. Second, there is no watchdog to monitor compliance and influence budget allocations which favour the implementation of equitable transport policies and plans. Third, there is no vehicle for raising the citizens' voice to demand for responsive public transport services from the operator associations. Fourth, weak social networking further limits the circulation of information amongst the citizenry thus restricting their understanding of rights and constraining their access to services.

Concluding Remarks and Policy Implications

This paper provides an insight into the dynamics of social identity, citizen voice and rural access in Uganda. It illuminates some of the policy and attitudinal biases which some socially excluded identities, notably PWDs, but also a broader category of women experience as regards accessibility. The findings, based on exploratory research, serve as a useful base for directing future [statistically significant] research. While the findings of this study are not conclusive, the paper has clearly demonstrated that distinct social identities experience different accessibility constraints and needs. The research established that most rural citizenry find the prevailing transportation arrangements to be unfair. This also applies to walking, the primary mode of mobility for the citizenry.

On account of their social identity, some citizenry such as pregnant women and persons with mobility, sensory, or cognitive disabilities experience restricted mobility and encounter specific accessibility challenges. For these social identities, and in particular for the PWDs, just one step may present an insurmountable barrier. This imposes restrictions on their economic choices, access to and utilisation of services and obstructs their ability to enhance and exercise their capabilities, such as through participation in meetings where decisions are made, skills are developed and information is disseminated.

Improved access and mobility are critical for reducing isolation, vulnerability, and dependency of socially excluded identities such as women and PWDs. And yet these identities are seldom identified or consulted by planners and are thus hindered from exercising agency to demand for their rights to equitable accessibility. It follows, therefore, that transport is not responsive to their accessibility needs. At the same time, these socially excluded identities do not benefit equitably from investments in transport.

The research ascertained that accessibility in terms of ease and ability of reaching desired destinations is the most defining predictor of choice, opportunity as well as utilisation of services. Long distances,

poor infrastructure, prohibitive transport costs, inefficient and inappropriate transportation, time poverty, personal insecurity as well as restricted mobility were found to impose particular limitations on the economic and social participation of disadvantaged social identities. For that reason, the majority tend to work at, or closer to home where they attain marginal returns on their labour. This serves as a disincentive for increased production with resultant negative impact on livelihoods. The above-mentioned barriers also influence degree of access to and utilisation of health services as well as school enrollment and attendance.

Measures such as the World Bank RAI along with destination indicators which are used as benchmarks to develop accessibility strategies to meet access targets mask mobility differences arising out of social exclusion. As the paper demonstrated, gender inequalities and social exclusion place women and other disadvantaged identities at different and uneven places from where they seek access to social services and economic opportunities. As an example, the NSDS [2008] reports that the average distance to a government health facility is 6 km and that 79 percent of the pupils travel a distance of less than 3 km to their respective schools. The research established that these statistics mean different things to different social identities. Whereas 3 or 5 km may be a walking distance to a woman/girl or man/boy without disability it may imply inaccessibility to a pregnant woman, a PWD or to even a woman or a man carrying a load.

Promoting responsive, equitable and accountable transport policy, plans and budgets requires not just an engaged citizenry, but an informed one. This, in part, requires adopting inclusive, people-centred planning approaches which specifically advance the rights of disadvantaged social identities and enhance their entitlements as well as improve their access.

Transcending the accessibility barriers of socially excluded identities, in part, requires listening to them and allowing them consumer voice to engage with the state and other actors in order to claim for their right to equitable transport. By making

the voices of the socially excluded count, the linkages between the supply and demand-side within transport systems will be strengthened for improved responsiveness and accountability.

Governments should place accountability, inclusion and equity at the heart of transport policy and planning. As a first step to providing inclusive and subsequently, universal access, gender equality and social inclusion analysis should be integral to the identification, design, implementation, monitoring and evaluation of transport policy and planning. That way inequalities and discrimination which restrict mobility and accessibility of otherwise socially excluded identities will potentially be taken into account and be addressed. Likewise, addressing the prejudices of the service providers, through, inter alia, promotion of the right to freedom of movement and accessibility is essential.

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References:

Brown Taylor, Claire Hughes and Tim Midgley (2008) Accountability and Voice for Service Delivery at the Local Level. A background paper for the UNDP regional training event Developing Capacities for Accountability and Voice. Sofia, Bulgaria. October 1-2, 2008

Bryceson D.F, D.A.C. Maunder, T.C. Mbara, R. Kibombo, A.S.C. Davis and J.D.G.F. Howe (2003) Sustainable livelihoods, mobility and access needs. TRL Report TRL544. www.dfid.gov.uk/r4d/pdf/outputs/R7784.pdf Last accessed July 31, 2012

Bryceson, D. and J. Howe (1993), "Rural Household Transport in Africa: Reducing the Burden on Women?" World Development, Vol.21, No.11, pp. 1715-1728

Burnett, J. J., & Bender-Baker, H. (2001). Assessing the travel-related behaviors of the mobility-disabled consumer. Journal of Travel Research, 40 (1), 4-11.

- Chakwizira, J., Nhemachena, C., Dube, S., & Maponya, G. (2010). Rural travel and disability in Leroro and Moremela Villages, South Africa. Paper delivered at The 12th International Conference on Mobility and Transport for Elderly and Disabled Persons (TRANSED), held in Hong Kong on 2-4 June, 2010
- Duchène Chantal (2011) Gender and Transport. International Transport Forum Discussion Paper 2011-11. May 2011. www.internationaltransportforum.org/jtrc/DiscussionPapers/DP201111.pdf Last accessed July 30, 2012
- Kamuhanda, Regina, Schmidt, Oliver. (2009). Matatu: A Case Study of the Core Segment of the Public Transport Market of Kampala, Uganda. *Transport Reviews*, Volume 29, Issue 1, pp 129-142.
- Malmberg-Calvo Christine (1994), "Case Study on Intermediate Means of Transport Bicycles and Rural Women in Uganda". SSATP Working Paper No.12
- Ministry of Gender, Labour and Social Development (2007) Uganda Gender Policy. Ministry of Works and Transport (2011) Strategic Plan -2011/12-2015/16. Final Draft October 2011
- O'Neill, T., Foresti, M. and Hudson, A. (2007) Evaluation of Citizens' Voice and Accountability: Review of the Literature and Donor Approaches. London: DFID.
- Porter Gina (2011) 'I think a woman who travels a lot is befriending other men and that's why she travels': Mobility constraints and their implications for rural women and girl children in sub-Saharan Africa. *Gender, place and culture* 18 (1), 65-81. DOI: 10.1080/0966369X.2011.535304
- Roberts Peter, KC Shyam and C Rastogi (2006) Rural Access Index: A Key Development Indicator. Washington D.C.: The World Bank
- Russell Stephen (2008) Demand-side Factors Affecting Health Seeking Behavior in Ghana. *GUJHS*. 2008 Apr; Vol. 5, No. 1. <https://blogs.commons.georgetown.edu/journal-of-health-sciences/issues-2/previous-volumes/vol-5-no-1-april-2008/demand-side-factors-affecting-health-seeking-behavior-in-ghana/> Last accessed July 31, 2012
- Sharma Tarun (2012) Quality of Life in Urban Mobility. Result of Policy Neglect of the Needs for Pedestrians. <http://indiastreams.wordpress.com/2012/12/03/1377/>. Last accessed December 03, 2012
- Tanzarn Nite (2008) "Gendered Mobilities and Travel in Developing Countries: The Case of (Urban) Uganda" IN Tanu Priya Uteng and Tim Cresswell (eds.) *Gendered Mobilities*. Hampshire: Ashgate
- Tanzarn Nite (2006) "Women's Political Space: Affirmative Action in Ugandan Parliamentary Politics" IN S. Ssali and A. Madanda (eds.) *Negotiating Public Space: Activism and Democratic Politics*. Kampala: DWGS
- Uganda Bureau of Statistics - UBOS (2010) Uganda National Household Survey 2009/2010. Socioeconomic Module, Abridged report. Kampala: UBOS
- UBOS (2008) The 2008 National Service Delivery Survey. Kampala: UBOS
- UBOS (2006) Uganda Demographic and Health Survey. Kampala: UBOS
- World Bank (2005) *Empowering People by Transforming Institutions: Social Development in World Bank Operations*. Washington, D.C.: World Bank

Road Traffic Injury Characteristics on Low-Volume Rural Roads in Tanzania

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Introduction

Every year, over 1.2 million people are killed in road traffic accidents worldwide, and up to 50 million more are injured (World Health Organization, 2009). Over 90% of these deaths occur on roads in low and middle income countries, with the World Health Organization's (WHO) African region reporting the highest mortality rate at 28.3 deaths per 100,000 population in 2002 (WHO, 2009). There is limited data on the effects of RTIs in rural communities throughout sub-Saharan Africa.

Evidence from low and middle income countries demonstrates that crashes on rural roads contribute significantly to the problem of RTIs. One Ugandan study found that traffic was the leading cause of disabling injuries in a rural setting (Kobusingye, 2001). A study in Ghana, which investigated police data, found that the majority of road traffic fatalities (61.2%) and injuries (52.3%) occurred on roads in rural areas (Afukaar, 2003). It further concluded that crashes leading to severe injuries were more likely to occur on rural roads compared with urban roads (Afukaar, 2003). The study was not clear, however, on the type of roads on which these injuries occurred, for example whether the injuries involved regional highways passing through rural areas or unpaved community access roads. Another study in Tanzania reported that 30% of transport related injuries occurring in rural areas led to severe injury outcomes (Moshiro, 2005). These studies indicate that rural roads contribute significantly to the worldwide RTI problem.

There is a growing body of research recognizing the disproportionately severe impact that road traffic crashes have on vulnerable road users; namely pedestrians, bicyclists and motorcyclists. A study from Kenya showed that while RTIs were more likely to be experienced by a vehicle's occupants, vulnerable road users had twice the odds of sustaining severe injuries compared to vehicle occupants (Mogaka, 58

2011). A hospital-based study conducted in an urban area of Tanzania reported that 42% of those experiencing transport injuries were pedestrians (Museru, 1998) while a population-based study in Nigeria showed that 54% of the injured were riding on a motorcycle (Labinjo, 2009). Furthermore, a population-based study in Tanzania showed that of the RTIs occurring in a rural district, 52% involved a bicycle (Moshiro, 2005). This evidence demonstrates that vulnerable road users are an important part of the epidemiology of road traffic injuries in sub-Saharan Africa.

In Tanzania, despite the completion of various road improvement projects and a growth in the contribution of the transport sector to the gross domestic product (increasing from 4.2% in 2008 to 5.2% in 2009), the road network remains of limited quality (UNESCO, 2010; TANROADS, 2011). Road travel is the dominant means of transport in Tanzania and carries over 80% of passenger traffic (UNESCO, 2010). The total classified road network is estimated to be 86,472 kilometres (km), of which about 7% is paved. An assessment conducted in December 2010 on overall road conditions indicated that 40% were good, 46% were fair and 14% were poor (TANROADS, 2011).

Amend is a non-governmental organisation with the goal of decreasing road traffic injury rates through advocacy, education, social marketing and scientific research in Africa and carried out this study with support from AFCAP. The aim of the study is to describe the characteristics and context of road traffic injuries on low-volume roads in a rural African setting, and to provide a knowledge base for developing a rural injury prevention strategy.

Methodology

Data was collected using a household survey technique along three rural roads. The sites are discussed in a later section of the paper. The sampling technique, described below, aimed to collect data on all households within 200 meters of each of the three study roads.

Sampling Strategy

A direct, total-population sampling technique was used in selecting households to be interviewed. Any household within 200 metres of each of the three study roads, along their entire lengths, was targeted. This technique was chosen to determine the RTI incidence rate among a population of rural road users living near a rural road. This targeted population was selected because the extremely low population density of the geographic area, and their variable distance from the road was unlikely to provide sufficient crash data to reasonably allow generalization to be made that would be valuable for the prevention program. In addition, unpublished subset analysis of population based cluster sampling, found a statistically significant increase in injury incidence in households within 100 meters of a road (Zimmerman, 2012).

The three sites were chosen as part of a larger control-intervention study for the purposes of a subsequent program evaluation.

Study Tools

Household surveys were used to collect the data. A team of Project Assistants (PAs) was recruited to collect the data at each of the study sites. The recruitment technique is described in previous publications. (Guerrero, 2010). The study team spent approximately two weeks in the summer of 2012 at each site collecting the baseline data.

Household Survey

A survey was administered to members of households to determine the incidence rate of RTIs among the population living alongside and using the study roads. A distance of 200 metres from each study road demarcated the geographical boundary of the study population and all households within this boundary were selected to be interviewed. In addition, at each end of the study roads, all households living within 200 metres of the junction in all directions were interviewed.

Information on age, sex and whether an RTI had occurred within the past three months was collected for every member of a household. If an injury had taken place, the PAs would proceed with a question-

naire to record details of the incident and the impact of the incident on the household.

Data Management

The research team used Statistical Package for the Social Sciences version 17.0 (SPSS) to enter the data. Demographics were calculated for the denominator, and an injury incidence was tabulated. Frequencies and means were calculated for categorical and continuous variables, respectively. If an individual was still recovering from an RTI at the time of interview, the time from the occurrence of the RTI to the day of the interview was recorded as the number of disability days. For the purposes of analysis, children under the age of one were considered one year old.

Results

Description of Sites

Data was collected from three sites in rural Tanzania: the Bago to Talawanda road in Bagamoyo District, the Kikaro to Mihuga road in Bagamoyo District and the Lawate to Kibong'oto road in Siha District. The first site, the Bago to Talawanda road, is approximately 150 km from Dar es Salaam. It runs from Bago village, which is situated on a tarmacked section of a wide regional road, to the small market village of Talawanda, passing by a number of other small villages situated in the remote countryside for a total of approximately 20 km. The second site, the Kikalo to Mihuga road, is also in Bagamoyo District. This road is approximately 13 km long and passes through a few remote villages in dry savannah and cattle-herding areas. Like the Bago to Talawanda road, people live in small mud-and-stick houses, survive on subsistence agriculture and tending small livestock, and have high levels of illiteracy and few social services nearby. The third site, the Lawate to Kibong'oto road in Siha District, is a 13.5 km road passing through the steep terrain of the foothills of Mount Kilimanjaro. The inhabitants along this road are more economically well off than those in Bagamoyo District. People own large, abundant farms and well-built houses and have access to social services and generally have high levels of literacy.

All three roads are low-volume rural roads with a mix of road users including pedestrians, non-motorized vehicles and motorized vehicles, all of whom share use of the single lane roads. The roads at each of the sites are mostly dirt roads, though the Bago to Talawanda road and the Lawate to Kibong'oto road have some sections where the surfaces have been improved with the addition of materials such as concrete and gravel (as part of an engineering research programme). The various road surfaces at the sites include dirt, gravel (which is dirt with the addition of gravel), concrete slabs, parallel concrete strips, hand-cut stone, paving blocks, and tarmac.

Household Characteristics

The study population included 5,868 individuals, representing a total of 1,279 households in the three study locations of

28±16.7 (Figure 1) and 82% of those injured were male. The age group of 15-44 year olds represented 63% of the injured population. Injuries to the legs were most commonly reported with 49% of those interviewed receiving this type of injury, followed by the head and arms/clavicle, which together represented 28% of the injuries (Figure 2). Following the incident only 22% of the victims filed a police report. The average length of disability (number of days of normal activity lost) was 24±25.9 days. The average length of disability for members of a household where there was an injured person (not including those injured) was reported as 5.2 days, with 3.5 days being the average for males and 6.7 days being the average number of days lost for females.

Location	Frequency	Household denominator	Yearly incidence ^{ab}	3-month incidence
Lawate to Kibong'oto road	16	2323	2.9	.69
Bago to Talawanda road	20	2202	3.6	.91
Kikaro to Mihuga road	13	1343	3.9	.97
Total	49	5868	3.3	.84

a. Calculated from 3-month incidence
b. Calculated per 100 person years

Table 1: Incidence and Total Population

Bago to Talawanda, Kikaro to Mihuga and Lawate to Kibong'oto. Of the 5,868 individuals, 49 were involved in a non-fatal RTI within the previous three months, resulting in a non-fatal incidence of 3.3 RTIs per 100 person years. The frequency at each site differed, with the Kikaro to Mihuga road having the highest incidence at 3.9 per 100 person years, followed by the Bago to Talawanda road at 3.6 and then the Lawate to Kibong'oto road with 2.9 per 100 person years (Table 1).

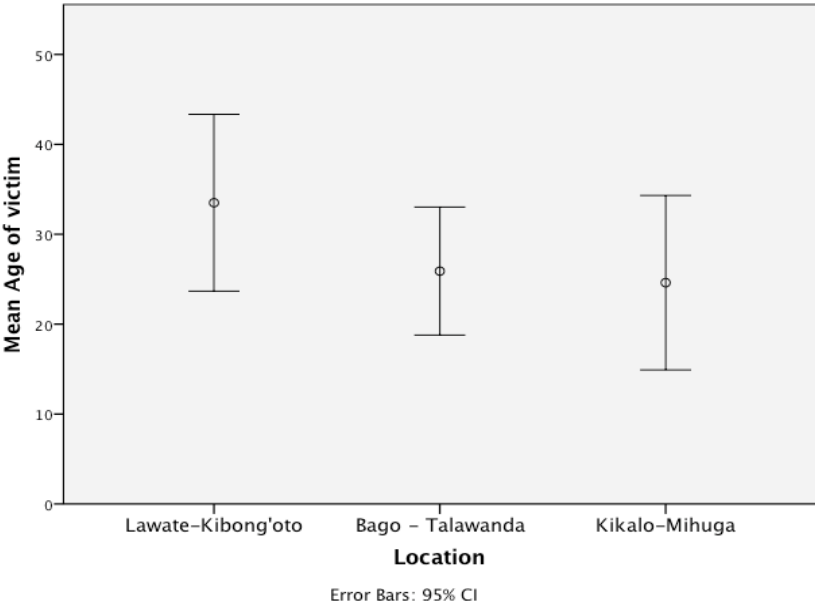


Figure 1: Mean Age and Location

The mean age of those injured in an RTI was 60

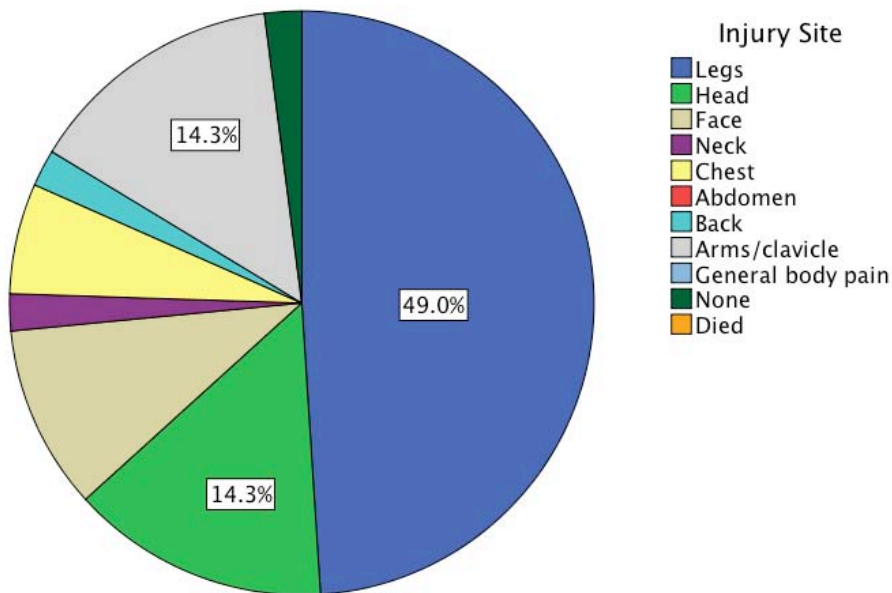


Figure 2: Injury Site

This study found that individuals were most commonly injured while riding a motorcycle, followed by those injured riding on a motorcycle taxi and being hit by a motorcycle (Figure 3). The circumstance of RTI that was most commonly reported was riding to and from work. Dirt roads represented the most common type of road

where RTIs occurred (37%), followed by highways (22%) and gravel roads (20%). The study population reported 59% of the RTIs to have occurred on one of the study roads. It was also found that 37% of injuries occurred during sunset, followed by 33% in the daytime, 22% in the morning and 8% at night.

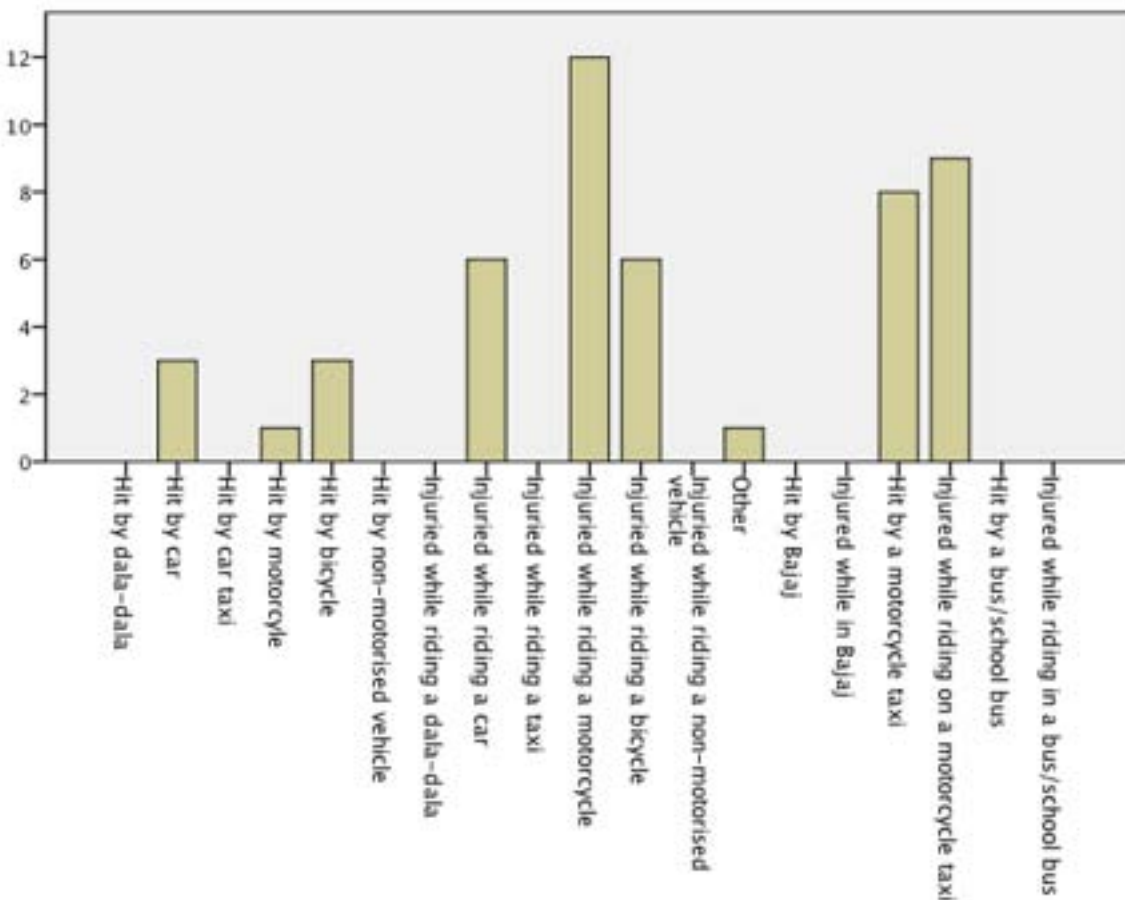


Figure 3: Crash Type *Note: A bajaj is a three-wheeled motorised scooter, and a dala-dala is a mini-bus passenger service vehicle.

Discussion

The aim of this study was to describe the characteristics and context of road traffic injuries on low-volume roads in a rural sub-Saharan Africa setting and to provide a knowledge base for the development of a rural injury prevention strategy. This study found a road traffic injury incidence rate of 3.3 per 100 person years. This rate is difficult to compare to other studies for several reasons. First, the definition of RTI is inconsistent in the literature, with a stricter definition only including those individuals that missed at least 1 day of normal activity. Our study used a more inclusive definition in order to capture as many injuries as possible, since the characteristics would be used to contrast an injury prevention program. Secondly, yearly incidence was extrapolated from a 3-month recall. This was done, since it has been shown that recall is enhanced over the prior 3 months (Mock, 1999). This had been used by other authors, but any factors that make the prior 3 months not typical will make the yearly incidence not representative of the actual yearly incidence (Navaratne, 2009). Finally, the population was defined in relation to a known risk factor (the road), making the incidence likely to be artificially high and not representative of the rural setting, but rather representative of households along rural low-volume roads on rural Tanzania.

The age group of 15-44 represented 63% of RTI victims in this study and 82% of those reporting an RTI were male. These findings are consistent with other reports (Mogaka, 2011; Jacobs, 2000; Labinjo, 2009, Afukaar, 2003) indicating that RTIs affect a portion of the population that are in their prime of economic productivity. Disability in this group can result in significant economic loss. Targeting road safety and injury prevention programmes towards young and middle-aged males, or prioritizing this group as beneficiaries of public health interventions, may result in improved RTI rates.

The household sampling data indicated that the most common type of crashes were those involving a motorcycle. Specifically, the RTIs affected individuals that were riding personal motorcycles or motorcycle taxis or those hit by a motorcycle

as another road user. Motorcycle-related injuries constituted over half of all injuries reported. Other studies from sub-Saharan Africa show similar results. A study conducted in Nigeria reports that the most common road user category for RTIs was motorcyclists (54.3%) (Labinjo, 2009). Furthermore, dirt roads and highways were the most common place for the RTI to occur and therefore represent the types of roads that would benefit the most from a targeted intervention.

Of those injured, the average length of disability was 24 ± 25.9 days. The disability days represent the number of days that the individual could not participate in normal daily activities. The economic repercussions of the loss of productivity for this many days can be substantial. A study in Ghana estimated that the economic burden of motorcycle accidents cost a northern municipality and RTI victims and their families about USD\$1.2 million (Kudebong, 2011). A study in Thailand found that the average cost of RTIs per patient was USD\$2,596 (Riewpaiboon, 2008). Furthermore, the social and economic burden of road traffic injuries extends beyond the injured person. This study found that the average number of days of normal activity lost for members of a household where there was an injured person (not including those injured) was 5.2 days, with 3.5 days being the average for males and 6.7 days being the average number of days lost for females.

These results are beneficial in the development of a targeted injury prevention programme, but should not be used for direct comparison to other settings or other studies. Because a three-month capture was used, and the incidence extrapolated, the time of year of the sample could easily skew the results. Secondly, the targeted reference population of individuals was suspected to have most likely been involved in an RTI. This was done in order to provide the most crash characteristics for formulating the prevention strategy. Finally, the definition of RTI was on the more inclusive side of the spectrum, since several studies require at least 1 day of activity lost to be included as an RTI

Conclusion

RTIs increasingly represent a major public health issue in low and middle income countries. RTIs in rural areas and low volume roads contribute to the overall problem. Relevant strategies must be adopted and tailored to the particular needs and circumstances of different road users. Strategies that include promoting behavioural change and implementing and enforcing traffic regulation policies should be employed. Dirt roads and highways were found to be the most common sites for RTIs while motorcyclists and males were the most at risk groups. Targeted interventions for these specific roads and vulnerable road users are likely to be beneficial in reducing the rate of RTIs.

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References:

Afukaar, F.K., Antwi, P., Ofosu-Amaah, S. (2003) Pattern of road traffic injuries in Ghana: implications for control. *Inj Control Saf Promot*, Mar-Jun;10(1-2):69-76.

FIA Foundation for the Automobile and Society. (2005). Counting the cost: road crashes and the poor. Retrieved from www.fiafoundation.org/Documents/Road_Safety/counting_the_cost_report.pdf

Guerrero, A., Amegashie, J., Obiri-Yeboah, M., Appiah, N., Zakariah, A. (2011) Paediatric road traffic injuries in urban Ghana: a population-based study. *Inj Prev*, 309-312.

Jacobs, G., Aeron-Thomas, A., Astrop, A. (2000) Estimating global road fatalities. *Transport Research Laboratory*, 445.

Kobusingye, O., Guwatudde, D., Lett, R. (2001) Injury patterns in rural and urban Uganda. *Inj Prev*, 7:46-50.

Kudebong, M., Wurapa, F., Nonvignon, J., Norman, I., Awoonor-Williams, J.K., Aikins, M. (2011) Economic burden of motorcycle accidents in Northern Ghana. *Ghana Med J*, Dec;45(4):135-42.

Labinjo, M., Juillard, C., Kobusingye, O.C., Hyder, A.A. (2009) The burden of road traffic injuries in Nigeria: results of a population-based survey. *Inj Prev*, 15:157-162.

Mock, C.N., Acheampong, F., Adjei, S., Koepsell, T. (1999) The effect of recall on estimation of incident rates for injuries in Ghana. *Int J Epidemiol*, 28(4):750-5.

Ministry of Transport. (2011) *National Transport Policy, Rural Transport Policy Directions*. Retrieved from <http://www.mot.go.tz/images/uploads/nationaltransportpolicy3.pdf>

Moshiro, C., Heuch, I., Åström, A., Settel, P., Hemed, Y., Kvåle, G. (2005) Injury morbidity in an urban and a rural area in Tanzania: an epidemiological survey. *BMC Public Health*, 5:11.

Museru, L.M., Leshabari, M.T., Grob, U., Lisokotola, L.N.M. (1998) The pattern of injuries seen in patients in the orthopaedic/trauma wards of Muhimbili Medical Centre. *East Central Afr J Surg*, 4:15-21.

Mogaka, E.O., Ng'ang'a, Z., Oundo, J., Omolo, J., Luman, E. (2011) Factors associated with severity of road traffic injuries, Thika, Kenya. *Pan Afr Med J*, 8:20.

Navaratne, K.V., Fonseka, P., Rajapakshe, L., Somatunga, L., Ameratunga, S., Ivers, R., Dandona, R. (2009) Population-based estimates of injuries in Sri Lanka. *Inj Prev* 15:170–175.

Riewpaiboon, A., Piyauthakit, P., Chaikledkaew, U. (2008) Economic burden of road traffic injuries: a micro-costing approach. *Southeast Asian J Trop Med Public Health*, Nov;39(6):1139-49.

Tanzania National Roads Agency (TANROADS). (2011) <http://www.tanroads.org>

The International Forum for Rural Transport and Development (IFRTD). Rural Roads. Retrieved from http://www.ifrtd.org/new/issues/r_roads.php

UNESCO National Commission of the United Republic of Tanzania. (2010) Transport: highway to development. Retrieved from <http://www.mot.go.tz/index.php/publications/category/publications/>

World Health Organization. (2009) Global status report on road safety: time for action. Geneva. Retrieved from www.who.int/violence_injury_prevention/road_safety_status/2009

Zimmerman, K., Mzige, A.A., Kibatata, P.L., Museru, L.M., Guerrero, A. (2012) Road traffic injury incidence and crash characteristics in Dar es Salaam: A population based study. *Accid Anal Prev* 45:204–210.