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Public transport and health outcomes in rural sub-Saharan Africa – A synthesis of professional opinion

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ABSTRACT

Much of the recent transport focus in rural sub-Saharan Africa (SSA) has been on road building and upgrading as opposed to the provision of public transport. The literature reveals evidence of significant negative public health outcomes associated with crashes and pollution attributable to rural transport. We report the results of a synthesis of professional opinion obtained from in-person interviews and an internet survey on health issues related to the provision of public transport in rural SSA. Field interviews were conducted as semi-structured dialogues with some 40 transportation and public health professionals in the capital cities of Ethiopia, Ghana and Kenya. Additionally, 86 responses to an Internet survey were received from 38 African countries. Poor mechanical conditions of vehicles and risky driving behaviours were reported to be an important source of injury from rural road crashes. The factors contributing to unsafe rural public transport were attributable to economic barriers to proper operation. Although there was some mismatch among the survey and interview results and the literature, public transport was shown to be an important potential source of air pollution exposure. The overwhelming conclusion is the lack of true understanding of the health impacts of rural air pollution in relation to basic needs for provision of safe mobility. The findings reflect the awareness of various professional communities and emphasise the complexity of the relationship between rural public transport and public health. Transport and health relationships in places such as rural sub-Saharan Africa are further complicated by the fact that there is such significant potential for positive health outcomes attributable to transport through enhanced access to healthcare, education, commerce, etc. Systematic epidemiological research is needed to fully understand the trade-offs between rural mobility and its impacts to public health in rural sub-Saharan Africa.

1. Introduction

Much of the recent transport focus in sub-Saharan Africa (SSA) has been on road building and upgrading. In all too many cases, however, these engineered roads provide physical connectivity (a road from here to there) that does not necessarily come with complimentary accessibility (no way to get there). Numerous researchers have documented how so much of everyday life in rural Africa is affected by the availability and quality of public transport and urged its further development (e.g., Riverson and Carapetis, 1991; Dawson and Barwell, 1993; Howe, 1997; Porter, 2002; Bryceson et al., 2008; Mengesha, 2010; Porter, 2014). The provision of public transport in rural SSA, however, is a complicated endeavour. The positive benefits of increasing mobility and accessibility are well documented (Howe and Richards, 1984; Ellis and Hine, 1998; Starkey et al., 2002; Starkey, 2007; Starkey and Njenga, 2010; Banjo et al., 2012; Porter, 2014). Several recent high-level studies, however, have documented a range of negative health outcomes associated with increased motorised travel ranging from injuries and death from road crashes to diseases attributable to air pollution generated from transport (Downing and

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Table 1
Organisations participating in field interviews.

Country	Organisations representation
Ethiopia	National Road Safety Council, Ministry of Transport
	Non-Governmental Organization (NGO)
	Transport Authority, Ministry of Transport
	Research and Development, Ethiopian Roads Authority
	Planning and Programming Management, Ethiopian Roads Authority (two individuals)
	Ethiopian Federal Police Commission
	Traffic Safety, Oromia Police Commission (two individuals)
	Addis Ababa Institute of Technology (two individuals)
	Ministry of Environment and Forestry
	World Health Organization
	Ministry of Health
	Private Consultant
Ghana	Building and Road Research Institute (four individuals)
	Kwame Nkrumah University of Science and Technology, Department of Roads and Transportation
	National Road Safety Commission (two individuals)
	Department of Feeder Roads (three individuals)
	Private Consultant
	University of Ghana, College of Public Health
	Ghana Health Service
	Ghana Highway Authority
	Environmental Protection Agency (two individuals)
Kenya	University of Nairobi, Dept. of Civil and Construction Engineering (three individuals)
	University of Nairobi, Institute of Development Studies
	African Development Bank, Nairobi
	International Forum for Rural Transport and Development, Nairobi
	Private Consultant
	Traffic Police
	Police Statistics Office
	Ministry of Transport and Infrastructure

Sethi, 2001; Freeman and Mathur, 2008; IHME, 2013). Indeed, road crashes and exposure to traffic-generated air pollution were recently reported to be among the top 10 leading causes of death throughout sub-Saharan Africa (GRSF, 2014).

While there exists a consensus on the negative health outcomes associated with transport, the lack of quality data (e.g., crashes/injuries, pollution levels/disease) limits the ability to develop truly effective, evidence-based solutions. And as noted above, the issues surrounding rural transport provision are complicated. In an effort to explore health and safety issues associated with transport in rural Africa, the African Community Access Programme[1] (AFCAP) commissioned a study to synthesise the results of an extensive literature review and expert opinion elicited through field interviews and an internet survey (Jones et al., 2014). In this paper, we summarise specific results from the AFCAP study related to the provision of public transport. In particular, the paper attempts to provide a narrative on road safety and exposure to air pollution in rural sub-Saharan Africa based on three sources of information: a literature review; interviews with 40 transport and public health professionals, and an internet survey of 86 other experts in the field.

2. Methodology

Hundreds of academic articles and research reports from the transportation, public health and global development communities were reviewed and some 170 were organised into an annotated bibliography (Jones et al., 2014). The results of the literature reviews were used to develop instruments for in-person dialogue interviews and an internet-based survey of professional opinion regarding the relationships between health and transport.

The field interviews were conducted as semi-structured dialogues in three study countries (Ethiopia, Ghana and Kenya) from 2 to 13 June, 2014 with some 40 local experts from a range of organisations (see Table 1). The three study countries were selected because of their participation on AFCAP programmes and, perhaps more importantly, the research team had professional connections in each. As such, interviewers were identified through snowball sampling. Some key potential interviewees were identified in the literature and others through professional contacts. They were contacted up to two weeks in advance of the interviews and, where possible, appointments were set (interviews were conducted via telephone/Skype in a few cases). Other interviewees were identified while research team members were in the field – interviewees suggested some and others had their colleagues join them.

Questionnaires (wording, tone, etc.) suggested by Starkey (2007) were used as a model for the developing the interview guides shown in Figs. 1 and 2. The interviewers generally followed the guides but allowed interviewees to expound on initial reactions. Throughout the interactions, the interviewers took notes and later transcribed them to summarise the discussions and highlight specific points raised. Input was transcribed as accurately as possible during the course of the interviews, but nonetheless there may be some minor inaccuracies. Therefore the unique perspectives offered by individual interviewees are provided in the following section as *indirect quotes*.

[1] Africa Community Access Programme (AFCAP) is a research *programme*, funded by UK Aid, with the aim of promoting safe and sustainable rural *access* for all people in *Africa*.

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