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Finding our balance: Considering the opportunities for public bicycle systems in Cape Town, South Africa

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ABSTRACT

This paper seeks to examine the degree to which a public bicycle system could meet the needs of people in Cape Town, South Africa, a middle-income city with significant resource constraints and transport justice considerations. The local authority in Cape Town has an explicit policy to provide affordable and appropriate mobility options for all; at the same time, it is concerned with environmental and economic sustainability, and global status. Recently, public bicycle systems have received increased attention in the city, yet business models that depend on advertising revenue, automation, and credit card possession are likely to exclude the urban poor, who live beyond the central city and seldom can afford the security requirements such systems may require.
The paper thus examines the tensions between the glamour of a globally competitive city, and the multiple unmet mobility needs of city residents; and begins to ask the questions: what role might an iconic, urban, public bicycle system play in Cape Town? What economic, sustainability or mobility needs might this serve? And how might a shared bicycle system business model operate if it were to serve the transport disadvantaged?

1. Introduction

> '*No known bike sharing programs are operative on the African continent. However, Cape Town, wanting to join the rank of world cities that are already showcasing all the intended benefits of programs, is considering putting one into action.*'
>
> [Living Green Magazine, 2013]

Since their emergence in the 1960s, public bicycle systems (also known as bicycle-sharing systems, or bike-share) now operate in more than 730 cities[2] worldwide, on five continents (Meddin & DeMaio, 2014). These systems usually operate in the commercial district or central city (O'Brien, Cheshire, & Batty, 2014; Shaheen, Martin, Cohen, & Finson, 2012), where there are multiple desirable destinations (Kretman, Johnson & Smith, 2011), and a mobility pattern of short, local trips to and from public transport interchanges. Pricing encourages these utility or commuter trips. Characteristically, public bicycle users are able to release a bicycle from one location and return it to another (Beroud & Anaya, 2012; Shaheen, Guzman & Zhang, 2012). Financed largely by advertising revenue or public funding (Beroud & Anaya, 2012; Shaheen, Guzman, & Zhang, 2010), the majority of new systems are what De Maio (2009) and Shaheen, Guzman and Zhang (2012) refer to as 'third generation' models: IT-based, fully automated systems that rely on credit cards for registration and user accountability, security (a deposit) and payment (Shaheen, Guzman & Zhang, 2010).

Since 2008, bicycle-sharing systems have begun operating in developing countries: Brazil, Chile, China, India, Iran and Mexico. Asia, China in particular, is the fastest growing PBS market (Shaheen, Guzman & Zhang, 2010), and the continent's experience is largely limited to the third-generation systems referred to above. The expansion from 2009 onward, to North and Latin America, Asia and Australia, has mostly been to cities with low cycling rates, but with a desire to increase these rates (Beroud & Anaya, 2012).

1.1. The benefits and purpose of public bicycle systems

The claimed benefits of public bicycle systems (PBS) are listed widely, in scholarly journals, business plans and feasibility studies, and included in online blog commentary, the popular press and social media timelines. Shaheen, Guzman and Zhang (2012) summarise these as the following:

- An increased overall acceptance of bicycles as a transport mode
- An increased number of people using a bicycle for daily mobility
- A safer cycling environment
- A low-carbon solution to the 'first mile/last mile' problem
- Multi-modalism (integration with public transport and other modes)

Abbreviations: BRT, Bus Rapid Transit/Transport; CBD, Central Business District, used interchangeably with Central City or central Cape Town; CoCT, City of Cape Town; IDP, Integrated Development Plan; ITP, Integrated Transport Plan; Joburg, Johannesburg; Jozi, Johannesburg; NMT, non-motorised transport; PBS, public bicycle system; TCT, Transport for Cape Town; The City, City of Cape Town; World Cup, FIFA 2010 World Cup.

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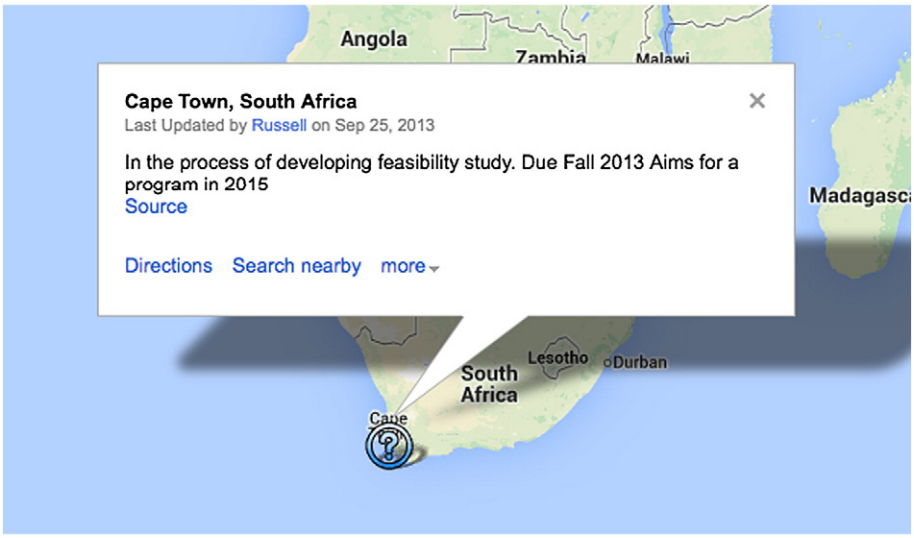

Fig. 1. World Bike Sharing Map (Meddin & DeMaio, 2014).

and increases mobility options
- Individual financial savings
- Confers health benefits
- Reduced traffic congestion and carbon emissions, and
- Greater environmental awareness.

There are cities that aim to address additional urban or transportation concerns with a public bicycle system, such as economic development, improved city status, or the extension of access and mobility to low-income communities. The Paris Velib system, for example, aims to 'improve mobility for all' and 'encourage economic vitality' (Midgley, 2009). Transport for London, when assessing the feasibility in 2008 for a 'cycle hire scheme', determined that such a scheme would also:

- address barriers to cycling, such as access to a bicycle, and
- promote tourism (TfL, 2008).

Liveability, economic competitiveness, and improved access for the poor are explicit goals proposed in the business plan for Philadelphia, USA (Philadelphia, 2009). A public bicycle system in that city should:

- Attract and retain talent for the city's employers and raise the attractiveness of Philadelphia for business investment and tourism
- … Help Philadelphia … achieve its goal of being the 'greenest city in America'
- Serve users in minority and low-income communities and improve their access to key destinations, such as jobs and recreation (p 2).

While 'the ultimate goal of bikesharing is to expand and integrate cycling into transportation systems, so that it can more readily become a daily transportation mode' (Shaheen, Guzman & Zhang, 2012 p 185), what matters is that cities design and implement public bicycle systems according to their own mobility needs and socio-economic context (Beroud & Anaya, 2012). Mexico City, for example, implemented PBS in order to help alleviate traffic congestion, and use is restricted to residents Shaheen et al. (2010). Hangzhou, China, implemented its system primarily as a feeder service for public transport (Shaheen, Guzman & Zhang, 2010); and London, to reduce overcrowding on buses and the underground in central London (TfL, 2008).

To date, there is no formal public bicycle system operating in Africa, although in 2013 the city authorities of eThekwini (Durban, KwaZulu-Natal Province),[3] and of Johannesburg (Gauteng Province), as well as the provincial authority of Gauteng, issued tenders for public bicycle feasibility studies. The City of Johannesburg explicitly called for a study that would 'establish a bike-sharing scheme providing affordable and convenient access to bikes to increase mobility opportunities … A key target constituency is existing and potential bicycle users among low income residents and learners' (CoJ, 2013). The City of Johannesburg also required the identification of the need for a user subsidy, and the establishment of a strategy for involving for local communities, as well as opportunities for job creation.

Research that examines the broad impact of PBS on transport behaviour, emissions and congestion, as well as on health and physical activity, is limited, however (Fishman, Washington, & Haworth, 2013; Midgley, 2011; Shaheen, Guzman & Zhang, 2010). Further, few peer-reviewed papers have evaluated the performance of public bicycle systems, their contribution to liveability improvements, and the barriers to their use (Fishman, Washington & Haworth, 2013). While Midgley (2011) suggests that there is some evidence that public bicycle schemes do increase bicycle mode share, Fishman, Washington, and Haworth (2013) and Shaheen, Guzman and Zhang (2010) have indicated that the majority of users have switched from another sustainable mode, such as public transport and walking, or from using their own personal bicycle. Pucher, Dill, and Handy (2010) report considerable variations in impact when assessing the infrastructure, programmes, and policies aimed at increasing bicycling in cities, with public bicycle systems being only one of many possible interventions.

This paper seeks to examine the degree to which a public bicycle system could meet the transport and sustainability needs of Cape Town, South Africa, a middle-income, inequitable city with significant resource constraints and transport justice concerns, and where an important reason for a low bicycle mode share is unaffordable bicycles. The local authority in Cape Town is mandated to provide affordable and appropriate mobility options for all; at the same time, it is concerned with economic competitiveness and global status. Recently, public bicycle systems have received increased attention in the city, yet business models that depend on advertising revenue, automation, and credit card possession are likely to exclude the urban poor, who live beyond the central city and seldom can afford the security requirements such systems may require (Fig. 1). This paper examines the tensions between the glamour of a globally competitive city, and the multiple unmet mobility needs of most city residents; and begins to ask the questions: what role might an iconic, urban, public bicycle system play in Cape Town? What economic, sustainability or mobility needs might this serve? And how might a shared bicycle system function if it were to serve the transport disadvantaged?

[3] The City of eThekwini decided against implementing a public bicycle system.