

# CHAPTER 2

*Cycling Today for  
a better Tomorrow*

## **BENEFITS OF CYCLING AND WALKING**



## 2. BENEFITS OF CYCLING AND WALKING

### 2.1 Background

#### 2.1.1 CITIES IN A SOUTH AFRICAN CONTEXT

Non-Motorised Transport is any means of transportation not supported by a motor. This includes cycling, walking and making use of animal-drawn carts or hand-pushed trolleys. Most people use a mix of motorised transport and NMT to travel. A better understanding is needed of the importance of NMT in South African cities and also its role in creating an efficient urban economy less hostile to its inhabitants.

“Pedestrian traffic is the backbone of mobility in cities in South Africa. The most attractive attribute of high-income cities all over the world is the walkability of the city. The purpose of urban transport policies is to achieve a better level of general mobility and accessibility at a much lower cost. The target should ensure that a significantly lower percentage of the city fund should be spent on transport.” (Low cost mobility in African cities, 2006).

#### 2.1.2 USER CHARACTERISTICS OF NON-MOTORISED TRAVEL IN SOUTH AFRICA

In South Africa, walking and cycling accounts for 9.1% of commuter trips in metropolitan areas; 25.6% in urban areas and 52.6% in rural areas. Several provinces in South Africa have a higher percentage of NMT trips, due to their rural nature or to the concentration of urban areas in those provinces. Nonetheless, NMT trips capture 24.6% of all trips and so are integral modes of transport. (National Transport Masterplan, 2006)

#### 2.1.3 PATTERNS OF USE: TRIP LEVELS, FREQUENCY, DISTANCE AND PURPOSE

According to the National Transport Master Plan 2050 of 2008, the effect of income on mode choice cannot be understated. Walk and cycle trips are most prevalent amongst income groups earning less than R500 per month. The demand for NMT trips decreases with increasing salary levels. This is

in direct contrast with motor vehicles, where prevalence increases with increased income as seen in Table 2.1.

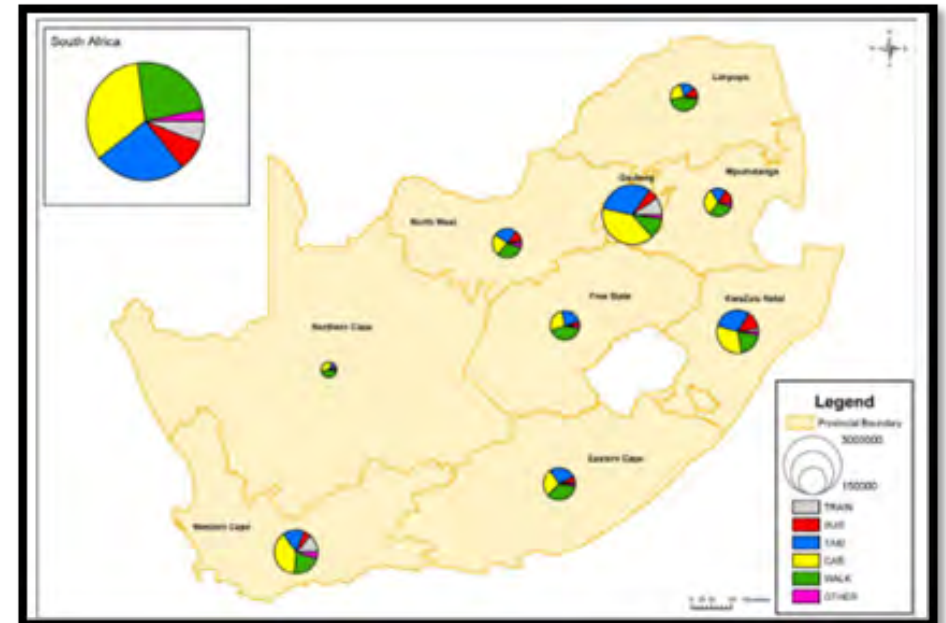


Figure 2.1 Main modes of travel to work per province in South Africa

TABLE 2.1 EFFECT OF INCOME ON MODE CHOICE IN SOUTH AFRICA

Income group	MAIN MODE OF TRAVEL TO WORK%					
	Train	Bus	Taxi	Car	Walk / Cycle	Other
Up to R500	3.0	7.0	20.5	4.4	57.9	7.2
R500- R1 000	6.6	10.5	29.0	6.6	39.5	7.8
R1 001- R2 000	10.4	12.4	37.9	13.8	19.4	6.2
R2 001- R3 000	8.9	11.1	31.3	28.5	13.7	6.4
>R3 000	2.4	5.5	15.7	65.4	8.4	2.6
Country Average	6.2	9.2	26.6	27.7	24.6	5.7

Source: National Transport Master Plan (2006)

### 2.1.4 COMPARISON OF SOUTH AFRICA WITH INTERNATIONAL COUNTRIES

Cycling rates in South Africa are lower than any other Sub-Saharan country. In fact, in Mali and Burkina Faso, as well as in the Netherlands, Denmark and many Asian countries, bicycles are used in 40% of all trips. In India, bicycles are also adapted to haul major loads and to act as taxis for two to three passengers (De Waal, 2000).

As illustrated in Figure 2.2, South Africa has 36 bicycles per 100 persons. The number of bicycles in use in South Africa is equivalent to the number of bicycles used in the Netherlands. In 2000, the Netherlands used 16.5 million bicycles and approximately 15 million bicycles were used in South Africa. Studies have shown that the more developed the country, the higher the rate of bicycle ownership (De Waal, 2000).

**TABLE 2.2 COST COMPARISON FOR ORLANDO DEMONSTRATION PROJECT, 2013**

Mode	Speed (km/h)	Delay in minutes	Travel time in minutes	Monthly Expense (Rands)	Comments
Rea Vaya BRT	60	3	6	R220.00	Constant price all the way.
Taxi	60	6	9	R500.00	Delays can be higher due to having to pick up passengers along the way.
Walking	5	1	34	R20.00	One pair of shoes per year.
Cycling	20	2	10	R60.00	Initial cost R500 for bicycle; R220 maintenance every year.
Private Car	60	2	5	R356.40	Maintenance costs + Fuel consumption can be higher.

Most distribution networks in South Africa are aimed at affluent recreational cyclists. This makes it difficult to access proper and appropriate cycling networks in peri-urban and rural areas.

With the growing rate of new housing developments, transport needs to link scholars with schools, shoppers with shopping centres, commuters with work locations, traders with customers, the unemployed with economic opportunities, and communities with each other. By increasing social integration through the use of transport, the barriers of isolation previously formed in the country will be broken.

## 2.2 Benefits of cycling and walking

Cycling and walking aid in providing a minimum level of mobility that is required for proper economic and social participation. Other benefits of utilising the two modes are shown in Figure 2.3 (Wittink, 2005).

### 2.2.1 SPACE SAVINGS

Bicycles occupy less space than other transport vehicles. In developed cities with parking limitations, bicycles have a space-saving advantage since providing for bicycle parking uses less space than for an average-sized motor vehicle. Figure 2.3 compares the space used to transport the same number of people by various modes compared to a bicycle. It shows the bicycle as a better mode for shorter distances, space wise.



**Figure 2.2 Comparison of space used to transport the same number of people by bus, bicycle and car.**  
Source: [www.shoroc.com](http://www.shoroc.com)

### 2.2.2 COST SAVINGS

For trips of less than 1km, walking is always the cheapest mode of travel, cycling is cheaper than public transport and using a car is 10 times more expensive than all of these options. The longer the distance cycled, the greater the cost savings.



A study on cost comparisons was undertaken as part of the NMT programme and is illustrated with cost comparisons in Table 2.2. This confirmed that walking and cycling are considerably cheaper than using public transport or a private car.

### 2.2.3 GENERATION OF INCOME AND EMPLOYMENT

In many semi-rural areas in South Africa, people use bicycles as a key mode of transport to generate income by ferrying goods for various informal and small businesses. Cycling is also three times faster than walking, creating more efficiency for informal and small businesses.

Cycling can aid traffic management within congested cities as it can alleviate problems created by congestion if it captures a significant modal share.



### 2.2.4 FEEDER TO PUBLIC TRANSPORT

If planned properly, cycling and pedestrian networks can act as a feeder to public transport. This has been successfully implemented in the Netherlands and Bogotá. This approach is currently being undertaken in many South African cities that will be implementing the Integrated Rapid Public Transport Network (IRPTN).

### 2.2.5 ACCESSIBILITY FOR ALL

Due to the bicycle being a low-cost form of mobility, it has the potential to aid in bringing about equity and greater accessibility for people who cannot afford public transportation or the purchasing of a motor vehicle.

Mobility has a profound effect on poverty. There exists a vicious cycle linking low mobility and low income. Incidence of low mobility for entire households creates bottlenecks for household income when public transport is unaffordable coupled with limited services or economic opportunities available within reasonable walking distances. Thus the solution is to reduce the cost of transport and make it more accessible to low-income earners as shown in Figure 2.4.



Figure 2.3 Clear road markings showing pedestrians where to cross.

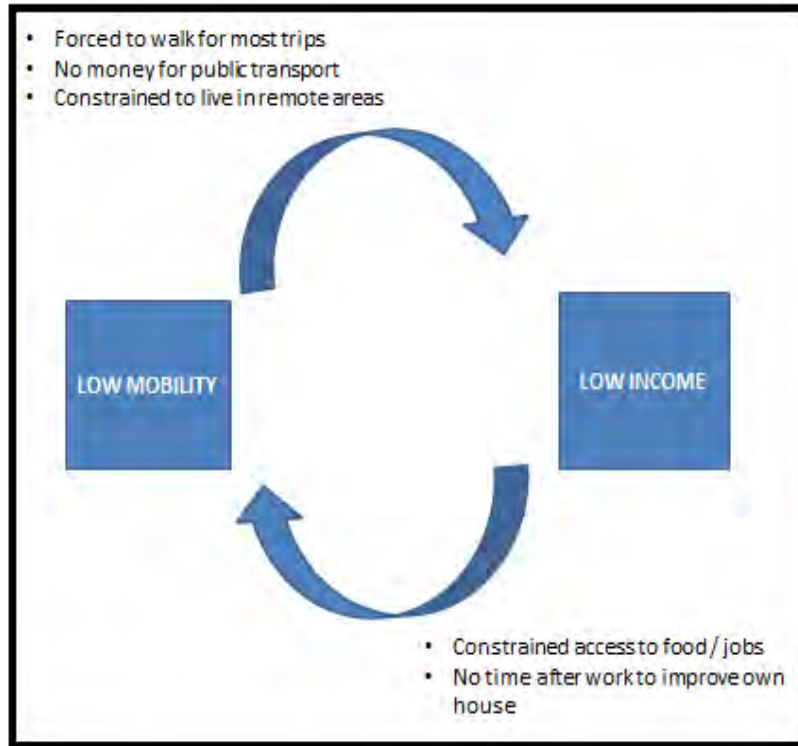


Figure 2.4 Link between low income and low mobility

Source: Koster (2000)

## 2.3 Main barriers to cycling and walking in South Africa

### 2.3.1 INFRASTRUCTURE

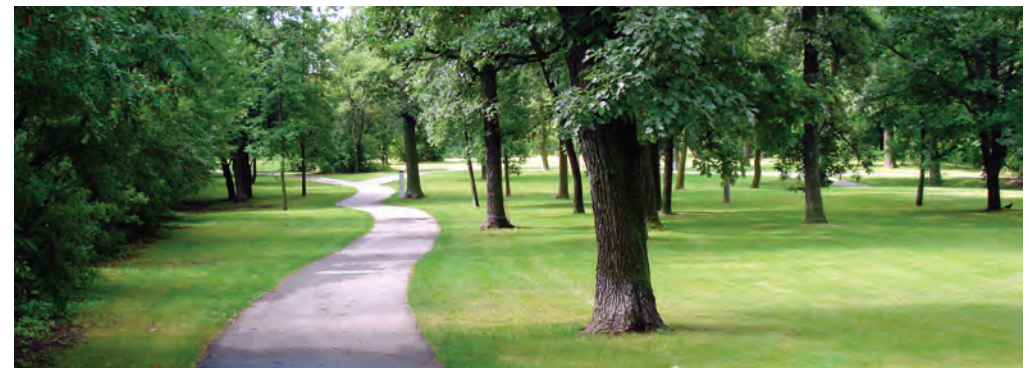
In South Africa, despite the surge of interest in NMT planning and provision, sidewalks remain inadequate in most cities and towns, and bicycle infrastructure is almost non-existent. Cities such as Cape Town, Johannesburg, Rustenburg, Tshwane and Ethekewini (see Figure 2.5), are working to improve this situation. In general, motorised traffic takes priority in terms of space allocation, comfort levels and budget.



Figure 2.5 Ethekewini NMT Programme launch at UNFCCC COP17, December 2011

### 2.3.2 SAFETY

Road engineering, over the decades, has focused on designing infrastructure that is faster, wider and more efficient for motorised traffic. These policies facilitated fast driving and neglected the human impact of accidents, the degraded conditions for walking and cycling and neighbourhood liveability. The fact that South African cities have been planned with the motor vehicle as the dominant mode of transport is evident in the high accident statistics involving pedestrians and motor vehicles. Most accidents take place at the intersection crossings.



### 2.3.3 LAND USE AND SPATIAL LAYOUT

Movement between modes is not seamless and the full NMT travel chain is seldom foreseen and planned for. The planning of sustainable settlements is only possible if land-use and transport planning is conducted simultaneously. Responsibilities of the land-use planning and transportation departments need to be integrated and shared. Land-use planners require an understanding of the transportation impact their plans will have. Furthermore, transport planning requires an integrated approach. Every project should consider all modes of transport. During project maintenance for example, an audit should be conducted regarding possible changes in demand for modes of transport and adapted to accommodate multi-modal forms of transport. The predominance of road infrastructure for motorised vehicles as the only enabler of mobility needs to be carefully reconsidered.



## 2.4 Concluding comments

*The benefits of walking and cycling are substantial and range from personal benefits such as good health, safety and cost savings to public benefits such as improved air quality, improved productivity and space savings. The challenge in South Africa is how to overcome the decades of planning bias in favour of motorised vehicles, how to retrospectively introduce NMT infrastructure and how to ensure that NMT planning is mainstreamed in urban and settlement planning. The NMT Best Practice Manual presents ways in which a selection of municipalities is addressing the inclusion of NMT in their urban planning processes.*