

Mobility and accessibility of elders in South Africa

Pelayo Arbués, gonzalezpelayo@gmail.com

March 2015

1 Abstract

Elders mobility is critical for social integration and essential to one's independence, the maintenance of well-being and quality of life. Although African populations are aging at much slower rates than the rest of the world, there is a growing recognition of population aging, especially in South Africa. In this paper we study how South African elders behave in travel terms. In particular we study the mobility of this segment of population and their accessibility to public services by public and private means.

1.1 Objective

In this paper we could study the effects of different sociodemographic variables on travel participation (Probit/Logit: travel or not), number of trips taken (Ordered probit). Preliminary ideas include studying elders mobility but also handicapped and disabled people.

1.2 Data description

The National Household Travel Survey in South Africa (NHTS) was conducted between January and March 2013, and a total of 51 341 households and/or dwelling units were sampled, using a random stratified sample design. The findings are representative of the population of South Africa and can be analysed and reported on at provincial, municipal and Transport Analysis Zone (TAZ) levels.

Table 1 contains the distribution of categorical variables in the sample.

Variable	Levels	n	%	Σ %
Race	African/Black	126797	80.6	80.6
	Coloured	16623	10.6	91.2
	Indian/asian	3544	2.2	93.4
	White	10309	6.5	100.0
	all	157273	100.0	
Gender	Male	74605	47.4	47.4
	Female	82668	52.6	100.0
	all	157273	100.0	
Disabled	No	131462	93.3	93.3
	Yes	9425	6.7	100.0
	all	140887	100.0	
Age	Age < 18	57539	36.7	36.7
	Age 18-35	47221	30.1	66.7
	Age 36-50	26213	16.7	83.4
	Age 51-64	15905	10.1	93.6
	Age 65-79	7813	5.0	98.5
	Age 80+	2268	1.4	100.0
	all	156959	100.0	

Labor_situation	Working	45407	41.9	41.9
	Student	14995	13.8	55.8
	Housewife	4109	3.8	59.6
	Pensioner	11998	11.1	70.6
	Unemployed	31818	29.4	100.0
	all	108327	100.0	
Education_level	No schooling	26858	17.7	17.7
	General	65529	43.2	60.9
	Further	53001	34.9	95.8
	Higher	4207	2.8	98.6
	Post	2142	1.4	100.0
	all	151737	100.0	
Have_licence	Yes	23475	14.9	14.9
	No	128880	82.0	96.9
	Unspecified	4918	3.1	100.0
	all	157273	100.0	
Area_of_residence	Metro	45794	29.1	29.1
	Urban	48548	30.9	60.0
	Rural	62931	40.0	100.0
	all	157273	100.0	
Income_quintile	Lowest income quintile	28488	18.1	18.1
	Quintile 2	46511	29.6	47.7
	Quintile 3	33978	21.6	69.3
	Quintile 4	25216	16.0	85.3
	Highest income quintile	23080	14.7	100.0
	all	157273	100.0	
Access_to_motor_vehicle	No motor vehicles	111259	70.7	70.7
	Access to motor vehicles	46014	29.3	100.0
	all	157273	100.0	
Traveled_in_refday	Yes	124308	80.0	80.0
	No	31109	20.0	100.0
	all	155417	100.0	

Table 1: Variables tabulation

}

1.2.1 Acessibility variable

The NHTS includes information about travel times to the following nearest facilities: food and grocery shops, other shops, traditional healer, church, medical services, post office, welfare station, police station, municipality representative, tribal authority and banks/financial services. In this fashion, each household representative reports the travel times and the usual mean of transport used to reach it.

Equation 1 shows the first approach taken to build the accessibility variable, travel times to all facilities have been averaged for each household.

$$\sum_{j=1}^n \frac{time_{hj}}{n} \quad (1)$$

Variable	n	Min	q ₁	\tilde{x}	\bar{x}	q ₃	Max	s	IQR	#NA
Food_shops	150395	1	15	25	32.2	40	300	28.4	25	6878
Other_shops	143699	1	5	10	18.9	25	300	21.6	20	13574
Traditional_healer	28921	1	15	25	34.3	45	300	34.7	30	128352
Church	131618	1	10	15	22.2	30	300	21.1	20	25655
Medical_services	141476	1	15	20	28.5	30	300	25.6	15	15797
Postal_office	114509	1	15	20	28.2	30	300	25.4	15	42764
Welfare_station	107514	1	15	30	33.8	45	300	28.3	30	49759
Police_station	126172	1	15	20	29.7	35	300	25.6	20	31101
Municipal_office	118370	1	15	25	31.5	40	300	27.2	25	38903
Tribal_authority	52587	1	15	20	31.1	40	300	29.0	25	104686
Financial_services	140065	1	15	30	32.5	40	300	27.5	25	17208

Table 2: Travel times to different services

For those household where all variables in Table 2 are missing, the value for Acc_h has been replaced by the average value in the Traffic Analysis Zone. Table 3 displays statistical information for Acc_h . The average values for households located in each TAZ are displayed in Figure 1.

Variable	n	Min	q ₁	\tilde{x}	\bar{x}	q ₃	Max	s	IQR	#NA
X.Acc_h.	157273	1	15.6	23.6	28.2	34	300	20.0	18.4	0

Table 3: Descriptive statistics of accessibility variables

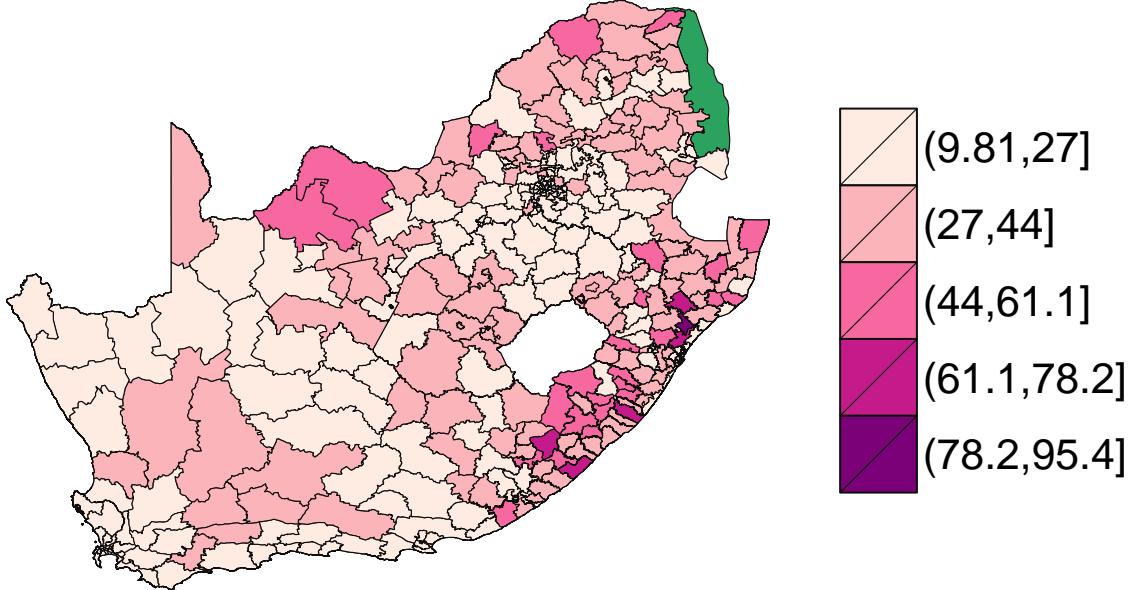


Figure 1: Travel in the reference day by gender

This measure might be improved by only taking the average of households reporting walking times? Next step: check time information to public transportation stations/stops to see if this info can be included in an accessibility measure.