Chapter 8 - Mobility Poverty as a Dimension to Inclusion and Satisfaction with Life in Durban

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Abstract

Urban mobility condition, affordability and experience are key to spatial interaction. However, the role of urban mobility in determining inclusion and satisfaction with life remains undocumented. Conceptualizing urban mobility condition as critical to spatial interaction, this study examined mobility poverty as a key construct to limiting urban inclusion and satisfaction with life in Durban, South Africa. This is aligned with the view that mobility is key to urban residents' spatial, social, and economic inclusion. Based on data collected via google survey, the study aimed to use mobility poverty as a predictive variable to explain inclusion among urban residents and satisfaction with life in Durban. A total of ninety respondents were sampled in the city using the purposive sampling technique. Durban was classified along the inner city and peripheral corridor. The study utilized exploratory design to understand the dimensions of transport poverty residents of the city. Using linear regression, the study hypothesized that transport poverty predicts urban inclusion and satisfaction with life. The conclusion was that transport service availability rather than city residents' socioeconomic characteristics predicted both spatial exclusion and satisfaction with life. Other variable constructs that predicted satisfaction with life were transport reliability and transport disadvantage variables.

Keywords: Durban, Transport Poverty, Satisfaction, Transport, Urban Inclusion, Urban Residents

Introduction

Post-apartheid South Africa is characterised by inequality in the quality of life. Orange and Merrifield (2010) posited that, deep-seated poverty, inequality, and lack of access to opportunities are some challenges that mark this era. The outcome of this is the apartheid spatial planning footprint. Gumede (2015) wrote that historically, spatial planning in South Africa was characterised by British and minority white domination and invasion. This, the author posits was the genesis of racialization and exclusion in the South African society. This is because spatial planning in South Africa ('as unjust as it may') continues to favour the white minority economically and socially at the expense of the indigenous African and black population. These colonial footprint and apartheid planning, according to Strauss (2019), resulted in spatial injustice and segregation, which continue to deepen the state of poverty among urban blacks to this day. As postulated by Strauss (2019), the material consequences, severe poverty, and structural inequality produced under the apartheid regime remain largely unresolved despite the post-apartheid attempts. For instance, it was identified that the indigenous black transport needs and service demands remained unmet, an anomaly and service poverty that resulted in increased transportation costs and satisfaction with life shocks (Maylam 1995) among the black residents.

Du Plessis (2014:71) mentioned that the 'South African urban form is characterised by several inefficiencies such as unequal access to economic and social opportunities, insufficient public transport and spatial structural elements resulting from apartheid-era policies and legislation'. Blamah *et al.* (2021) identified that limited access, weak affordability, and unavailability of public transport remain the drivers of and dimension to transport poverty. This assertion is an offset of the novel argument of Lucas (2012) that there exist nexuses among poverty, transport disadvantage, accessibility to services and socioeconomic exclusion. In South Africa, studies (Lucas 2011; Jennings 2015; Ngubane 2018**)** reported the spatial divide in transport poverty and mobility experiences. The transport poverty experience is due to apartheid spatial segregation, lack of accessibility to public transport and spatial mobility imbalances (Ngubane 2018; Jennings 2015). The spatial limitation and exclusion as a transport disadvantage, according to Parnell (2015), Jennings (2015), Culwick (2015), Blamah *et al.* (2021) and Chakwizira *et al.* (2021), lead to increased travel time and distance and lack of mobility accessibility due to transport demand and supply variance. These

results further limit transport affordability and, indirectly, satisfaction with life among South Africans (Behrens & Venter 2005).

In Cape Town, South Africa, Behrens *et al.* (2004) mentioned that low-income earners experience higher transport poverty and remain the most disadvantaged due to limited transport modal alternatives. It was reported that their modal limitation indirectly influences their access to the city centre and other places of opportunity. In Durban, Bannister & Esteves (2017) believed that long commuting distance and the cost of transportation remain drivers of transport poverty in the city. Despite the residents' dependence on public transport, this is attributed to limited neighbourhood transportation access and connectivity (Møller 2001). This further contributes to continued dependence on private car ownership among financially capable residents. Iterating this, Venter *et al.* (2007) had it that long-distance travel and its associated costs result in a situation whereby low-income residents of peri-urban and peripheral localities within the city seem to suffer the worst access and mobility conditions. Despite the relevance of transport to the socio-economic development of a nation and its citizenry (Luke & Heyns 2020), it was argued by Pojani & Stead (2015) that the transport sector of South Africa is in a poor state. These negativities and limiting factors to having an improved quality of life - especially for the black majority - in South Africa range from mobility and transport availability, accessibility, safety, affordability (Heyns & Luke 2017) and spatial exclusion, which continue to limit social, economic, and spatial inclusion and quality of and satisfaction with life. Aligning to the commentary on transport sector and infrastructure conditions in South Africa, the transport policy focus of the country entails embracing a focus on promoting an affordable, safe and accessible public transport system (National Planning Commission 2011; Department of Transport 2015; Luke & Heyns 2020) such that social inclusion and improved quality of life are achieved for all residents.

In South Africa, the National Development Plan (NDP) (Vision 2030) reiterates the need to achieve inclusivity by emphasizing the need to create vibrant urban settlements with new norms and national spatial frameworks. The gap that this study aim to bridge is captured in the hypothesis that transport poverty can be an explainable factor and dimension to achieving quality of life for the urban residents in Durban, South Africa. Mobility poverty is often referred to as transport poverty or transport-related social exclusion (Van den Broeck 2016). The concept remains a multidimensional phenomenon (Ranchordas 2020). Van den Broeck (2016)

conceptualized that transport poverty is experienced when transport modal split is unaffordable, transport is inaccessible, unsafe, in poor condition, and relatively unavailable due to low frequency and inadequate public transport. In Kuttler and Moraglio (2021), transport poverty was conceptualized as the transport or mobility inequalities and social construction of mobility disadvantages. These disadvantages were argued to be defined by social exclusion and economic deprivation. Studies (Ekes 2015; Mead 2021) alluded quality of life can be explained by mobility poverty indicators of quality of service, degree of spatial isolation owing to transport connectivity, travel condition, pricing, and affordability.

The South African urban space provides a unique point of entry and discussion on the inclusive city and satisfaction with life in the sense that it goes beyond the conceptualization of urban space through the lenses of urbanization – but incorporates massive restructuring of urban spaces with the intention of ameliorating negativities arising out of the colonial and apartheid governments. This is aligned with the National Transport Masterplan (NATMAP) 2020 that aimed to achieve an integrated, smart, and efficient transport system, supporting a thriving economy that promotes sustainable economic growth, supports a healthier lifestyle, provides safe and accessible mobility options, socially includes all communities, and preserves the environment (Department of Transport 2015: 1 - 3). The need to understand life experience along the transport thinking in Durban is forwarded in Makhaola and Proches (2017). The author reported that improved transport condition remains critical to improving the country's tourism sector. The argument was that the lack of transportation that connects tourists to preferred tourist locations continues to hamper livelihood conditions (jobs and income) in the city. It was argued that tourists with no means of transport could not connect to their choice destination after certain hours. This, therefore, reflects the issue of poor transport reliability in the city. Chen *et al.* (2019) traced that the transport disadvantages in the form of limited public transport and poor road networks were more evident in Durban. It argues that spatial segregation owing to a weak transport system is far worse in the township setting of the city. In fact, in township areas such as Lamontville, Sibiya (2019) reported that the area remains marginalized in transport planning. The author mentioned challenges such as limited non-motorized transport (NMT) infrastructures in the area. It was reported that the lack of splits, safety, lighting, poor development, and poor maintenance of the limited existing formal NMT routes, as in most areas of peripheral Durban,

are the common experiences in these settings.

Thus, the author argues that there exists a gap in literature on how transport poverty contributes to spatial inclusivity and satisfaction with life. This study is one of the few that attempts to close this knowledge gap; as it relates to Durban, South Africa. This is because, despite the need to document and investigate transport inclusion and spatial-mobility justice along the mobility poverty thinking in South Africa (Jennings 2015; Jennings *et al.* 2018), there exists limited knowledge of the transport poverty experience of South Africans (Kane 2010). To achieve this, the study hypothesized that transport poverty influences life satisfaction and spatial inclusion among urban residents in Durban, South Africa.

Study Methods and Materials

This quantitative study was based on the post-positivism ideology with data on respondents' transport experiences in Durban, South Africa. The data for the study were collected using an online google form from the 1st of May to the 16th of August 2021. Respondents for this study were obtained purposively. The targeted respondents were city dwellers that were conversant with Information and Communication Technology (ICT). An online survey allows for a more convenient sampling technique and greater coverage. Likewise, it was purposive, considering the study setting is Durban, South Africa. Thus, respondents in this study were residents within Durban's inner-city (CBD) and peripheral city areas.

In this study, satisfaction with life (SWL) as a dependent variable was tested and explained transport poverty (transport disadvantaged, service availability, and reliability) variable constructs. Studies (Pavot & Diener 2008; Currie 2010; Currie *et al.* 2010) explained that transport service availability indicators include the cost, ease of access, ability to get around, the ability to find transport to commute and the ability to get to places quickly (Table 1). The variable construct for transport disadvantage includes the availability of transport modes at night, on weekends, and at various bus stops. It likewise includes the connectedness of transport nodes, the ability to physically enter a transport node and the operating frequency of a transport mode. The authors explained that a transport system is reliable when it is safe, public transport travel information, city navigation is understood, transport assistance is achieved, and residents have the time to travel. These, according to Pavot and Diener (2008), define satisfaction with life (condi-

tion, ideal or potential change in life experience) (Table 1).

Table 1: Explainable variables to define each indicator

Indicator	Indicator
Transport Service Availability	**Transport Disadvantaged**
Ability to cover the cost of transport	Ability to physically get onto transport modes
Ease of getting to the destination quickly	Transport modes being available at night
Finding transport so you can commute	Transport modes being available at weekends
Being able to commute when you want to	Transport modes operating frequently
Having to rely on others for transport	Being able to get to bus/taxi stops
Being able to get around reliably	Ability to connect easily among modal splits

Transport Reliability	Spatial Exclusion
Ability to get public travel information	Satisfaction with neighbourhood modal service
Perception of safety when commuting alone	Satisfaction with neighbourhood road quality
Sense of help when traveling within the city alone	Satisfaction with employment opportunity
Ability to understand/navigate the town	Satisfaction with neighbourhood social service
Finding the time to travel when you need to	Satisfaction with local government presence
Access to people transport assistance	

Satisfaction with Life	Socioeconomic Characteristics
Closeness to an ideal life	Age
The conditions of my life are excellent	Income

I am satisfied with my life	Employment status
Perception of having achieved life wants	Locational classification
Desire to want to live and not change the life experience	

In analysing the data, the mean score of the indicators were computed and analysed accordingly. In the study, various indicators hypothesized that various indicators predicted both satisfaction with life and spatial exclusion experience. Using linear regression, two hypotheses were tested. These are:

Transport poverty indicators (transport disadvantaged, service availability, and reliability), and spatial exclusion, predict satisfaction with life (Figure 1)

Figure 1: Thematic expression of hypothesis one

Socioeconomic characteristics and transport poverty indicators predict spatial exclusion (Figure 2)

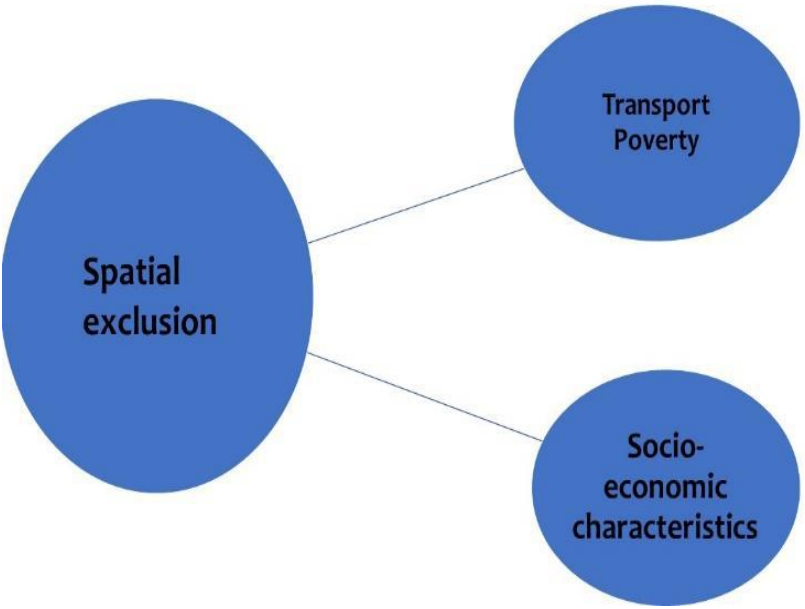

Figure 2: Visual expression of hypothesis two

Study Results and Findings

Socioeconomic Characteristics of Respondents

Figure 3 shows the geographical distribution of the respondents. From the sample, 86% resided within the CBD of Durban. All the sampled respondents were between 20 and 59 years of age. However, 51.6% of the sample was between 30 and 40. These imply that many respondents had experienced between twelve and twenty-two years of transport-related characteristics. Thus, they needed experience decoding the various dimensions to transport poverty.

From the sample, over half of the sample size earned below R5000 and only 23.7% earned above R15000. It can also be observed in table 2 that 1:2 of the sampled respondents earned below R3000. This can be explained by 17.2% being unemployed and 6.5% being students. The sample size of respondents was mainly (59.1%) male.

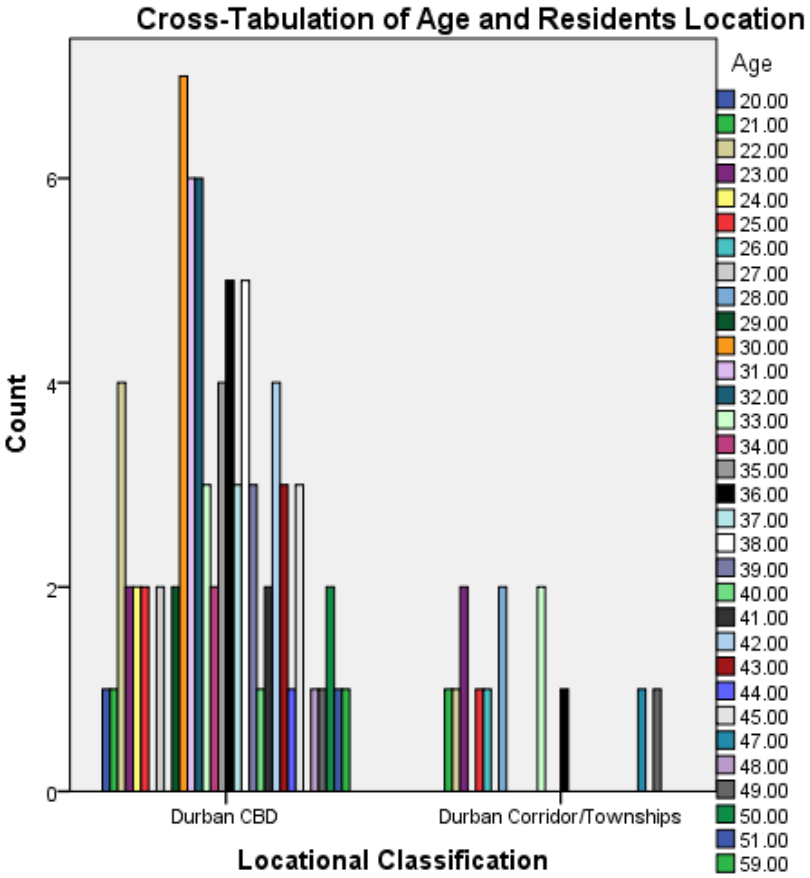

Figure 3: Distribution of study respondents

Table 2: Residents' income, employment and gender distribution

Average Monthly Income			Employment Status			Gender		
Response	**No.**	**%**	**Response**	**No.**	**%**	**Response**	**No.**	**%**
Below 3000	40	43.0	Employed	38	40.9	Male	55	59.1

3001 - 5000	13	14.0	Unemployed	16	17.2	Female	38	40.9
5001 - 10000	12	12.9	Self Employed	33	35.5			
10001 - 15000	6	6.5	Student	6	6.5			
Above 15000	22	23.7						
Total	**93**	**100**	**Total**	**93**	**100**	**Total**	**93**	**100**

Hypothesis one: Transport poverty predicting satisfaction with life

The study tested to predict satisfaction with the life (wellbeing identity) of Durban residents along the transport poverty and spatial exclusion argument. As presented below:

Satisfaction with Life (Y) =
transport disadvantaged + service availability + reliability + spatial exclusion.

Based on linear regression (Table 3), the study output shows that the dimensions of transport poverty significantly explained the satisfaction with life experience and wellbeing identity among Durban residents. The result of transport service availability, disadvantage and reliability was significant at p=0.000, 0.000 and 0.043, respectively. It was revealed that there was no significant relationship between the spatial exclusion identity of respondents and the wellbeing construct. However, Table 3 shows that a unit increase in transport service availability and transport reliability (at a coefficient value of 0.531 and 0.270, respectively) would increase satisfaction with life. While the coefficient results of -0.377 shows that a unit increase in the transport disadvantage variable and its corresponding indicators would reduce the value of satisfaction with life by 0.377 units. However, the model summary shows that transport poverty variables and their defining indicators accounted for about 39% change in satisfaction with life experience. It explains that other unexplainable indicators accounted for 61% of changes or experiences in satisfaction with life.

Table 3: Output table for transport poverty predicting satisfaction with life

Model Summary					
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	
1	.625[a]	.390	.363	.59264	
ANOVA[a]					
Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	19.780	4	4.945	14.079	.000[b]
Residual	30.908	88	.351		
Total	50.687	92			
Coefficients[a]					
	Unstandardized Coefficients		Standardized Coefficients		
Model	B	Std. Error	Beta	t	Sig.
(Constant)	.000	.061		.003	.997
Mean_SE	-.118	.091	-.124	-1.300	.197
Mean_TSA	**.531**	.122	.532	4.345	**.000**
Mean_TD	**-.377**	.104	-.392	-3.633	**.000**
Mean_TR	**.270**	.132	.249	2.049	**.043**

Hypothesis two: Spatial exclusion is predicted by transport poverty and resident socioeconomic characteristics

The study tested to predict spatial exclusion of Durban residents using transport poverty variables and socio-economic characteristics. As presented: Spatial Exclusion (Y) = Transport Disadvantaged + Service Availability + Reliability + Socio-economic Characteristics. The study results, as presented in Table 4, shows that only the transport service availability construct (p=0.031) was significant. The model coefficient (-0.329) shows that a unit increase in transport service availability variable construct would reduce spatial exclusion by 0.329. Likewise, the transport service availability as the significant independent variable construct

provided a 27.5% explanation for the spatial exclusion changes among Durban residents.

Table 4: Output table for transport poverty and socioeconomic characteristics predicting spatial exclusion

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.202[a]	.041	-.003	.78445
2	.525[b]	.275	.215	.69390

ANOVA[a]					
Model 1	Sum of Squares	df	Mean Square	F	Sig.
Regression	19.780	4	4.945	14.079	.000[b]
Residual	30.908	88	.351		
Total	50.687	92			
Model 2	Sum of Squares	df	Mean Square	F	Sig.
Regression	15.371	7	2.196	4.560	.000[c]
Residual	40.445	84	.481		
Total	55.816	91			

Coefficients[a]					
	Unstandardized Coefficients		Standardized Coefficients	t	
Model	B	Std. Error	Beta		Sig.
1 (Constant)	.349	.544		.643	.522
Age	-.009	.011	-.091	-.780	.437
Locational classification	-.141	.244	-.063	-.578	.565
Average Monthly Income	-.032	.056	-.067	-.572	.569
Employment Status	.089	.090	.116	.995	.322

2 (Constant)	.453	.486		.932	.354
Age	-.006	.010	-.065	-.628	.532
Locational classification	-.185	.217	-.083	-.854	.396
Average Monthly Income	-.056	.056	-.117	-1.005	.318
Employment Status	.055	.080	.071	.681	.498
Mean_TSA	**-.329**	.150	-.313	-2.189	**.031**
Mean_TD	-.081	.135	-.080	-.597	.552
Mean_TR	-.179	.157	-.155	-1.140	.257

Discussion and Conclusion

The study aimed to predict satisfaction with life and spatial exclusion using transport poverty and socioeconomic variables construct. The defining constructs of transport poverty were based on transport reliability, service availability and transport disadvantage indicators. The finding revealed that socioeconomic variables do not explain satisfaction with life and spatial exclusion in Durban. The insignificance of socioeconomic characteristics may be explained by the increasing resilient identity and other important spatial variables that may define the exclusion of respondents. For instance, studies (Lucas 2011; Khuzwayo *et al.* 2019; Maswime 2021; Govender & Loggia 2021; Oviedo 2021) have argued that non-socioeconomic indicators such as land access and ownership, home ownership, and geographical connectivity as captured in road connectivity and condition (standard) of road furniture are imperative to explaining spatial exclusion. In fact, Oviedo (2021) argued that the wellbeing and inequality experienced among vulnerable groups in the city depend on transport and urban configuration.

The argument for the insignificance of respondents' socio-economic characteristics is divergent from empirical evidence studies that gender, income and residential locations predict the quality of life (Venter *et al.* 2007; Fajemilehin & Odebiyi 2011; Guo *et al.* 2018; Musvoto 2021). Venter *et al.* (2007:653) documented that 'households in peri-urban and peripheral localities suffer the highest travel burdens, having neither the high access of a central location nor the livelihoods-enhancing amenities in their local

environment'. The study further reported the inequality associated with quality of life. Such that women remain the most exposed to satisfaction with life infrastructure needs. The premise of this study among Durban residents was that transport-related service availability, reliability, and its associated disadvantages rather than economic factor such as income (high or low) remain imperative to satisfaction with life experiences. Blamah *et al.* (2021) have recognised that improved access, daily availability, and quality conditions of public buses are critical to satisfaction with life. The study argued that the perception of public transport buses' safety and convenience are critical to the quality of life, ease of mobility and city identity construct. Iterating this, studies (Popoola & Akande 2016; Popoola *et al.* 2020) posited that livelihood capacity (income inclusive) may be irrelevant when mobility disadvantage is evident. The peri-urban and rural geographies were reported to be at the most mobility disadvantage when put into context. All of which limit their inclusiveness and quality of life. Both studies, as evidenced in this study, emphasised the effect of transport service availability on spatial exclusion (B= -0.329) and satisfaction with life (B= 0.531).

In South Africa, Magidimisha-Chipungu (2022) has reported on the effect of road furniture, such as signage and information, on a city's safety and quality of life. Based on the thematic evaluation of secondary cities in South Africa, neighbourhood planning and secondary surveillance, community, and street ease of call for help, and street lighting as predictors of safety and security were reported to be unequal It was argued that daytime public informal surveillance and emergency response seem more feasible and limited in the evening. This was perceived as contributing to the 'ghostness' of central business district (CBD) areas which is evidenced by to lack of late-night public transport at bus parks. In ensuring the ability to get to destinations faster, studies (Pernegger & Godehart 2007; Kunene 2013; LeGuerin 2014; Das & Keetse 2015; Keetse & Das 2016; Feikie *et al.* 2018) wrote about the increasing traffic delay along certain corridors of South African cities (including Durban), dilapidating road condition and poor road connectivity. Likewise, the hike in transport cost remains a spatial exclusion and satisfaction with life factors in Durban. Thus, calling for improved government responsiveness in managing exclusion and improving quality of life.

The study, therefore, concludes that policy formation and infrastructure investment toward managing transport poverty rather than a continued emphasis on income or other financial indicators may be critical to achieving inclusive development and quality of life in Durban. Recom-

mended infrastructure provision includes improved road connectivity and management, road furniture (such as signage and markings), traffic management, and transport cost control to improve service availability. To manage safety and security, street policing and lighting must be evaluated so that the sense of feeling safe among Durban commuters around the city CBD and periphery can be achieved. This can be practicable when public transport modes are available at the designated bus stops, during the weekends and mainly at night. The summary is that achieving spatial inclusion (opposite of exclusion) and mobility poverty in Durban depends on great infrastructure investment and conscious policy formation towards exclusion and mobility poverty.

Study Limitation

The authors recognised that the small sample remains a limitation of the study. This is because a small sample size may give room to a margin of error and the likelihood of increasing type II errors. The argument is that the study's exploratory nature was the reason why a small sample was considered. The author also recognised that online surveys might undermine sample randomization.

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