



AA RESEARCH

2017 South African
'entry level' vehicle safety report

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Contents

1. Introduction	3
1.1 Background to the study.....	3
1.2 Purpose of study	3
1.3 Scope of research	4
1.4 Overview of Report.....	4
2. Equipment review	4
2.1 Introduction	4
2.2 Active/Passive safety features	5
2.3 Sample of motor vehicles.....	7
3. Research methodology	9
3.1 Identification of vehicle sample.....	9
3.2 Safety scoring	9
4. Overall results.....	11
5. Discussion and findings	13
6. Limitations.....	15
7. Conclusion	15
8. References	16

1. Introduction

1.1 Background to the study

In 2016, the Automobile Association of South Africa (AASA) published its first 'entry-level vehicle' safety report. This report highlighted the limited but important vehicle safety features on 'entry-level vehicles' available in South Africa (SA). The current socio-economic outlook is still on a downward trend, and reflects the same, if not heavier burden faced by South African consumers.

For this reason, the 'entry-level vehicle' market remains hotly contested as motorists seek more affordable driving options, with lower prices sometimes attained at the expense of safety features.

This disconnect between price and safety was highlighted in last year's entry-level safety report. It is therefore disappointing that vehicles listed in the previous report (most of which are still on sale today) still carry similar, if not the same, limited safety equipment as standard. No notable improvements have been made despite the recognition that motor vehicle crashes cost the South African economy approximately R142 billion annually, and equate to 3.4% of South Africa's Gross Domestic Product. (RTMC, 2016). Being cognisant of inflation rates, the second iteration of this report increased the entry-level vehicle cost threshold from R150 000 to R160 000. This additional 6.3% increase to the financial threshold did not reveal an uptick in the safety equipment on offer in comparison to 2016.

It is critical at this point to note that the primary methodology utilised to gather information for this project was desktop research. Vehicle safety data was acquired from the latest brochures available online, or from dealerships, and thus the resultant safety scores do not fully consider the structural engineering safety aspect of the sample of vehicles.

1.2 Purpose of study

The variety of motor vehicles available in South Africa is not equal when viewed in terms of the quality and features on offer, especially when considering the number of **basic safety features** available in '**affordable**' motor vehicles. This then begs the question, how does a buyer maximise their budget in terms of safety, or rather get the most safety for the money spent? This report seeks to identify and compare the standards of safety equipment present in motor vehicles on the South African market for under R160 000 (entry-level).

1.3 Scope of research

Objectives of this report:

- Identify the basic safety features available in motor vehicles retailing under R160 000,
- Identify prominent safety features in these motor vehicles,
- Develop a method which allows for the comparison of safety features found in these vehicles, and,
- Highlight the vehicles with the most, and least, safety features in relation to their retail pricing.

1.4 Overview of Report

The report addresses the fundamentals of a vehicle's safety features. These are divided into 'Active' and 'Passive' safety features. The importance of each of these safety features is explained, followed by the methodology used in addressing their significance. In turn, this allows for the allocation of notional 'safety' points for the motor vehicles under investigation. Once this is achieved, the reader can gain a clearer understanding of how entry-level vehicles on the South African market rate in terms of both **safety** and **affordability**.

2. Equipment review

2.1 Introduction

For the purpose of this report, the AA examined each of the vehicles in the selected price bracket for what may be regarded as the minimum safety features which promote increased safety in preventing crashes, or moderating their effects. According to global studies, the combination of anti-lock braking systems (ABS), and electronic stability control (ESC), In the European Union, where ESC became a mandatory requirement in all new cars from November 2014, it is estimated that it prevented at least 188 500 injury crashes and saved more than 6 100 lives since 1995 (International Transport Forum, 2016). An explanation of these minimum safety features, as well as the motor vehicles under investigation, is highlighted below.

2.2 Active and Passive safety features

2.2.1 Active safety features refers to devices and systems that assist in keeping a motor vehicle under control and possibly prevent a crash from occurring. According to the Road Management Traffic Corporation's (RTMC) 2016 Annual Road Traffic Calendar Report, 77.5% of fatal crashes were caused by human error. Active safety features, therefore, are automated systems which aid in compensating for this human error. Active safety features investigated within the range of motor vehicles are:

- *Anti-lock braking system (ABS)*: - ABS prevent the wheels from locking up when the driver applies the brakes, enabling the driver to steer while braking.
- *Electronic stability control (ESC)*: - ESC works by detecting if the steering inputs of the driver are inconsistent with the vehicles direction of travel, and then applies the appropriate brakes to prevent the wheels from slipping, keeping the vehicle under control and on the road in hazardous conditions. It should be noted that ESC systems may have different acronyms between different motor manufacturers. In essence, however, they all aim to achieve the same results.

2.2.2 Passive safety features refers to systems within the motor vehicle that protect occupants from injury in the case of a motor vehicle crash. The passive safety features under consideration for this report are the secondary/supplementary restraint system (SRS), more commonly known as airbags, which provide a cushion upon impact to protect the driver and passengers during a crash. Each vehicle's specification was examined for the presence of:

- Driver side airbags
- Passenger side airbags
- Curtain airbags (airbags located above the head along the roof-lining)
- Side airbags

Location of the various airbags is illustrated in Figure 1

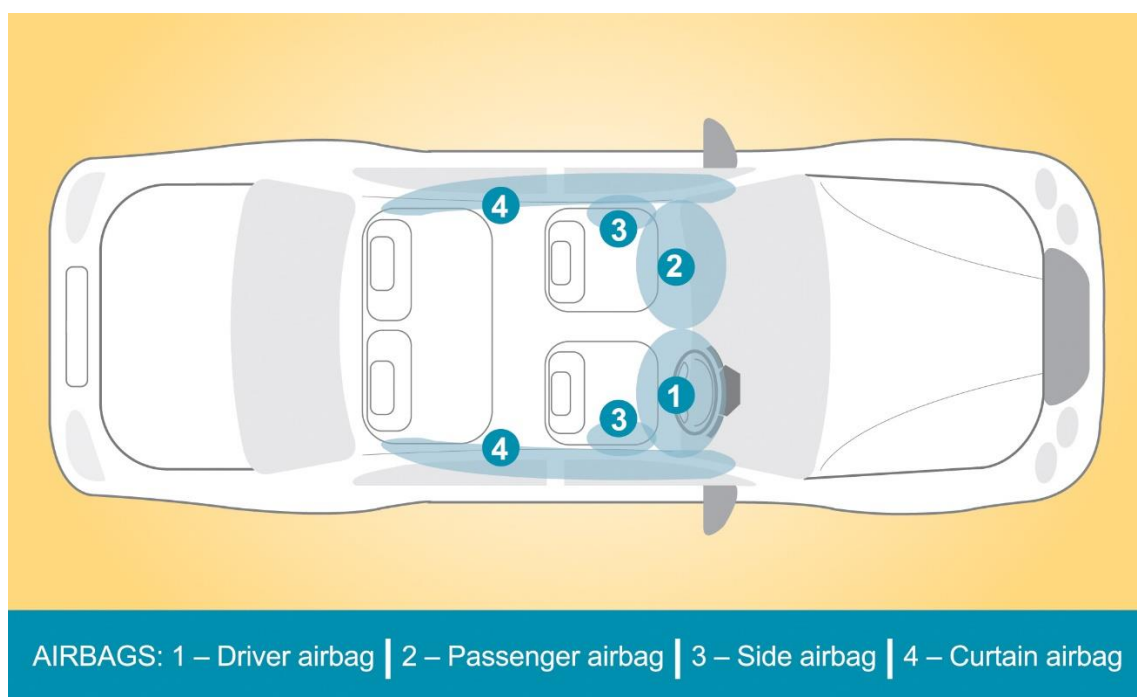


Figure 1. Location of airbags

2.2.3 Euro/Global (Other) NCAP testing – NCAP stands for New Car Assessment

Programme. NCAP has created the five-star safety rating system to help consumers and businesses compare vehicles more easily, and to help them identify the safest choice for their needs. The safety rating is derived from a series of vehicle tests, designed and carried out by Euro NCAP. These tests represent, in a simplified way, important real-life crash scenarios that could result in injury, or death of occupants, or other road users. The number of stars reflects how well the car performs in Euro NCAP tests, but is also influenced by what safety features the vehicle manufacturer is offering in each market. A high star rating shows not only that the test result was good, but also that safety equipment on the tested model is readily available to all consumers in Europe' - (EuroNcap, 2016)

NOTE: There are a number of NCAP testing standards throughout the world, and while these tests are critical in terms of a high quality third party independent testing standard, buyers would be encouraged to look at the testing requirements for each region. It cannot be assumed that two similarly named vehicles will have the same rating in different markets. A three (3) star rating on one may not be the equivalent to a three (3) star rating on another.

The presence of the features highlighted above will serve as the standard to determine the level of safety of motor vehicles under R160 000 in South Africa. A point based system is used to award motor vehicles 'safety points' in relation to the existence of fitted safety equipment. Furthermore, motor vehicles crash tested under the NCAP system (in this case EURO NCAP) will be given additional points if the manufacturer can confirm that the locally available model is identical to that tested. This scoring procedure is explained in further detail in the methodology section. The AA recognises that various safety features contribute differently in terms of fatality/injury prevention, but for the purpose of this report, scores are awarded merely on the face value of their existence.

2.3 Sample of motor vehicles

Table 1 below indicates the motor vehicles which have a retail price of less than R160 000. Twenty-five (25) models make up the sample of vehicles from 14 different manufacturers. All vehicle pricing and safety features have been collected from dealership brochures and are correct as of 31 September 2017.

Important to note that not all levels of the same vehicle models were selected, only vehicles with variances in engine capacity and or safety equipment were included.

Table 1. Make, model, and retail value (lowest to highest) of motor vehicles

Make and Model	Price
Chery QQ3 0.8 TE (aircon)	R99,995
Datsun Go 1.2 Mid	R106,900
Chery QQ3 1.1 TXE	R114,995
Tata Indica 1.4 LGi	R118,995
Renault Kwid 1.0 Expression	R124,900
Suzuki Celerio 1.0 GA	R133,900
Kia Picanto 1.0 Start	R134,995
Tata Vista 1.4 Ini Bounce	R134,995
Datsun Go+ 1.2 Lux	R139,900
Chevrolet Spark 1.2 Curve	R140,700
Mitsubishi Mirage 1.2 GL	R149,900
BAIC D20 hatch 1.3 Comfort	R149,990
Chery J2 1.5 TX	R149,995

Kia Picanto 1.0 Street	R149,995
Kia Picanto 1.2 Start	R150,995
Hyundai i10 1.1 Motion	R154,900
Suzuki Swift hatch 1.2 GA	R154,900
Mahindra KUV100 1.2 G80 K4+	R154,995
Tata Vista 1.4 Ignis	R154,995
Suzuki Swift DZire sedan 1.2 GA	R155,900
Honda Brio hatch 1.2 Trend	R156,100
Tata Manza 1.4 Ini	R156,995
Tata Bolt hatch 1.2T XMS	R157,995
Toyota Aygo 1.0	R159,100
Nissan Micra 1.2 Visia+ (audio)	R159,900

Pricing source: (<http://www.duoporta.com/>)

3. Research methodology

3.1 Identification of vehicle sample

For the 2017 report, the R160 000 designation was set as the benchmark in identifying the potential vehicles for investigation. This price level has been increased by R10 000 (6.3%) from 2016, but is still representative of what may be regarded as 'entry-level' vehicles.

Scoring increments are considered at values of R10,000. The purpose of this is to allow a prospective buyer to consider how much more safety they can “buy” for an additional R10,000. By way of example, a vehicle costing R160 000, with a 10% deposit, financed over 72 months, and with an interest rate of 12%, produces a monthly instalment of R2 815. A variance of around R10 000 on the vehicle's purchase price will add or remove roughly R176 from the monthly instalment costs.

Please note: These figures are indicative. They are provided to indicate an approximation of the difference in monthly instalment that a buyer may expect based on this financing model – *Real world numbers will vary.*

3.2 Safety scoring

A safety point-based system was developed with weights allocated to the existence of certain safety features. Active safety features such as ABS and ESC were given the most significant weights (30 points each), in recognition of their core function of **avoiding collisions**.

In relation to passive safety features, each available airbag scored 10 points. The only exception is the curtain airbag, which scores 20 points (an additional 10 points), as studies show these airbags can drastically reduce life threatening head injuries by up to 50% (Insurance Institute for Highway Safety, 2006).

Safety points are also allocated to motor vehicles which are confirmed to have undergone the EURO NCAP crash test. As NCAP testing is not mandatory for vehicles to be approved for market release, the vehicles which have undergone the process represent a particular, repeatable safety benchmark which allows the public to evaluate their crash performance. As such, an additional five safety points is allocated for each star achieved on the NCAP safety rating scale (maximum of five stars, $5 \times 5 = 25$ maximum achievable points).

A **total of 135 points** is achievable if a motor vehicle has all of the safety features installed. Safety feature weighting can be seen in the Table 2:

Table 2. Safety feature weighting

Active safety (crash prevention)	Maximum Score	Comments
Anti-lock brakes (ABS)	30	Present – full score. Absent – no score
Electronic Stability Control	30	Present – full score. Absent – no score
Passive safety (crash protection)	Maximum Score	Comments
Driver's airbag	10	Present – full score. Absent – no score
Front passenger airbag	10	Present – full score. Absent – no score
Side airbags	10	Present – full score. Absent – no score
Head / curtain airbags	20	Present – full score. Absent – no score
Crash test rating (frontal impact)	25	Pro-rata – five points per star. Must be for equivalent spec vehicle rated under current (post-2009) Euro NCAP.
Total points achievable	135	Perfect score

In addition to the weights/points allocated, the following 'Safety/Affordability' index is provided:

$$\frac{\text{Overall Safety Score}}{(\text{Price of Vehicle} \div R10000)} = \text{Safety/Affordability Score}$$

Example:

$$= \frac{135}{(R160000 \div R10000)}$$

$$= \frac{135}{(16)}$$

$$= \underline{8.44} \quad (\text{Safety/Affordability score})$$

The example above is calculated with the maximum scores of 135 safety points and the R160 000 vehicle price in mind. This index allows us to compare the safety features (associated with this report) one can buy in terms of every R10 000 spent.

4. Overall results

Table 3. Overall safety scores for all 25 vehicle models (priced highest to lowest)

Make and Model	Price	Safety points total	Anti-lock brakes (ABS)	Electronic Stability Control	Driver's airbag	Front passenger airbag	Side airbags	Curtain airbags	Crash test rating (Ncap)	Safety per 10k
Scoring Example	160000	135	30	30	10	10	10	20	25	8.44
Toyota Aygo 1.0	159100	60	30	0	10	10	10	0	0	3.77
Nissan Micra 1.2 Visia+ (audio)	159900	60	30	0	10	10	10	0	0	3.75
Chery QQ3 1.1 TXE	114995	50	30	0	10	10	0	0	0	4.35
Chevrolet Spark 1.2 Curve	140700	50	30	0	10	10	0	0	0	3.55
Mitsubishi Mirage 1.2 GL	149900	50	30	0	10	10	0	0	0	3.34
BAIC D20 hatch 1.3 Comfort	149990	50	30	0	10	10	0	0	0	3.33
Chery J2 1.5 TX	149995	50	30	0	10	10	0	0	0	3.33
Kia Picanto 1.0 Street	149995	50	30	0	10	10	0	0	0	3.33
Suzuki Swift hatch 1.2 GA	154900	50	30	0	10	10	0	0	0	3.23
Mahindra KUV100 1.2 G80 K4+	154995	50	30	0	10	10	0	0	0	3.23
Tata Vista 1.4 Ignis	154995	50	30	0	10	10	0	0	0	3.23
Suzuki Swift DZire sedan 1.2 GA	155900	50	30	0	10	10	0	0	0	3.21
Honda Brio hatch 1.2 Trend	156100	50	30	0	10	10	0	0	0	3.20
Tata Bolt hatch 1.2T XMS	157995	50	30	0	10	10	0	0	0	3.16
Suzuki Celerio 1.0 GA	133900	50	30	0	10	10	0	0	0	3.73
Renault Kwid 1.0 Expression	124900	10	0	0	10	0	0	0	0	0.80
Kia Picanto 1.0 Start	134995	10	0	0	10	0	0	0	0	0.74
Datsun Go+ 1.2 Lux	139900	10	0	0	10	0	0	0	0	0.71
Kia Picanto 1.2 Start	150995	10	0	0	10	0	0	0	0	0.66
Hyundai i10 1.1 Motion	154900	10	0	0	10	0	0	0	0	0.65

Make and Model	Price	Total	Anti-lock brakes (ABS)	Electronic Stability Control	Driver's airbag	Front passenger airbag	Side airbags	Curtain airbags	Crash test rating (Ncap)	Safety per 10k
Chery QQ3 0.8 TE (aircon)	99995	0	0	0	0	0	0	0	0	0.00
Datsun Go 1.2 Mid	106900	0	0	0	0	0	0	0	0	0.00
Tata Indica 1.4 LGi	118995	0	0	0	0	0	0	0	0	0.00
Tata Vista 1.4 Ini Bounce	134995	0	0	0	0	0	0	0	0	0.00
Tata Manza 1.4 Ini	156995	0	0	0	0	0	0	0	0	0.00

5. Discussion and findings

The purpose of this report is to inform the public on the safety features currently available in the 'entry-level' segment of motor vehicles in South Africa. Anecdotal evidence suggests buyers of entry-level motor vehicles usually prioritise *affordability* over all other vehicle features. However, one should not disregard the safety aspect when making this important decision.

Anti-locking braking system (ABS), electronic stability control (ESC), and the number of airbags on offer, serve as the assessment criteria for the 25 identified motor vehicles. As important as they are, the allocation of points for safety belts is not considered as they are now standardised for all motor vehicles. The presence of head restrains was initially considered as part of the assessment criteria, but insufficient information is available at dealer level, and this assessment criterion has been eliminated from the report. In future, this, and other safety technologies, may be considered for inclusion, as the specification level of entry-level vehicles increases over time.

A significant finding of the current report is that none of the vehicles under investigation comes equipped with electronic stability control (ESC). South African road conditions are often impacted by poor drainage, resulting in sand and debris on the road surface and, in turn, increasing the chances of a vehicle without ESC losing control, and being involved in a crash. Considering ESC's lifesaving potential, it is critical to ask if this specification should not be a minimum safety standard in the South African market.

Another interesting finding is that none of the vehicles in this year's sample is EURO NCAP tested. A commendable finding however is that 11 of the 25 identified vehicles have ABS and electronic brake-force distribution (EBD) installed, a positive step towards increasing the overall safety of vehicles.

In terms of **true safety points** attained, points of 10 or less are considered as having 'poor' safety. Safety points between twenty (20) and fifty (50) can be considered as having 'moderate' safety, and safety points of fifty (50) and above can be considered as having 'acceptable' safety. In table 4 below: ten (10) vehicles fall under the 'poor safety' category, thirteen (13) vehicles fall under the 'moderate safety' category, and only two (2) vehicles fall under the 'acceptable' category this year.

Table 4. True safety points

'Poor' Safety (points ≤ 10)	'Moderate' Safety (Score 20 - 50)	'Acceptable' Safety (Score > 50)
Renault Kwid 1.0 Expression	Chery QQ3 1.1 TXE	Toyota Aygo 1.0
Kia Picanto 1.0 Start	Chevrolet Spark 1.2 Curve	Nissan Micra 1.2 Visia+ (audio)
Datsun Go+ 1.2 Lux	Mitsubishi Mirage 1.2 GL	
Kia Picanto 1.2 Start	BAIC D20 hatch 1.3 Comfort	
Hyundai i10 1.1 Motion	Chery J2 1.5 TX	
Chery QQ3 0.8 TE (aircon)	Kia Picanto 1.0 Street	
Datsun Go 1.2 Mid	Suzuki Swift hatch 1.2 GA	
Tata Indica 1.4 LGi	Mahindra KUV100 1.2 G80 K4+	
Tata Vista 1.4 Ini Bounce	Tata Vista 1.4 Ignis	
Tata Manza 1.4 Ini	Suzuki Swift DZire sedan 1.2	
	Honda Brio hatch 1.2 Trend	
	Tata Bolt hatch 1.2T XMS	
	Suzuki Celerio 1.0 GA	

As for the Safety/Affordability index developed for this report, one can use it as a guide to understanding it as an 'Affordability of Safety' proposition. For this report, a score of four (4) points and above can be seen as 'acceptable safety/affordability', a score between three (3) and 3.99 points can be seen as 'moderate safety/affordability', whereas 2.99 points and below can be seen as 'poor safety/affordability' on the Safety/Affordability index. As can be seen in Table 5 below: only one (1) vehicle falls under the 'acceptable safety/affordability' category, fourteen (14) vehicles fall under the 'moderate safety' category, and eleven (10) vehicles fall under the 'poor' safety/affordability categories.

Table 5. Safety/Affordability categories

'Poor' Safety/affordability (Score ≤ 2.99)	'Moderate' Safety/affordability (Score 3 - 3.99)	'Acceptable' Safety/affordability (Score ≥ 4)
Renault Kwid 1.0 Expression	Toyota Aygo 1.0	Chery QQ3 1.1 TXE
Kia Picanto 1.0 Start	Nissan Micra 1.2 Visia+ (audio)	
Datsun Go+ 1.2 Lux	Chevrolet Spark 1.2 Curve	
Kia Picanto 1.2 Start	Mitsubishi Mirage 1.2 GL	
Hyundai i10 1.1 Motion	BAIC D20 hatch 1.3 Comfort	

Chery QQ3 0.8 TE (aircon)	Chery J2 1.5 TX	
Datsun Go 1.2 Mid	Kia Picanto 1.0 Street	
Tata Indica 1.4 LGi	Suzuki Swift hatch 1.2 GA	
Tata Vista 1.4 Ini Bounce	Mahindra KUV100 1.2 G80 K4+	
Tata Manza 1.4 Ini	Tata Vista 1.4 Ignis	
	Suzuki Swift DZire sedan 1.2 GA	
	Honda Brio hatch 1.2 Trend	
	Tata Bolt hatch 1.2T XMS	
	Suzuki Celerio 1.0 GA	

We are hopeful this report will inform the public, and persuade motor manufacturers to prioritise safety in vehicles produced for the South African market.

Once again, we call upon motor manufacturers to consider substituting luxury or convenience specification items with safety items. We believe this consideration must be weighed against the inexperience of the typical drivers of these vehicles, and the need to protect them against traffic hazards to the greatest extent possible.

6. Limitations

The AA notes there are a multitude of safety features available on the market, and also recognises the various effects they may have in reducing fatalities/injuries. As such the calculations used herein are by no means all-encompassing in terms of their ability to save lives, but merely addresses their existence within a motor vehicle. Furthermore, the current weighting system was developed by the AA, and is based on ‘face-value’ importance of the various safety features under investigation. The AA recognises there will be room for improvement regarding the allocation of weights to safety features in future reports.

7. Conclusion

The purpose of this report was to inform and highlight the value of safety of ‘entry-level motor vehicles’ currently available in South Africa. The AA encourages consumers to do adequate research when making a decision on purchasing a motor vehicle. Make sure the vehicle model you intend on purchasing comes with the safety features that are specific to that model and not advertised for the entire range.

8. References

EuroNcap. (2016, September 20). <http://www.euroncap.com/en/about-euro-ncap/how-to-read-the-stars/>. Retrieved from www.euroncap.com.

Insurance Institute for Highway Safety. (2006, October 7). Status Report Vol. 41, No.8.

International Transport Forum. (2016). *Zero Road Deaths and Serious Injuries: Leading a Paradigm Shift to a Safe System*. Paris: OECD.

Vehicle Price Source (2017, September). Retrieved from <http://www.duoporta.com>