

ASISA

The South African *insurance gap* (2022)

Quantifying the *insurance gap* by considering the financial impact on South African households of the death or disability of an earner in the household

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TRUE SOUTH

ACTUARIES & CONSULTANTS

A study by True South Actuaries & Consultants

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1 INTRODUCTION

1.1 Definitions

Terms for which a definition is supplied in Appendix A, are denoted in italics.

1.2 Background and brief

ASISA retained True South Actuaries and Consultants to update previous studies conducted to determine the extent of under-insurance in South Africa. This study is referred to as the "2022 *Insurance gap Study*" and reflects the situation as at the end of 2021. Previous studies were conducted in 2007, 2010, 2013, 2016, and 2019 which reflected the extent of under-insurance in South Africa as at the end of 2006, 2009, 2012, 2015, and 2018 respectively.

1.3 Acknowledgements

We express our thanks to the life insurers who participated in the study through the provision of data on fairly tight timelines. We continued to experience improvement in both the quality and quantity of data compared to the previous studies. We are also particularly grateful for the many instances where senior officials in the respective organizations got personally involved to assist us in securing the necessary data.

1.4 What is included and what is excluded

In Appendix A (defining terms that are denoted in italics throughout this document), the *insurance gap* (see modelling notes in Appendix B) is defined as the difference between the *insurance need* and *actual cover*:

- The *insurance need* is defined as the amount of cover required to meet the need that is created by the *death event* and/or the *disability event* (see modelling notes in Appendix C):
 - It assumes the household would want to maintain the pre-event standard of living.
 - It further assumes that the need extends to the deceased / disabled household member's *retirement age* only as this study doesn't express any view on post-retirement provision adequacy.
 - It excludes any additional short-term expenses related to the risk event, such as funeral costs, medical costs and/or cost of structural changes to one's home in the case of a *disability event*.

- *Actual cover* considers benefits received post-event from insurers (retail and group-type cover), self-insurance pension schemes (like the GEPPF), and government disability grants. (See modelling notes in Appendix D.)
 - It excludes funeral cover (as it is pragmatically assumed that the objective of such cover does not include income replacement).
 - It excludes cover that provides for certain selected situations only, such as accident only cover and cover from the Road Accident Fund, the Compensation Fund, and short-term insurance.
 - It ignores any shortfall that may result due to any waiting periods that may be enforced by the disability cover product design.

2 EXECUTIVE SUMMARY

2.1 Number of *death events* / *disability events* expected

The table below shows the number of *earners* expected to suffer a *death event*¹ and / or a *disability event*² during 2022:

Table 1 - Number of earners suffering a death and/or disability event in 2022

	Death event ³	Disability event
Number of <i>earners</i>	14.3m	14.3m
Number of events expected per year	142 723	47 099
Number of events expected per day	391	129

2.2 The *insurance gap*

At a macro level

The *insurance gap* was determined using the same principles as used for previous studies. (See appendices B, C, and D.) The *insurance gap* as at the end of 2021 was calculated to be 34.3 trillion (1 trillion = 1 000 billion = 1 000 000 million = 10^{12}):

- If South African households wanted to maintain their standards of living after a *death event*, the *insurance need* for all *earners* combined is in the region of R25.7 trillion (see section 3.1). The extent of *actual cover* in force in the economy only amounts to R11.3 trillion (see section 3.2). This leaves a death *insurance gap* of around R14.4 trillion (see section 3.3).
- If South African households wanted to maintain their standards of living after a *disability event*, the *insurance need* for all *earners* combined is in the region of R37.2 trillion (see section 3.1). The extent of *actual cover* in force in the economy only amounts to R17.3 trillion (see section 3.2). This leaves a disability *insurance gap* of around R19.9 trillion (see section 3.3).

(Numbers are rounded.)

¹ By reference to the demographics of the *earners* in each segment and application of the AIDS model of the Actuarial Society of South Africa.

² By reference to a disability investigation of the Actuarial Society of South Africa calibrated so that ratio of disabilities to deaths is consistent with group premium rates obtained.

³ The number of *death events* expected aims to illustrate a long-term stable view of mortality and would therefore exclude increases in deaths experience over recent years.

At a micro level

The *insurance gap* as at the end of 2021 was calculated to be R2.4m for the average South African *earner*:

- If the average South African *earner* wanted to ensure that her/his family can maintain their standard of living in the event of her/his death, provision would need to be made for R1.8m of cover. However, the average South African *earner* has life cover of just less than R0.8m. This leaves an average death *insurance gap* of about R1.0m.
- If the average South African *earner* wanted to ensure that her/his family can maintain their standard of living in the event of her/his being subject to a *disability event*, provision would need to be made for R2.6m of cover. As the average South African *earner* has disability cover of just less than R1.2m, this leaves an average disability *insurance gap* of about R1.4m.

2.3 Responses to the *insurance gap*

A response to the *insurance gap*, could be to pro-actively purchase additional death and disability cover.

Reactive responses (post the *death event / disability event*) include [1] curtailing household expenditure and [2] shifting the burden of under-insurance to the remaining household members of working-age by requiring increased contributions from them to total household income. The extent required by each of the responses is summarised in the table below:

Table 2 - Possible responses to the *insurance gap*

	Pro-active	Reactive post death event / disability event	
	Cost to close gap (% of earnings)	% reduction in household expenditure	Generating additional income per month
Death event	4.5%	30% ⁴	5 630
Disability event	2.6%	33%	7 443
Total	7.1%		

2.4 The *insurance gap* broken down into segments

In the main body of this document, the *insurance gap* is reported for different segments of the population in terms of income, education, age, province, and gender.

⁴ Expressed as a percentage of post event household expenditure (i.e. reduced due to smaller family size).

3 INCREASE IN THE *INSURANCE GAP* SINCE THE PREVIOUS STUDY

3.1 The *insurance need* grew by 1.5% pa

In the table below, the *insurance need* is expressed as the product of three numbers:

Table 3 – Three components combine to define the *insurance need*

	Note	Total insurance need (in R'bn) 2019 study		Total insurance need (in R'bn) 2022 study	
		Death	Disability	Death	Disability
Total income at risk	1	2 863	2 863	3 042	3 042
* Replacement ratio	2	57%	78%	57%	78%
* Capitalisation factor	3	15.1	15.9	14.9	15.6
Insurance need	1*2*3	24 488	35 654	25 712	37 209

Note 1 - Income at risk: This includes all income as per the definition (Appendix A) of *earnings*. The slow growth in the income at risk was due to a decrease in the workforce (by about 1.3m workers), coupled by *earnings per earner* growing at less than CPI pa. (For more information, see Appendix C1.)

Note 2 - Replacement ratio: This represents the proportion of household members' personal income that "will be missed" after the *death event* or the *disability event*. The replacement ratio is lower for the *death event* reflecting the fact that the deceased *earner's* portion of expenses will no longer be part of the household budget. (For more information, see Appendix C2.)

Note 3 - Capitalisation factor: This factor is related to the number of years that the *earner* would still have contributed to the household. It reflects the period from current day up to *retirement age*. The capitalisation factors are slightly lower than that of the 2019 study, as the age of the average *earner* increased slightly over the 3-year period. This was caused by rising unemployment amongst the younger age groups. (For more information, see Appendix C3.)

3.2 *Actual cover* grew by 3.2% pa

As for the 2019 study, regulatory returns form the basis of the *actual cover* information requirement, which ensures credibility of the results in at least two ways:

- High response rates: As the requested information is readily available, (the bulk had already been provided to the regulator), most insurers respond to the information request resulting in a lesser need to ratio data to account for non-respondents.
- Quality and comparability of information: Returns are audited and the specification for what is required is uniform for all insurers alike. There is therefore less possibility for interpretation / data extraction errors.

See Appendix D for more information on the sources used for determining the total level of *actual cover* in the market and allocating this to different segments of the *earner* population.

Table 4 - Total actual cover held relative to previous study

Actual cover in R'bn	Note	2019 study ⁵	2022 study	Increase pa
Life cover	1	9 674	11 348	5.5%
Disability insurance cover	2	12 500	13 252	2.0%
Disability grants	3	3 895	4 014	1.0%
Total		26 069	28 615	3.2%

Note 1: Growth in life cover since previous study

Table 5 - Growth in life cover, split between retail and group insurance

Actual life cover in R'bn	2019 study ⁵	2022 study	Increase pa
Retail insurance	5 689	6 681	5.5%
Group insurance	3 985	4 667	5.4%
Total life insurance cover	9 674	11 348	5.5%

Note 2: Growth in disability cover since previous study

Table 6 - Growth in disability cover, split between retail and group insurance

Actual disability cover in R'bn	2019 study	2022 study	Increase pa
Retail insurance	4 722	4 974	1.8%
Group insurance	7 779	8 279	2.1%
Total disability insurance cover	12 500	13 252	2.0%

⁵ The 2019 study's actual life cover figures were restated. The actual group life cover in place at the end of 2018 was understated (and the life insurance gap thus overstated) in the 2019 study. The restatement was necessary to ensure that both studies are on a like-for-like basis, enabling sensible comparisons to be made and conclusions to be drawn.

Note 3: The amount of the maximum social security disability grant increased by about 3.6% pa since the 2019 study. However, the number of low-income *earners* eligible for the grant decreased and thus the total cover available in the scenario where all *earners* become disabled has increased by only 1.0% pa since the 2019 study.

3.3 The total *insurance gap* increased by 0.2% pa

Table 7 - *Insurance gap: Comparison against previous study*

<i>R'bn</i>	2019 study ⁵			2022 study		
	<i>Death</i>	<i>Disability</i>	<i>Total</i>	<i>Death</i>	<i>Disability</i>	<i>Total</i>
<i>Insurance need</i>	24 488	35 654	60 142	25 712	37 209	62 921
<i>Actual cover from insurance</i>	-9 674	-12 500	-22 174	-11 348	-13 252	-24 601
<i>Disability grant cover</i>	-	-3 895	-3 895	-	-4 014	-4 014
<i>Insurance gap</i>	14 814	19 259	34 073	14 364	19 943	34 307
<i>Cover adequacy</i>	40%	46%	43%	44%	46%	45%

From the end of 2018 to the end of 2021, the *insurance gap* increased by 0.2% pa. The *insurance gap* per *earner* increased at a steady rate of 3.2% pa; the decrease in the *insurance gap* was therefore driven by the reduction in the number of *earners* over the 3-year period.

The *actual cover* as percentage of the *insurance need* (referred to as *cover adequacy*) indicates that only 45% of the *insurance need* is currently met by *actual cover*. This percentage improved slightly since the previous study due to the *insurance need* growing at a slower rate than the *actual cover*.

From the end of 2018 to the end of 2021, the death *insurance gap* decreased slightly (1.0% pa), while the disability *insurance gap* increased slightly (1.2% pa).

4 PERSONALISING THE *INSURANCE GAP*

4.1 The *insurance gap per earner*

The table below shows how the *insurance gap* of R34.3 trillion can be expressed as an average gap of R2.4m per South African *earner* (R1.0m for *death events* and R1.4m for *disability events*):

Table 8 - *Insurance gap in total for all earners and per-earner*

	<i>Total insurance gap (in R'bn)</i>		<i>Insurance gap per earner (in Rand)</i>	
	<i>Death</i>	<i>Disability</i>	<i>Death</i>	<i>Disability</i>
<i>Insurance need</i>	25 712	37 209	1 801 422	2 606 929
Total income at risk	3 042	3 042	213 093	213 093
* Replacement ratio	57%	78%	57%	78%
* Capitalisation factor	14.9	15.6	14.9	15.6
<i>Actual cover</i>	-11 348	-17 266	-795 074	-1 209 704
Retail insurance	-6 681	-4 974	-468 084	-348 472
Group insurance	-4 667	-8 279	-326 990	-580 008
Government grants	0	-4 014	-	-281 224
<i>Insurance gap</i>	14 364	19 943	1 006 348	1 397 225

In the case of a *death event*

If the average South African *earner* wanted to ensure that her/his family can maintain their standard of living in the event of her/his death, provision would need to be made for R1.8m of cover. However, the average South African *earner* has life cover of just less than R0.8m. This leaves an average death *insurance gap* of about R1.0m.

In the case of a *disability event*

If the average South African *earner* wanted to ensure that her/his family can maintain their standard of living in the event of her/his being subject to a *disability event*, provision would need to be made for R2.6m of cover. However, the average South African *earner* has disability cover of just more than R1.2m. This leaves an average disability *insurance gap* of about R1.4m.

4.2 Responses to the *insurance gap*

A response to the *insurance gap*, could be to pro-actively purchase additional death and disability cover.

Reactive responses (post the *death event / disability event*) include [1] curtailing household expenditure and [2] shifting the burden of under-insurance to the remaining household members of working-age by requiring increased contributions from them to total household income.

The table below indicates the extent required by each of these responses:

Table 9 - Possible responses to the *insurance gap*

	Pro-active	Reactive post death event / disability event	
	Cost to close gap (% of earnings)	% reduction in household expenditure	Generating additional income per month
Death event	4.5%	30%	5 630
Disability event	2.6%	33%	7 443
Total	7.1%		

4.3 Further personalising the *insurance gap*

Due to the diversity of the South African socio-economic landscape, the concept of the “average South African *earner*” is less clear than (say) the “average Australian *earner*”. For this reason, it makes sense to consider the *insurance gap* for different segments of the South African *earner* population.

In the sections below we show the *insurance gap* and possible responses to it for the following segments of the South African *earner* population:

- Section 5: *Earnings* groups
- Section 6: Level of education
- Section 7: Age groups
- Section 8: Province
- Section 9: Gender

5 THE *INSURANCE GAP PER EARNINGS GROUP*

5.1 Segments

The 14.3 million *earners* were divided into 5 groups with equal representation by number. The first group represented the 20% poorest individuals within the universe of *earners*. The next group represented the next 20% poorest individuals, etc.:

Table 10 – Demographics of earners in each of the earning segments

Segment	Segment bounds (net earnings)	Number of earners (million)	Average annual net earnings (Rand)	Average Age
Poorest 20%	up to R33 154 p.a.	2.9	17 056	36
2 nd Quantile	R33 155 to R67 005 p.a.	2.9	49 665	37
3 rd Quantile	R67 006 to R118 195 p.a.	2.9	90 645	37
4 th Quantile	R118 196 to R246 922 p.a.	2.9	194 607	39
Richest 20%	more than R246 923 p.a.	2.9	713 428	42
All		14.3	213 093	38

5.2 Findings

The numbers in the remainder of this section reveal that:

- For a *death event*, the *cover adequacy* shows a strong positive correlation with personal income - i.e. the higher the income, the bigger proportion of the *insurance need* is met by *actual cover*.
- This would have been the case for the *disability event* as well had it not been for government disability grants. The level of the grant is such that it covers the full disability *insurance need* of the poorest 20% *earners*. Most *earners* within this (poorest 20%) group would therefore not have any need for additional (or any for that matter) disability insurance cover.

5.3 The size of the *insurance gap* per segment

Death *insurance gap* per earner

Table 11 - Derivation of the per-earner death *insurance gap* by earnings

	Poorest 20%	2nd Quantile	3 rd Quantile	4 th Quantile	Richest 20%
Insurance need	133 112	553 252	1 053 472	1 987 061	5 279 739
Total income at risk	17 056	49 665	90 645	194 607	713 428
* Replacement ratio	43%	61%	66%	61%	54%
* Capitalisation factor	18.2	18.1	17.7	16.6	13.6
Actual cover	-7 424	-47 941	-163 868	-581 114	-3 174 736
Retail insurance	-3 150	-11 369	-27 834	-270 448	-2 027 434
Group insurance	-4 274	-36 571	-136 034	-310 666	-1 147 302
Government grants	0	0	0	0	0
Insurance gap	125 688	505 312	889 603	1 405 948	2 105 003
Cover adequacy (Cover/Need)	6%	9%	16%	29%	60%
Number of <i>earners</i> (millions)	2.9	2.9	2.9	2.9	2.9
Total <i>insurance gap</i> (R'bn)	359	1 443	2 539	4 014	6 010

For example, an *earner* that finds her/himself in the top 20% of South African *earners*, would typically need life cover of almost R5.3m. Typically such an *earner* would only have life cover of R3.2m, leaving an average *insurance gap* of around R2.1m.

Disability *insurance gap* per earner

Table 12 - Derivation of the per-earner disability *insurance gap* by earnings

	Poorest 20%	2nd Quantile	3 rd Quantile	4 th Quantile	Richest 20%
Insurance need	319 837	926 205	1 634 170	2 991 914	7 161 882
Total income at risk	17 056	49 665	90 645	194 607	713 428
* Replacement ratio	100%	100%	98%	89%	71%
* Capitalisation factor	18.8	18.6	18.4	17.3	14.2
Actual cover	-517 999	-516 978	-626 701	-937 172	-3 449 411
Retail insurance	-478	-5 406	-43 693	-204 714	-1 487 935
Group insurance	-9 309	-77 994	-287 121	-613 056	-1 912 393
Government grants	-508 211	-433 579	-295 886	-119 401	-49 083
Insurance gap	-198 161	409 227	1 007 469	2 054 742	3 712 471
Cover adequacy (Cover/Need)	> 100%	56%	38%	31%	48%
Number of <i>earners</i> (millions)	2.9	2.9	2.9	2.9	2.9
Total <i>insurance gap</i> (R'bn)	-566	1 168	2 876	5 866	10 599

For example, the 20% poorest South African *earners* would typically need disability cover of about R0.3m. Typically such an *earner* would have disability cover far exceeding this need, mostly due to government grants leaving no *insurance gap*.

5.4 Responses to the *insurance gap*

Death *insurance gap*

The table below gives (for each of the segments) the degree of intervention required for each of three possible responses to the *insurance gap* in the case of a *death event*:

Table 13 - Responses to the death *insurance gap* by earnings

		Poorest 20%	2 nd Quantile	3 rd Quantile	4 th Quantile	Richest 20%	All
Purchase additional Insurance	Cost of insurance (as % of current <i>earnings</i>)	7.1%	9.7%	9.4%	6.9%	2.7%	4.5%
	Increase in current level of cover (e.g. 1.5x implies additional cover required equal to 1.5 times current level)	16.9	10.5	5.4	2.4	0.7	1.3
Reduce household expenditure	Required reduction in household expenditure	11%	32%	39%	35%	27%	30%
Additional income required	Extra income required per month (net of tax)	703	2 827	4 977	7 865	11 776	5 630
	Extra income as % of <i>earnings</i> pre-event	49%	68%	66%	48%	20%	32%

Disability *insurance gap*

For a *disability event*, the figures are as follows:

Table 14 - Responses to the disability *insurance gap* by earnings

		Poorest 20%	2 nd Quantile	3 rd Quantile	4 th Quantile	Richest 20%	All
Purchase additional Insurance	Cost of insurance (as % of current <i>earnings</i>)	-4.6%	3.2%	4.4%	4.2%	2.1%	2.6%
	Increase in current level of cover (e.g. 1.5x implies additional cover required equal to 1.5 times current level)	-0.4	0.8	1.6	2.2	1.1	1.2
Reduce household expenditure	Required reduction in household expenditure	-13%	21%	35%	41%	38%	33%
Additional income required	Extra income required per month (net of tax)	-1 056	2 180	5 366	10 945	19 775	7 443
	Extra income as % of <i>earnings</i> pre-event	-74%	53%	71%	67%	33%	42%

6 THE *INSURANCE GAP* PER EDUCATION LEVEL

6.1 Segments

Each *earner* is allocated to one of five education categories depending on the highest level of education achieved:

- PS or lower: Primary school not completed.
- Some HS: Completed primary school, but not high school.
- Matric: Completed high school, but no diploma or degree.
- Diploma: Diploma but no degree.
- Degree: Degree or more.

Table 15 - Demographics of earners in each of the education segments

Segment	Number of earners (million)	Average annual earnings (Rand)	Average Age
PS or lower	1.2	63 434	44
Some HS	4.9	113 354	39
Matric	5.6	173 884	35
Diploma	0.9	369 622	39
Degree	1.7	666 270	41
All	14.3	213 093	38

6.2 Findings

The numbers in the remainder of this section reveal that:

- For the *death event*, the *cover adequacy* shows a strong positive correlation with highest level of education achieved.
- This would have been the case for the *disability event* as well had it not been for government grants. These grants are targeted at the poor where there is a bias to lower levels of education.

6.3 The size of the *insurance gap* per segment

The tables below highlight how different the *insurance gap* is for the different segments. We show figures for the “average earner” within each segment.

Death *insurance gap* per earner

Table 16 - Derivation of the per earner death *insurance gap* by education

	<i>PS or lower</i>	<i>Some HS</i>	<i>Matric</i>	<i>Diploma</i>	<i>Degree</i>
<i>Insurance need</i>	495 581	988 477	1 793 816	2 978 781	4 567 780
Total income at risk	63 434	113 354	173 884	369 622	666 270
* Replacement ratio	65%	62%	60%	55%	51%
* Capitalisation factor	12.1	14.0	17.2	14.6	13.4
<i>Actual cover</i>	-73 808	-237 304	-521 747	-1 618 717	-3 452 131
Retail insurance	-27 032	-103 579	-283 716	-940 721	-2 235 195
Group insurance	-46 777	-133 725	-238 031	-677 996	-1 216 936
Government grants	0	0	0	0	0
<i>Insurance gap</i>	421 773	751 173	1 272 069	1 360 064	1 115 650
<i>Cover adequacy (Cover/Need)</i>	15%	24%	29%	54%	76%
Number of <i>earners</i> (millions)	1.2	4.9	5.6	0.9	1.7
Total <i>insurance gap</i> (R'bn)	513	3 710	7 107	1 164	1 870

For example, *earners* with matric as highest qualification would typically need life cover of almost R1.8m. Typically such an *earner* would only have cover of R0.5m, leaving an *insurance gap* of R1.3m – implying that only 29% of the life *insurance need* is protected by *actual cover*.

Table 17 - Derivation of the per-earner disability *insurance gap* by education

	<i>PS or lower</i>	<i>Some HS</i>	<i>Matric</i>	<i>Diploma</i>	<i>Degree</i>
<i>Insurance need</i>	747 544	1 454 137	2 590 227	4 363 674	6 510 463
Total income at risk	63 434	113 354	173 884	369 622	666 270
* Replacement ratio	93%	87%	83%	77%	69%
* Capitalisation factor	12.7	14.8	18.0	15.4	14.1
<i>Actual cover</i>	-383 918	-615 133	-1 009 416	-2 082 418	-3 782 433
Retail insurance	-18 057	-70 321	-225 129	-747 308	-1 615 152
Group insurance	-67 500	-211 582	-474 042	-1 192 376	-2 077 734
Government grants	-298 360	-333 230	-310 246	-142 734	-89 547
<i>Insurance gap</i>	363 626	839 004	1 580 811	2 281 257	2 728 030
<i>Cover adequacy (Cover/Need)</i>	51%	42%	39%	48%	58%
Number of <i>earners</i> (millions)	1.2	4.9	5.6	0.9	1.7
Total <i>insurance gap</i> (R'bn)	442	4 143	8 832	1 953	4 572

For example, an *earner* with at least a degree, would typically need disability cover of about R6.5m. Typically, such an *earner* would only have cover of R3.3m, leaving a substantial *insurance gap* of R3.8m – implying that 58% of the disability *insurance need* is protected by *actual cover*.

6.4 Responses to the *insurance gap*

Death *insurance gap*

The table below gives (for each of the segments), the degree of intervention required for each of three possible responses to the *insurance gap* in the case of a *death event*:

Table 18 - Responses to the per-earner death insurance gap by education

		<i>PS or lower</i>	<i>Some HS</i>	<i>Matric</i>	<i>Diploma</i>	<i>Degree</i>	All
Purchase additional insurance	Cost of insurance (as % of current <i>earnings</i>)	6.4%	6.4%	7.0%	3.4%	1.5%	4.5%
	Increase in current level of cover (e.g. 1.5x implies additional cover required equal to 1.5 times current level)	5.7	3.2	2.4	0.8	0.3	1.3
Reduce household expenditure	Required reduction in household expenditure	30%	35%	39%	26%	14%	30%
Additional income Required	Extra income required per month (net of tax)	2 359	4 202	7 116	7 608	6 241	5 630
	Extra income as % of <i>earnings</i> pre-event	45%	44%	49%	25%	11%	32%

Disability *insurance gap*

For the *disability event*, the figures are as follows:

Table 19 - Responses to the per-earner disability insurance gap by education

		<i>PS or lower</i>	<i>Some HS</i>	<i>Matric</i>	<i>Diploma</i>	<i>Degree</i>	All
Purchase additional insurance	Cost of insurance (as % of current <i>earnings</i>)	2.4%	3.0%	3.6%	2.4%	1.6%	2.6%
	Increase in current level of cover (e.g. 1.5x implies additional cover required equal to 1.5 times current level)	0.9	1.4	1.6	1.1	0.7	1.2
Reduce household expenditure	Required reduction in household expenditure	21%	31%	39%	34%	27%	33%
Additional income required	Extra income required per month (net of tax)	1 937	4 469	8 420	12 151	14 531	7 443
	Extra income as % of <i>earnings</i> pre-event	37%	47%	58%	39%	26%	42%

7 THE *INSURANCE GAP* PER AGE GROUP

7.1 Segments

Earners were categorised based on their age last birthday:

Table 20 – Demographics of earners in each of the considered age segments

Segment	Number of earners (million)	Average annual earnings (Rand)	Average Age
Under 30	3.7	123 350	25
30-39	4.3	191 012	34
40-49	3.7	270 876	44
50-54	1.4	263 546	52
55 and over	1.3	324 838	58
All	14.3	213 093	38

7.2 Findings

The numbers in the remainder of this section reveal that *cover adequacy* is lowest at the younger ages. *Earners* in the older age categories (50-54 and 55 and over) tend to have adequate insurance in place, i.e. the *insurance need* is covered by *actual cover* in place:

- *Insurance need*: As mentioned earlier, calculations assume that an *insurance need* only exists up to intended *retirement age*. As such, the *insurance need* for older *earners* is a much smaller multiple to current *earnings* compared to younger *earners*. This is evidenced in the capitalisation factors in the table below.
- *Actual cover*: Lump sum benefits do not take into account the diminishing need for insurance with increasing age.

7.3 The size of the *insurance gap* per segment

The tables below highlight how different the *insurance gap* is for the different age-group segments. We show figures for the “average *earner*” within each segment:

Death *insurance gap* per *earner*

Table 21 - Derivation of the per-earner death *insurance gap* by age

	<i>Under 30</i>	<i>30-39</i>	<i>40-49</i>	<i>50-54</i>	<i>55 and over</i>
<i>Insurance need</i>	1 820 505	2 178 550	2 082 227	1 076 306	468 831
Total income at risk	123 350	191 012	270 876	263 546	324 838
* Replacement ratio	58%	57%	57%	55%	55%
* Capitalisation factor	25.6	20.0	13.4	7.4	2.6
<i>Actual cover</i>	-209 265	-763 791	-1 052 582	-1 261 796	-1 350 122
Retail insurance	-84 799	-401 595	-652 151	-856 381	-851 255
Group insurance	-124 466	-362 196	-400 430	-405 415	-498 867
Government grants	0	0	0	0	0
<i>Insurance gap</i>	1 611 240	1 414 760	1 029 646	-185 491	-881 291
<i>Cover adequacy (Cover/Need)</i>	11%	35%	51%	> 100%	> 100%
Number of <i>earners</i> (millions)	3.7	4.3	3.7	1.4	1.3
Total <i>insurance gap</i> (R'bn)	5 954	6 013	3 788	-251	-1 140

For example, an *earner* aged between 30 and 39 typically needs R2.2m of life cover to ensure the household can maintain its standard of living after her/his death. Typically, such an *earner* would have life cover of less than R0.8m, leaving an average *insurance gap* of more than R1.4m.

Disability *insurance gap* per *earner*

Table 22 - Derivation of the per-earner disability *insurance gap* by age

	<i>Under 30</i>	<i>30-39</i>	<i>40-49</i>	<i>50-54</i>	<i>55 and over</i>
<i>Insurance need</i>	2 768 041	3 167 075	2 831 317	1 561 705	763 039
Total income at risk	123 350	191 012	270 876	263 546	324 838
* Replacement ratio	86%	81%	75%	75%	74%
* Capitalisation factor	26.0	20.6	13.9	7.9	3.2
<i>Actual cover</i>	-1 038 817	-1 365 184	-1 494 630	-953 203	-645 440
Retail insurance	-111 976	-328 969	-569 051	-449 754	-354 757
Group insurance	-426 174	-717 588	-749 250	-410 483	-263 724
Government grants	-500 667	-318 627	-176 329	-92 967	-26 958
<i>Insurance gap</i>	1 729 224	1 801 891	1 336 687	608 501	117 599
<i>Cover adequacy (Cover/Need)</i>	38%	43%	53%	61%	85%
Number of <i>earners</i> (millions)	3.7	4.3	3.7	1.4	1.3
Total <i>insurance gap</i> (R'bn)	6 390	7 658	4 917	825	152

For example, an *earner* that is younger than 30 typically needs R2.8m of disability cover to ensure the household can maintain its standard of living after her/his disability. On average, such an *earner* has life cover of around R1.0m, leaving an *insurance gap* of R1.7m.

7.4 Responses to the *insurance gap*

Death *insurance gap*

The table below gives (for each of the segments) the degree of intervention required for each of three possible responses to the *insurance gap* in the case of a *death event*:

Table 23 - Responses to the death *insurance gap* by age segments

		<i>Under 30</i>	<i>30-39</i>	<i>40-49</i>	<i>50-54</i>	<i>55 and over</i>	All
Purchase additional Insurance	Cost of insurance (as % of current <i>earnings</i>)	13.2%	6.8%	3.5%	-0.7%	-2.8%	4.5%
	Increase in current level of cover (e.g. 1.5x implies additional cover required equal to 1.5 times current level)	7.7	1.9	1.0	-0.1	-0.7	1.3
Reduce household expenditure	Required reduction in household expenditure	53%	47%	29%	-5%	-20%	30%
Additional income required	Extra income required per month (net of tax)	9 013	7 914	5 760	-1 038	-4 930	5 630
	Extra income as % of <i>earnings</i> pre-event	88%	50%	26%	-5%	-18%	32%

Disability *insurance gap*

For the *disability event*, the figures are as follows:

Table 24 - Responses to the disability *insurance gap* by age

		<i>Under 30</i>	<i>30-39</i>	<i>40-49</i>	<i>50-54</i>	<i>55 and over</i>	All
Purchase additional Insurance	Cost of insurance (as % of current <i>earnings</i>)	5.4%	3.7%	2.0%	1.1%	0.2%	2.6%
	Increase in current level of cover (e.g. 1.5x implies additional cover required equal to 1.5 times current level)	1.7	1.3	0.9	0.6	0.2	1.2
Reduce household expenditure	Required reduction in household expenditure	46%	46%	30%	13%	2%	33%
Additional income required	Extra income required per month (net of tax)	9 211	9 598	7 120	3 241	626	7 443
	Extra income as % of <i>earnings</i> pre-event	90%	60%	32%	15%	2%	42%

8 THE *INSURANCE GAP* PER PROVINCE

8.1 Segments

Earners were categorised based on the province they reside in:

Table 25 - Demographics of earners in each of the provinces

Segment	Number of earners (million)	Average annual earnings (Rand)	Average Age
Western Cape	2.0	276 725	39
Eastern Cape	1.2	167 441	38
KwaZulu-Natal	2.3	161 326	37
Northern Cape	0.3	174 091	37
Free State	0.8	152 364	38
North West	0.8	160 469	40
Gauteng	4.9	260 679	39
Mpumalanga	1.0	181 948	38
Limpopo	1.0	157 772	38
All	14.3	213 093	38

8.2 Findings

The numbers in the remainder of this section reveal that:

- *Cover adequacy (actual cover / insurance need)* for the *death event*, ranges quite a lot from 26% (Limpopo) to 56% (Western Cape).
- For the *disability event*, the *cover adequacy (actual cover / insurance need)* ranges from 32% (Limpopo) to 54% (Western Cape).

8.3 The size of the *insurance gap* per segment

We show figures for the “average *earner*” within each segment:

Death *insurance gap* per *earner*

Table 26 - Derivation of the per-*earner* death *insurance gap* by province

	<i>Western Cape</i>	<i>Eastern Cape</i>	<i>KwaZulu-Natal</i>	<i>Northern Cape</i>	<i>Free State</i>	<i>North West</i>	<i>Gauteng</i>	<i>Mpumalanga</i>	<i>Limpopo</i>
<i>Insurance need</i>	2 197 176	1 535 175	1 548 999	1 625 508	1 244 308	1 319 579	2 094 109	1 720 364	1 428 976
Total income at risk	276 725	167 441	161 326	174 091	152 364	160 469	260 679	181 948	157 772
* Replacement ratio	57%	61%	59%	58%	54%	56%	55%	58%	58%
* Capitalisation factor	14.0	15.1	16.2	16.0	15.0	14.6	14.5	16.4	15.6
<i>Actual cover</i>	-1 236 701	-647 365	-483 523	-563 343	-411 391	-452 223	-1 077 517	-468 824	-374 035
Retail insurance	-684 058	-366 370	-306 618	-317 953	-300 699	-294 466	-599 327	-347 882	-316 080
Group insurance	-552 643	-280 995	-176 905	-245 390	-110 693	-157 757	-478 190	-120 943	-57 956
Government grants	0	0	0	0	0	0	0	0	0
<i>Insurance gap</i>	960 475	887 810	1 065 476	1 062 166	832 917	867 356	1 016 592	1 251 539	1 054 940
<i>Cover adequacy</i>	56%	42%	31%	35%	33%	34%	51%	27%	26%
Number of <i>earners</i> (m)	2.0	1.2	2.3	0.3	0.8	0.8	4.9	1.0	1.0
Total <i>insurance gap</i> (R'bn)	1 955	1 095	2 413	334	659	709	4 945	1 236	1 018

For example, the average Limpopo *earner* typically needs R1.4m of life cover to ensure the household can maintain its standard of living after her/his death.

Typically, such an *earner* would have life cover of less than R0.4m, implying that only 26% of the life *insurance need* is protected by *actual cover*.

Disability *insurance gap per earner*

Table 27 - Derivation of the per-earner disability insurance gap by province

	Western Cape	Eastern Cape	KwaZulu-Natal	Northern Cape	Free State	North West	Gauteng	Mpumalanga	Limpopo
Insurance need	3 122 192	2 173 993	2 230 900	2 463 720	1 953 496	2 025 161	3 008 167	2 508 198	2 109 393
Total income at risk	276 725	167 441	161 326	174 091	152 364	160 469	260 679	181 948	157 772
* Replacement ratio	76%	81%	82%	83%	81%	82%	76%	81%	82%
* Capitalisation factor	14.9	16.0	17.0	17.1	15.8	15.3	15.1	17.0	16.3
Actual cover	-1 692 893	-1 094 415	-932 564	-1 029 872	-741 521	-819 120	-1 503 771	-819 843	-678 093
Retail insurance	-485 470	-264 063	-242 399	-249 364	-225 105	-231 326	-444 500	-274 303	-240 799
Group insurance	-979 983	-498 487	-339 074	-467 799	-197 395	-282 794	-830 474	-230 889	-102 640
Government grants	-227 440	-331 864	-351 091	-312 710	-319 021	-305 001	-228 797	-314 651	-334 653
Insurance gap	1 429 299	1 079 578	1 298 336	1 433 848	1 211 975	1 206 040	1 504 396	1 688 355	1 431 301
Cover adequacy	54%	50%	42%	42%	38%	40%	50%	33%	32%
Number of <i>earners</i> (m)	2.0	1.2	2.3	0.3	0.8	0.8	4.9	1.0	1.0
Total <i>insurance gap</i> (R'bn)	2 909	1 332	2 940	451	959	985	7 318	1 667	1 381

For example, the average Gauteng *earner* typically needs approximately R3.0m of disability cover to ensure the household can maintain its standard of living after her/his disability. (This is higher than the average *earner* in South Africa due mostly to the superior average *earnings* of *earners* in Gauteng.) Typically, such an *earner* would have disability cover around R1.5m, implying that additional disability cover of almost R1.5m is required for the average Gauteng *earner*.

8.4 Responses to the *insurance gap*

Death *insurance gap*

The table below gives (for each of the segments) the degree of intervention required for each of three possible responses to the *insurance gap* in the case of a *death event*:

Table 28 - Responses to the death *insurance gap* by province

		<i>Western Cape</i>	<i>Eastern Cape</i>	<i>KwaZulu-Natal</i>	<i>Northern Cape</i>	<i>Free State</i>	<i>North West</i>	<i>Gauteng</i>	<i>Mpumalanga</i>	<i>Limpopo</i>	All
Purchase additional Insurance	Cost of insurance (as % of current <i>earnings</i>)	3.3%	5.0%	6.3%	5.9%	5.2%	5.2%	3.7%	6.6%	6.4%	4.5%
	Increase in current level of cover (e.g. 1.5x implies additional cover required equal to 1.5 times current level)	0.8	1.4	2.2	1.9	2.0	1.9	0.9	2.7	2.8	1.3
Reduce household expenditure	Required reduction in household expenditure	23%	34%	40%	38%	35%	38%	24%	42%	44%	30%
Additional income required	Extra income required per month (net of tax)	5 373	4 966	5 960	5 942	4 659	4 852	5 687	7 001	5 901	5 630
	Extra income as % of <i>earnings</i> pre-event	23%	36%	44%	41%	37%	36%	26%	46%	45%	32%

Disability insurance gap

For the *disability event*, the figures are as follows:

Table 29 - Responses to the disability insurance gap by province

		Western Cape	Eastern Cape	KwaZulu-Natal	Northern Cape	Free State	North West	Gauteng	Mpumalanga	Limpopo	All
Purchase additional Insurance	Cost of insurance (as % of current <i>earnings</i>)	2.1%	2.6%	3.2%	3.3%	3.2%	3.1%	2.3%	3.7%	3.6%	2.6%
	Increase in current level of cover (e.g. 1.5x implies additional cover required equal to 1.5 times current level)	0.8	1.0	1.4	1.4	1.6	1.5	1.0	2.1	2.1	1.2
Reduce household expenditure	Required reduction in household expenditure	28%	33%	38%	40%	38%	40%	28%	45%	47%	33%
Additional income required	Extra income required per month (net of tax)	7 613	5 751	6 916	7 638	6 456	6 424	8 013	8 993	7 624	7 443
	Extra income as % of <i>earnings</i> pre-event	33%	41%	51%	53%	51%	48%	37%	59%	58%	42%

9 THE *INSURANCE GAP* PER GENDER

9.1 Segments

Earners are split between male and female as following:

Table 30 - Demographics of earners separately for males and females

Segment	Number of earners (million)	Average annual earnings (Rand)	Average Age
Male	8.1	235 922	38
Female	6.1	182 928	38
All	14.3	213 093	38

9.2 Findings

The numbers in the remainder of this section reveal that:

- Females are marginally less adequately covered than males for both death and *disability events*.
- Males make up roughly 58% of the total *insurance gap*, and females the remaining 42%.
- The cost of purchasing additional insurance is cheaper for females compared to males.

9.3 The size of the *insurance gap* per segment

Death *insurance gap* per earner

Table 31 - Derivation of the per-earner death *insurance gap* by gender

	Male	Female
Insurance need	1 896 741	1 675 472
Total income at risk	235 922	182 928
* Replacement ratio	56%	57%
* Capitalisation factor	14.2	16.0
Actual cover	-888 221	-671 993
Retail insurance	-536 505	-377 675
Group insurance	-351 716	-294 318
Government grants	-	-
Insurance gap	1 008 520	1 003 479
Cover adequacy (Cover/Need)	47%	40%
Number of earners (millions)	8.1	6.1
Total <i>insurance gap</i> (R'bn)	8 194	6 170

For example, a male *earner* with would typically need death cover of about R1.9m. Typically such an *earner* would only have cover of R0.9m, leaving an *insurance gap* of R1.0m – implying that only 47% of the life *insurance need* is protected by *actual cover*.

Disability *insurance gap* per *earner*

Table 32 - Derivation of the per-earner disability *insurance gap* by gender

	Male	Female
Insurance need	2 738 847	2 432 617
Total income at risk	235 922	182 928
* Replacement ratio	77%	81%
* Capitalisation factor	15.1	16.5
Actual cover	-1 291 813	-1 101 208
Retail insurance	-398 105	-282 889
Group insurance	-602 359	-550 474
Government grants	-291 349	-267 845
Insurance gap	1 447 034	1 331 409
Cover adequacy (Cover/Need)	47%	45%
Number of <i>earners</i> (millions)	8.1	6.1
Total <i>insurance gap</i> (R'bn)	11 757	8 186

For example, a female *earner* with would typically need disability cover of about R2.7m. Typically such an *earner* would only have cover of R1.3m, leaving an *insurance gap* of R1.4m – implying that 45% of the disability *insurance need* is protected by *actual cover*.

9.4 Responses to the *insurance gap*

Death *insurance gap*

The table below gives (for each of the segments) the degree of intervention required for each of three possible responses to the *insurance gap* in the case of a *death event*:

Table 33 - Responses to the death *insurance gap* by gender

		Male	Female	All
Purchase additional Insurance	Cost of insurance (as % of current <i>earnings</i>)	4.2%	4.9%	4.5%
	Increase in current level of cover (e.g. 1.5x implies additional cover required equal to 1.5 times current level)	1.1	1.5	1.3
Reduce household expenditure	Required reduction in household expenditure	31%	29%	30%
Additional income required	Extra income required per month (net of tax)	5 642	5 614	5 630
	Extra income as % of <i>earnings</i> pre-event	29%	37%	32%

Disability *insurance gap*

For the *disability event*, the figures are as follows:

Table 34 - Responses to the disability insurance gap by gender

		Male	Female	All
Purchase additional Insurance	Cost of insurance (as % of current <i>earnings</i>)	2.6%	2.7%	2.6%
	Increase in current level of cover (e.g. 1.5x implies additional cover required equal to 1.5 times current level)	1.1	1.2	1.2
Reduce household expenditure	Required reduction in household expenditure	35%	30%	33%
Additional income required	Extra income required per month (net of tax)	7 708	7 092	7 443
	Extra income as % of <i>earnings</i> pre-event	39%	47%	42%

APPENDIX A: DEFINITIONS

"Actual cover"

The *actual cover* is the total amount of existing insurance cover of various kinds. It includes cover from insurers (retail and group-type cover), self-insurance pension schemes (like the GEPP), and government disability grants.

Cover types designed to provide for shorter term expenses are excluded (consistent with the definition for *insurance need*). Cover disregarded in *actual cover* include:

- Funeral Cover: It was pragmatically assumed that funeral cover provides for short-term expenditure related to the death-event and is therefore not typically earmarked for post-event provision.
- Road Accident Fund: The Road Accident Fund provides cover for expenses incurred (medical and legal) as well as loss of support that are the result of certain types of road accidents. It would not be suitable for an individual will take this into consideration when doing a financial needs analysis.
- Compensation Fund: Workman's compensation cover is of a short-term, immediate nature. Since the definition of *insurance need* excludes such short-term costs, this source of cover was excluded from the study.
- Short-term insurers: Short-term insurers also provide a degree of life and disability cover. Given [a] the fairly modest quantum and [b] the complexities involved in obtaining detailed data from providers this source was pragmatically excluded.

"Cover adequacy"

Cover adequacy is calculated as the *actual cover* as percentage of the *insurance need*. It therefore reflects the extent to which the *insurance need* is covered by *actual cover*. A number of 100% indicates no need for additional insurance.

"Death event"

For purposes of this report, a *death event* is defined as the death of an *active earner*. To determine the death *insurance gap*, we essentially consider the separate death of each of the *earners* in South Africa (assuming that all other members of the household survive) and then aggregate the result over the 14.3 million people.

“Disability event”

For purposes of this report, a *disability event* is defined as total and permanent disability of an *active earner*, i.e. where it is unlikely for the disabled person to return to work any time after the event.

“Earner”

These are the individuals for which an *insurance gap* was calculated and aggregated to arrive at the total gap for purposes of this study. To be included, an individual had to be [a] South African, [b] earning a regular income (i.e., be an “*active earner*”) and [c] between the ages of 18 and 65.

Only individuals with the following main sources of incomes were counted as “*active earners*”: salaries or wages, net profit from business activities, net profit from professional practices or net profit from commercial farming. Individuals with other main sources of incomes were not considered “*active earners*”, these sources include: social welfare grants, regular allowances/remittances received from non-household members, regular receipts from pension from previous employment, income from letting fixed property, interest received on deposits, etc.

“Earnings”

Throughout this document reference to *earnings* implies annual payments for ordinary-time, standard or agreed hours for all *active earners* before taxation and other deductions. It includes salaries, wages, commissions, fees, and employer’s contributions (e.g. to pension, provident, medical aid, sick pay and other funds). The definition includes bonuses (performance or otherwise) and overtime payments.

“Insurance gap”

The *insurance gap* is defined as the difference between the *insurance need* and *actual cover*. It therefore represents the total net additional cover that will be purchased by South African *active earners* in the following situation:

- Those that are under-insured purchase additional cover, so that their *actual cover* equals their *Insurance need*.

- Those that have adequate insurance cover in place, reduce their current *actual cover* to reflect their respective *insurance need*. (This includes those that do not have an *insurance need*, but do have *actual cover*, terminating their policies.)

"Insurance need"

This is the amount of cover required to meet the need that is created by the *death event* and/or *disability event*. It excludes any short-term expenses related to the risk event. E.g. for the *death event*, funeral costs were not considered. Neither was additional medical or equipment expenditure that may be required as a result of the *disability event*.

It was assumed that the household maintains its current living standards after the *death event* / *disability event*. Expenditure post event changes only insofar as this event would lead to a reduction or elimination of certain household expenses from that point forward.

It was assumed that an *insurance need* only exists up to intended *retirement age*. From this point onwards it was assumed that prior retirement provision would fund the household's expenditure. This study therefore ignores the extent to which insufficient allowance may currently be made by *earners* for post-retirement expenses.

"Retirement age"

Retirement age was taken to be between 60 and 65, depending on the *earner's* current age: For those younger than 58, it was assumed that retirement would take place at age 60. *Earners* older than 63 were assumed to have intended *retirement age* of 65. The assumption for the intended *retirement age* of *earners* aged between 58 and 63 was phased in between 60 and 65.

APPENDIX B: MODELLING NOTES - *EARNER* POPULATION

Where assumptions were required, we generally aimed to set these at objective “best estimate” levels. However, where this proved difficult, our approach was to rather err in the direction that would provide a lower *insurance gap*.

The base source of information in terms of the composition of the South African *earner* population was the metadata from StatsSA’s Living Conditions Survey 2014/2015. The 14.3m *earners* are represented by about almost 21,000 model points with suitable weights to ensure objectively weighted representation.

Information was updated using a combination of the following sources:

- The latest General Household survey published by StatsSA
- Quarterly Labour Force Surveys (QLFS) published by StatsSA
- Quarterly Employment Statistics (QES) published by StatsSA
- Consumer Price Indices (CPI) published by StatsSA

For each of the model points representing a number of South African *earners*, the *insurance gap* was determined as the difference between the *insurance need* and *actual cover* (see modelling notes in Appendix C and Appendix D).

APPENDIX C: MODELLING NOTES - *INSURANCE NEED*

The modelling of the *insurance need* is best explained by considering its breakdown into three components:

Table 35 - *Insurance need represented as product of three numbers*

	More information	Total (R'bn)		Average per earner (Rand)	
		Death	Disability	Death	Disability
Total income at risk	Appendix C1	3 042	3 042	213 093	213 093
* Replacement ratio	Appendix C2	57%	78%	57%	78%
* Capitalisation factor	Appendix C3	14.9	15.6	14.9	15.6
Total		25 712	37 209	1 801 422	2 606 929

Appendix C1: Total Income at Risk

Definition

Total income at risk allowing for all income as per the definition (Appendix A) of *earnings*.

Decline in workforce since previous study = 2.9% pa

The Living Conditions Survey 2014/2015 reported 14.8m *earners*. For the 2019 study, to derive the number of *earners* at the end of 2018, we allowed for growth of 5.4% (in total, not pa). For the 2022 study, we allowed for a decline in the workforce of 8.4% (in total, not pa) from the 2019 study, as per the QLFS publication. Total number of *earners* end 2021 (14.3m) has therefore decreased by 2.9% per annum from the previous study.

The sharp decrease in the workforce was a result of substantial rises in unemployment during 2020, because of the Covid-19 pandemic and related lockdowns. This decrease in the workforce is substantiated by the QES publication and by information on the Trading Economics website.

The segments of the workforce that saw the greatest decline from the end of 2018 to the end of 2021 were younger age groups and less educated groups. The following illustrates the point, showing "1-in-how many" *earners* that were in the workforce at the end of 2018 were no longer in the workforce by the end of 2021:

- Overall: 1-in-12
- Per age group:
 - Under 30: 1-in-7
 - 30-39: 1-in-11
 - Over 40: 1-in-25

- Per education group:
 - Primary school not completed: 1-in-3
 - Completed primary school, but not high school: 1-in-8
 - Completed high school (and/or some diploma/degree): largely unchanged

Growth in average *earnings* since previous study = 3.8% pa

This study assumes that the average level of *earnings* increased by 3.8% pa since the previous study. The main data source for arriving at this parameter was the QES publication.

This increase in average *earnings* is substantiated by BankservAfrica “take-home pay report” and by information on the Trading Economics website.

Total level of *earnings* modelled

Combining the decline in *earners* (2.9% pa) and the growth in *earnings* (3.8% pa) results in a modelled increase in total *earnings* of 2.0% pa:

Table 36 - Total earnings by earners increased by 2.0% pa

	2019 study	2022 study	Increase per annum
Number of <i>earners</i> (million)	15.6m	14.3m	-2.9%
Average annual <i>earnings</i> (Rand)	183 649	213 093	3.8%
Total annual <i>earnings</i> (R'm)	2 862 903	3 041 512	2.0%

The 2.0% increase pa in total *earnings* modelled compares positively with the increase derived from the QES publications, where the increase over the same three-year period was reported as 2.3% pa.

Appendix C2: Replacement Ratio

The replacement ratio represents the proportion of the household *earner* member’s personal income that “will be missed” after the *death event* or the *disability event*. It is calculated as the “household budget deficit post-event” divided by personal income at risk. The “household budget deficit post-event” is calculated (for each of the model points) as the difference between:

- Household expenses post-event (an annual figure): This takes into account the fact that, in a *death event*, expenses directly related to the *earner* considered will disappear from the household expense budget.

- Household income post-event (an annual figure): This takes into account income that will continue after the *death event / disability event* mostly from other *earners* and retired household members.

Insurance proceeds are not taxed (the taxation on both life and disability insurance products is now mostly based on "tax-free benefits through post-tax premiums"). The portion of personal income that was directed towards income tax is therefore excluded when the *insurance need* is calculated.

For the death *insurance need*, the replacement ratio additionally takes the following into account:

- Insurance cover for single-member families is only required to the extent that support payments to other households formed part of income.
- When an *earner* dies, the household expenditure will be lower post-event. For modelling purposes, we allocated total household expenses into different categories:
 - Fixed expenses: Expenses that cannot sensibly be assigned / allocated to any specific member in the household and would therefore not change materially much should the family become smaller. Examples include expenditure on housing, washing and cleaning expenditure, and domestic worker wages.
 - Adult expenses: Post-event expenditure is adjusted by taking into account the number of adults in the household before and after the event. Examples include alcoholic beverages.
 - People expenses: Post-event expenditure is adjusted by taking into account the number of people in the household before and after the event. Examples include food, clothing, reading matter, and stationary.
- To the extent that savings represent provision for retirement, it needs to remain in the expense base as we are relying on these contributions to provide the household with an income from the intended *retirement age*. To the extent that it represents wealth creation though, it should be excluded from the expense base in line with definitions of *insurance need* (maintenance of current standard of living).

For the disability *insurance need*, the replacement ratio also takes into account the savings-element with wealth creation motive that will not be required in the post-event situation.

Appendix C3: Capitalisation Multiple

A capitalisation factor is calculated by determining the number of years that the *earner* would still have contributed to the household up to *retirement age* only.

Generally speaking, the term is the period that household members would have remained dependent on income at risk. As current retirement provision expenditure was retained in the expense base, it is appropriate to allow the dependency duration to cease at what would have been the retirement date.

In determining these factors, an interest rate that exceeds living expense inflation by 1.9% was assumed.

APPENDIX D: MODELLING NOTES - ACTUAL COVER

Accurate calculation of the *insurance need* for each of the sample / model points on the representative dataset (populated metadata from Statistics South Africa) is possible as all information affecting it is available at this level. This, however, is not the case for *actual cover*. The StatsSA datasets do not contain any information on product ownership or insurance cover. Hence, additional resources had to be used to [1] determine the total level of *actual cover* as at end 2021 and [2] assign this cover to each of the sample points in the dataset.

Appendix D1: ASISA questionnaires

The long-term insurance industry is the primary source of life and disability cover. A questionnaire was sent to all relevant insurers who were requested to provide

- Information on total cover amounts in the format that this information is reported annually to the regulator (the so-called TP2.1 and TP2.2 statements). These statements contain information on the total payments (separately for Retail and Group cover and per cover type) that would be made in the hypothetical scenario where all their policyholders were subject to a separate and independent *death event* and *disability event*.
- Additional information that would allow adjustments to these figures for purposes of determining the *actual cover* for this study. This includes information that would allow approximate allocation of total cover amounts between different age groups, genders, and socio-economic groups.

The following adjustments were made to the insurer-provided data:

- Capitalising disability income cover: Income disability cover was capitalised by discounting regular payments. Payments were multiplied by annuity factors allowing for the term to retirement (dependant on current age) as well as whether payments would escalate or not and at which rate (supplied by most insurers).
- Translating socio-economic groups to income groups: For retail cover, insurers were requested to provide information split per socio-economic group as per their own definition / categorisation.
- Allowing for non-respondents: The response factor was quite high with all the major insurers (by market share) providing information. Approximate allowance was made for the (around 9% of market share) non-respondents.

- Excluding out-of-scope cover: As the study is concerned with the *actual cover* of *active earners* only, we had to (approximately) exclude such (retail) cover held by retired and unemployed individuals.

Appendix D2: Other data sources

Self-insured pension schemes provide a material proportion of total group risk cover. Allowance was made for such cover based on approximations from publicly available information (e.g. annual reports) as well as discussions with advisors to these schemes.

Government is a major source of disability cover through its disability income grant and the study paid due consideration to the conditions for payment of these grants. Current qualification criteria and levels were allowed for.

Appendix D3: Allocation of *actual cover* to each modelled *earner* - True South models

This total level of *actual cover* (derived from the above sources) then had to be allocated to each of the "model points" representing the South African *earner* population. This was done separately for individual life cover, individual disability cover, group life cover, and group disability cover using two True-South developed models which were calibrated using the data sources described above:

- TSPO-model: The True South Product Ownership model returns the probability of a South African *earner* having life or disability cover based on supplied information such as education, age, income, marital status, family composition, and geography (per province).
- TSCL-model: The True South Cover Level models return the level of cover given that cover does exist based on similar information required by the TSPO-model.

Genetic algorithm technology⁶ was used to solve the optimisation problem of fitting the model parameters. As mentioned elsewhere, input for deriving the parameters were obtained from a wide variety of sources.

⁶ A genetic algorithm is an experience-based technique for problem solving that mimics the process of natural evolution (i.e. using concepts inspired by natural evolution, such as inheritance, mutation, selection, and crossover). This approach is routinely used to generate useful solutions to optimization and search problems, including previously unsolvable, complex non-linear problems.

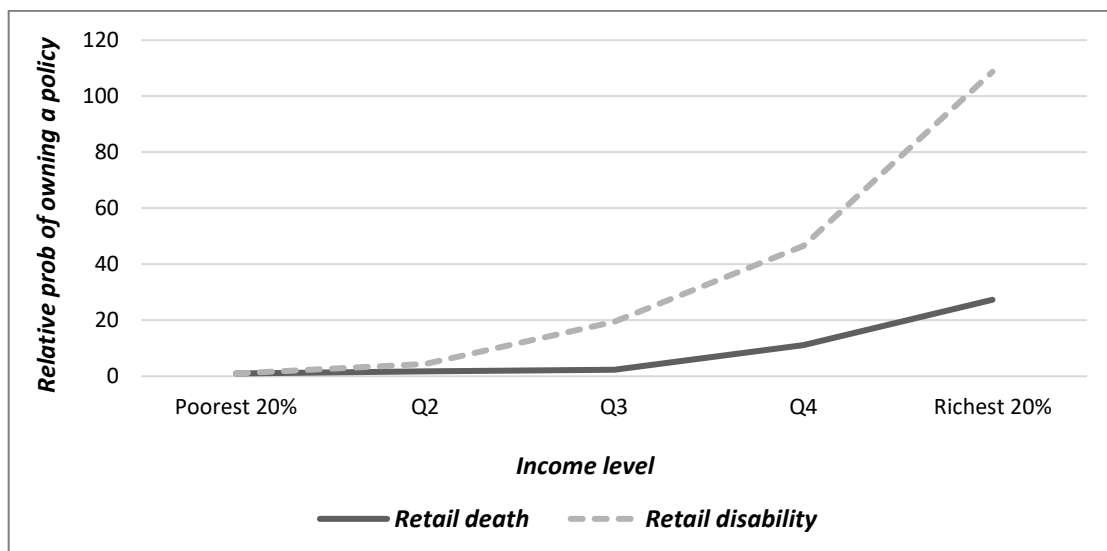
The total *actual cover* for each of the sample points was derived by multiplication of the probability of being insured (from the TSPO-model) with the average level of cover (from the TSCL-model) for each of the four cover types (life vs. disability and retail vs. group).

Some interesting findings derived from the TSPO model are provided below:

- **Income:**

A person with *earnings* in the top 20% is about 2.4 times more likely to have life insurance (2.3 times for a disability insurance policy) compared to an otherwise identical person (including education level, age, etc.), but with *earnings* in the second highest 20%. The following graph shows the relative probability that *earners* have a retail life or disability insurance policy, per income level (using the poorest 20% income group as a base, =1):

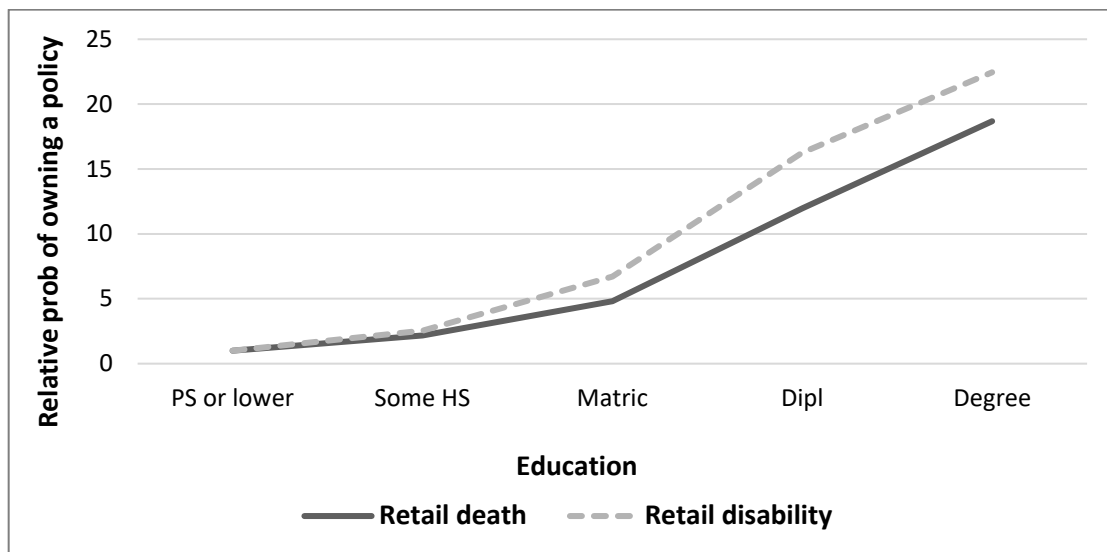
Figure 1 - Relative probability of having a retail life or disability policy, per income level



- **Level of education**

There is a very strong correlation between insurance policy ownership and highest level of education attained. The likelihood of a matric graduate having a life insurance policy is 4.8 times higher than an otherwise identical person (with regard to income, age, gender, family composition, marital status), but with only a primary school education. The relativity is more pronounced for disability policy ownership, with the factor being 6.7. The following graph shows the relative probability that *earners* have a retail life or disability insurance policy, per education level (using the primary school or lower group as a base, =1):

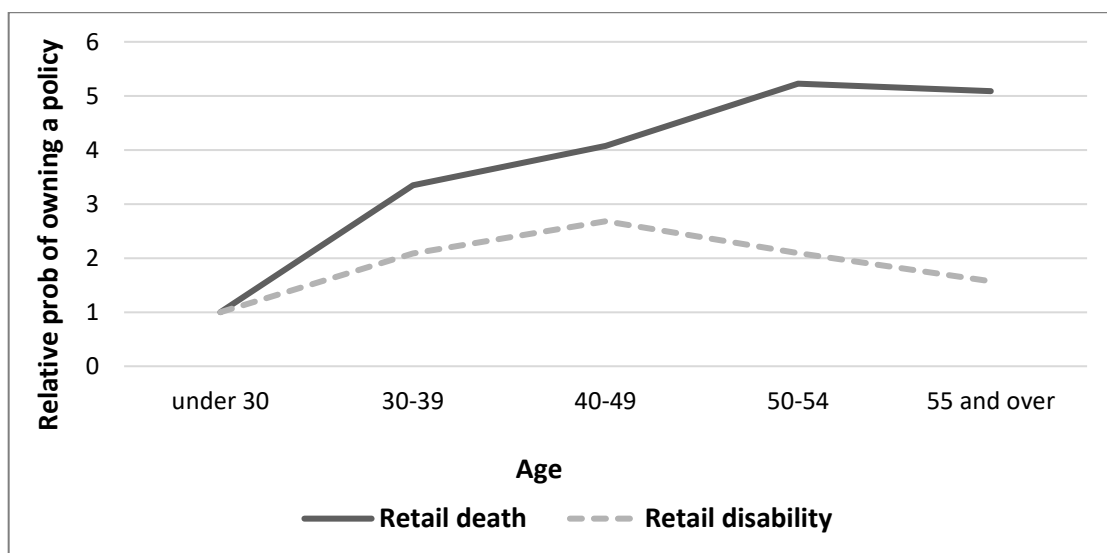
Figure 2 - Relative probability of having a retail life or disability policy, per education



- **Age:**

A 50 to 54-year-old person is 5.2 times more likely to own a life insurance policy (2.1 times for a disability insurance policy) compared to an otherwise identical person under the age of 30. The following graph shows the relative probability that *earners* have a retail life or disability insurance policy, per age group (using the under 30 group as a base, =1):

Figure 3 - Relative probability of having a retail life or disability policy, per income level



- **Province:** The above factors adequately explain the extent of likely insurance cover, except for group insurance where there is a much-enhanced probability of group life cover and / or disability cover if an *earner* resides in Gauteng or the Western Cape.
- **Group cover:** The main determinants for the level of group cover are salaries and wages, age, and education level.