2017 ACTUARIAL REPORT

for the Bermuda Health Council

Bermuda Health Council

2017 Actuarial Report for the Bermuda Health Council

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2017 Actuarial Report for the Bermuda Health Council

July 2018

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Introduction

Morneau Shepell has been engaged by the Bermuda Health Council (Health Council) and we are pleased to present our report on the Fiscal 2017 review (i.e. the period April 1, 2016 to March 31, 2017) of the following programs:

- The Standard Health Benefit (SHB), and
- the Mutual Reinsurance Fund (MRF).

The purpose of this report is:

- to review the statistical and claims information submitted by the insurers and approved schemes, as it relates to the SHB
- to comment on trends over the Fiscal 2016 / Fiscal 2017 period
- to recommend premium rates that are to take effect in Fiscal 2019[1]
- to analyze any changes in SHB and MRF benefit provisions that are under consideration

In preparing this report we relied on the documentation and information provided to us by the Health Council.

[1] Note that in this report, Fiscal 2019 is referred to as the period July 1, 2018 to June 30, 2019. This is due to changes in the SHB, the MRF and the SPR that will take effect on July 1, 2018.

Section A. Summary & Premium Recommendation

A summary of Fiscal 2017 and Fiscal 2016 insured headcount, claims and costs per-capita is tabled below:

A.1. Standard Health Benefit Insured Headcount

	Fiscal 2017	Fiscal 2016	% Change
Grand Total	48,145	48,682[2]	-1.1%

A.2. Standard Health Benefit Claims Data

Claim Amounts	Local		
	In-Patient	Out-Patient	Total
Fiscal 2016[3]	$48,791,000	$108,897,000	$157,688,000
Fiscal 2017	$45,360,000	$117,854,000	$163,214,000
Increase	(7.0%)	8.2%	3.5%

A.3. Standard Health Benefit Cost per-capita and Loss Ratios

Fiscal 2017		Fiscal 2016[4]		
Local Cost Per-Capita	Loss Ratio	Local Cost Per-Capita	Loss Ratio	Cost Per-Capita Increase
$283	106%	$270	98%	4.7%

[2] This is revised from 48,669 as previously reported.

[3] Due to the insurers' revision to the claims, these amounts are revised from those previously reported (which were $47,576,000 for In-Patient and $105,676,000 for Out-Patient).

[4] Due to the insurers' revision to the claims and headcount, the cost per-capita and loss ratio is respectively revised to $270 and 98% compared with $262 and 96% as previously reported.

A.4. Standard Premium Recommendation (including the MRF)

	Inc. %	Standard Health Benefit	Mutual Reins. Fund	Total
Fiscal 2018 Premium		$242.43	$91.57	$334.00
1. Increase in BHB Fees	N/A	$0.00	$0.00	$0.00
2. SHB Change in Utilization	4.5%	$10.91	$0.00	$10.91
3. Future Changes under the SHB	N/A	$0.00	$0.00	$0.00
4. Future Changes under the MRF	11.4%	$0.00	$10.40	$10.40
Recommended Fiscal 2019 SPR		**$253.34**	**$101.97**	**$355.31**
% Change in Premium		**4.5%**	**11.4%**	**6.4%**
$ Change in Premium		**$10.91**	**$10.40**	**$21.31**

Please refer to the sections that follow for notes on the above recommendation.

Respectfully submitted,

Howard Cimring, FFA, FCIA
Morneau Shepell

July, 2018

Section B. The Standard Health Benefit

B.1. Introduction

The Standard Health Benefit (SHB), as defined by the Health Insurance (Standard Health Benefit) Regulations 1971, consists of in-patient, out-patient, home medical services, palliative care and other benefits. The SHB is the minimum package of benefits which must be provided within any health insurance policy sold in Bermuda, including each employer sponsored or health insurance provider's health plan. Further, it is compulsory for each employed or self-employed person, and their non-employed spouse, to have health insurance. Private and public health insurers and approved schemes are licensed by the Bermuda Health Council.

A Standard Premium Rate (SPR) for the SHB is determined annually by the Ministry of Health, after taking advice from the Bermuda Health Council which commissions an actuarial review for the SPR. The SPR is the ceiling rate that can be charged to insured persons for the SHB. A health insurance provider cannot charge more than the SPR for the Standard Health Benefit. An employee cannot be required to pay more than half of the SPR for SHB coverage. The SPR allows all insured persons to access the same basic level of SHB health insurance coverage for the same price regardless of their health status.

The SPR is set with reference to the claims experience of all the insured participants. As such, the claims experience (in respect of the SHB component only) across all the health insurance providers is pooled together and a single premium rate reflective of the pooled experience is determined.

B.2. Fiscal 2017 Claims and Statistical Data

We have analyzed the Fiscal 2017 and Fiscal 2016 insurer and approved scheme[5] submissions to the Health Council. A summary of certain data elements and our analysis is tabled below:

Table 1 - Headcount

	Average Headcount[6]				
	F2017	% Total	F2016	% Total	% Change
Private Plans	33,505	70%	33,974*	69%	-1.4%
Government Plans	14,640	30%	14,708	31%	-0.5%
Grand Total	48,145	100%	48,682	100%	-1.1%

* revised from the previously reported headcount of 33,961

In Fiscal 2017, there were five insurers and three approved schemes. In Fiscal 2017, 41% of the insured population was aged 55 and over. This figure has been steadily rising since Fiscal 2013 when it was 37%. The estimated average age of the insured population in Fiscal 2017 is 52.0 years old (a 0.7 of a year increase over Fiscal 2016).

The claims are summarized below:

Table 2 - Claim Amounts

Claim Amounts	Local		
	In-Patient	Out-Patient	Total
Fiscal 2016*	$48,791,000	$108,897,000	$157,688,000
Fiscal 2017	$45,360,000	$117,854,000	$163,214,000
Increase	(7.0%)	8.2%	3.5%

* revised from previously reported, which were $47,576,000 for In-Patient and $105,676,000 for Out-Patient

[5] An approved scheme is a scheme established by an employer to cover its employees and retirees.

[6] These figures represent SHB insured persons only (not including the youth that are 100% subsidized by government) and do not represent the total number of lives that are insured.

At the beginning of Fiscal 2017 the following changes to the SHB were effected:

- The BHB ward rates were harmonized to a single rate of $1,350 per diem. Previously the rates varied by general, semi-private, and private wards.
- Various additional coverages were added to the SHB, such as coverage for a Zio Patch, Peripheral Artery Disease Screening and Diagnostic Services, High Risk Foot Podiatry and Plasma Exchange.

The cost per-capita and loss ratios for Fiscal 2017 and Fiscal 2016 are tabled below:

Table 3 - Cost Per-Capita and Loss Ratios

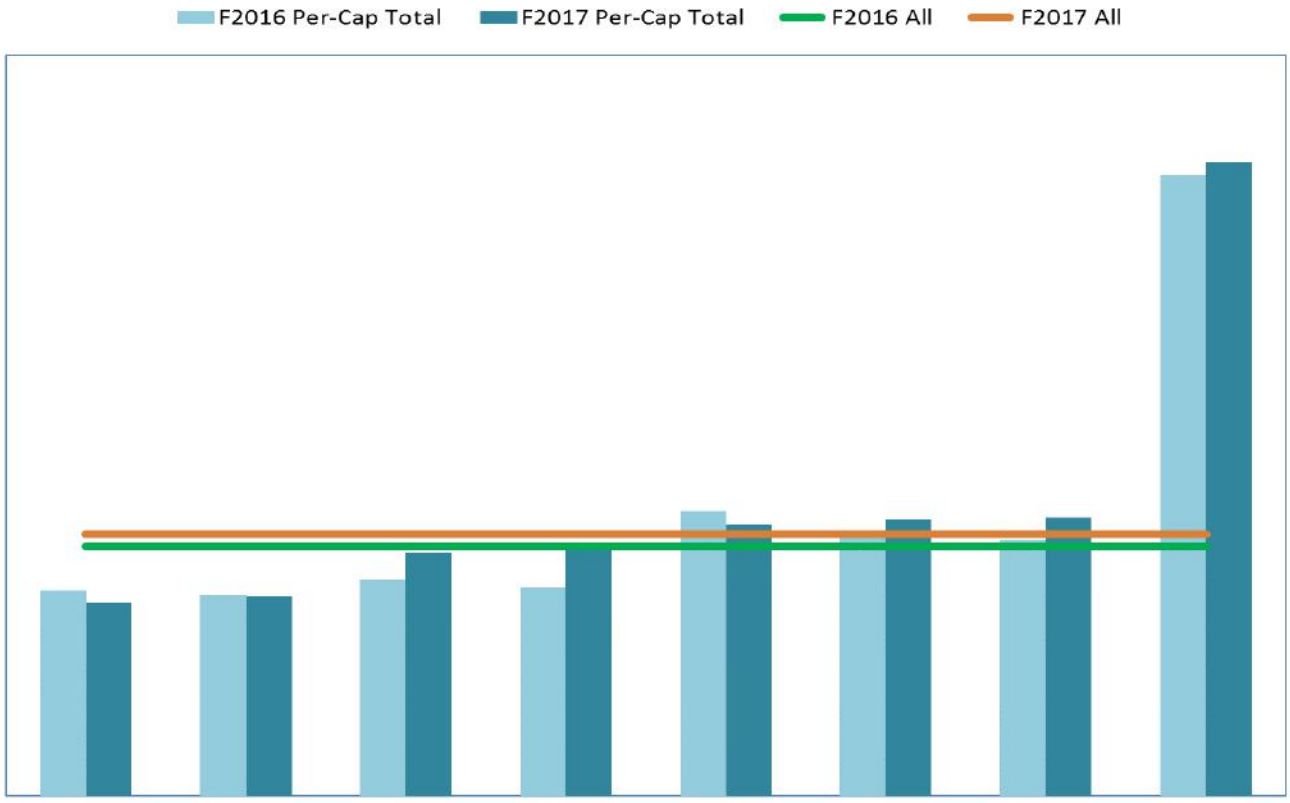
	Fiscal 2017		Fiscal 2016		
	Local Cost Per-Capita	Loss Ratio	Local Cost Per-Capita	Loss Ratio	Cost Per-Capita Increase
Private Plans	$239	89%	$228[7]	83%	5%
Government Plans	$382	143%	$366	133%	4%
Total	$283	106%	$270	98%	5%

The Fiscal 2017 loss ratio is based on a Standard Premium Rate of $267.35.

[7] Adjusted due a revision to the Private Plan claims and headcount. The previously reported cost per-capita was $218 for Private Plans and the Grand Total for all insurers was $262.

The following chart illustrates the variation in the local costs per-capita by insurer / approved scheme, as well as the comparison to the overall cost-per capita. The omission of data points on the chart is deliberate.

Chart 1 – Local Costs Per-Capita (by Insurer)



The data supplied by insurers and approved schemes also includes claims data grouped into various age bands. The data has been analyzed and the charts in Appendix 1 present the average per-capita claims by age band. As expected, the charts show an increasing cost per-capita leading up to age 65 (i.e. healthcare costs on average increase with age). At age 65 a decline is expected due to the government subsidy[8].

We have also analyzed In-Patient data supplied by the BHB, the results of which can be found in Appendix 2.

[8] For those that are age 65 and over, if they satisfy a 10 year residency requirement, the government provides a subsidy for claims under the SHB.

B.3. Standard Premium Rate History

The history of the SPR and the loss ratio is as follows:

Table 4 - SPR and Loss Ratio History

	Standard Premium Rate	% Change	Loss Ratio*
Fiscal 2008	$152.59	8.3%	100%
Fiscal 2009	$164.37	7.7%	109%
Fiscal 2010	$184.01	11.9%	112%
Fiscal 2011	$209.63	13.9%	108%
Fiscal 2012	$225.46	7.6%	106%
Fiscal 2013	$236.73	5.0%	105%
Fiscal 2014	$282.27	19.2%	94%
Fiscal 2015	$272.67	(3.4%)	90%
Fiscal 2016	$274.33	0.6%	98%
Fiscal 2017	$267.35	(2.5%)	106%
Fiscal 2018	$242.43	(9.3%)	To be determined next year

* based on a comparison of the SPR to the determined claims cost per-capita

B.4. Standard Premium Rate Recommendation

The recommendation for the Fiscal 2019 Standard Premium Rate is as follows:

Table 5 - Standard Premium Rate Recommendation

	Increase %	
Fiscal 2018 SPR		$242.43
1. Increase in BHB Fees (adjustment to Fee Schedule)	N/A	$0.00
2. Allowance for Change in Utilization	4.5%	$10.91
3. Changes in Benefit Provisions	N/A	$0.00
4. Allowance for Claims Administration	0.0%	$0.00
Recommended Fiscal 2019 SPR		**$253.34**
% Change in SPR		**4.5%**
$ Change in SPR		**$10.91**

Notes

1. The BHB fees will be maintained at the prior year's rates.
2. The utilization represents the overall expected change in the consumption and provision of healthcare services under the Standard Health Benefit package. It may arise due to numerous factors such as ageing of the population, the introduction of new medical tests and technologies, a shifting in the case mix that requires treatment, an increase in the disease burden amongst the population, and for example, the unpredictability of possible severity due to influenza or other types of viruses and climate related events. By its very nature, and particularly amongst small populations, healthcare expenditure can fluctuate from one period to the next and accordingly, so would the measure of utilization. Historically, the utilization under the Standard Health Benefit has ranged approximately between 4.0% per annum to 8.0% per annum, although there have been years in which it has exceeded 8.0% and likewise, years where it has been below 4.0%. From an actuarial standpoint it is appropriate to include a measure of utilization in the forecast for setting the Standard Premium Rate and we have included an allowance for an estimated 4.5% increase in utilization over Fiscal 2019 (an increase in the SPR of $10.91).
3. Morneau Shepell has been advised that no changes or additional benefits are approved for inclusion in the SHB.

4. Morneau Shepell recommends maintaining the multiplier at 4 times the SPR for those over age 65 and not eligible for the government subsidy (to be eligible for the government subsidy one has to have been resident for a continuous period of not less than 10 years during the period of 20 years immediately preceding the application for payment of the subsidy). The cost (without subsidies) for persons aged 65 and over is estimated to be approximately four times the population as a whole (and the SPR is representative of the cost of the population as a whole). In addition, relevant components of the MRF premium will be subject to a similar multiplier.

Section C. Mutual Reinsurance Fund

C.1. Introduction

The Mutual Reinsurance Fund (MRF) is funded by a premium which is added onto each health insurance contract. The insurance providers collect a premium from each insured person and deposit this premium with the MRF. The determination of the premium rate of the MRF rests with the Ministry of Health.

The MRF serves the following purposes:

a) it acts as a catastrophic fund[9] to cover certain high dollar value claims which are included as benefits under the SHB or allows the introduction and assessment of new and experimental treatments and programs which have no prior established actuarial experience or pricing model,

b) it transfers funds to the following:

- the Health Insurance Department of the Ministry of Health to sustain HID's role as insurer of last resort[10] and to support the various healthcare programs (e.g. the Primary Care Pilot Program) maintained by HID,
- the Health Council so that it may continue to fulfill its mandate as it relates to the oversight of insurers, the SHB, MRF and other initiatives, and
- the BHB related to care services.

The history of the MRF Premium is as follows:

[9] Since the beginning of Fiscal 2015 it had ceased to function in this capacity however, from Fiscal 2018, it does again function in this capacity.

[10] HID accepts high-cost participants and has open enrollment policies which impose no terms of underwriting or exclusion of pre-existing conditions.

Table 6 - MRF Premium History

	MRF Premium Rate	% Change
Fiscal 2008	$21.25	7.5%
Fiscal 2009	$22.84	7.5%
Fiscal 2010	$24.43	7.0%
Fiscal 2011	$26.51	8.5%
Fiscal 2012	$26.81	1.1%
Fiscal 2013	$34.88	30.1%
Fiscal 2014	$43.57	24.9%
Fiscal 2015	$29.18	(33.0%)[11]
Fiscal 2016	$63.74	118.4%[12]
Fiscal 2017	$70.72	11.0%
Fiscal 2018	$91.57	29.5%[13]

[11] With effect from Fiscal 2015, various claims covered by the MRF were transferred to SHB, becoming payable by the insurers.

[12] Various transfers were initiated giving rise to an increase in the MRF premium.

[13] With effect from Fiscal 2018, the MRF absorbed claims in respect of Dialysis, Transplants & Anti-Rejection Drugs.

C.2. Mutual Reinsurance Fund Premium Recommendation

The recommendation for the Fiscal 2019 MRF Premium is as follows:

Table 7 - MRF Premium Recommendation

	Increase %	
Fiscal 2018 MRF Premium		$91.57
Claims in respect of Dialysis, Transplants & Anti-Rejection Drugs	13.1%	$11.99
Revision to Transfers		
a) Suspension of the transfer to the Primary Care Pilot Program	(3.7%)	($3.37)
b) Increase in the transfer to HID (for HIP and FutureCare)	2.5%	$2.32
c) Reduction in the transfer to the Health Council	(0.6%)	($0.54)
Recommended Fiscal 2019 MRF Premium		**$101.97**
% Change in MRF Premium		**11.4%**
$ Change in MRF Premium		**$10.40**

Notes

1. The increase in respect of dialysis is due to the increasing prevalence of persons requiring treatment. In addition, dialysis services provided in the community (i.e. outside of the BHB) are not eligible to receive government subsidy. Further, the allowance for a kidney transplant is to increase from $100,000 to $150,000.
2. With respect to the transfers:
   a) The transfer in respect of the Primary Care Pilot Program is to be suspended (an amount of $3.37). The program will through continue with the use of accumulated reserves.
   b) The transfer to HID will increase by $2.32.
   c) The transfer to the Health Council will decline by $0.54.

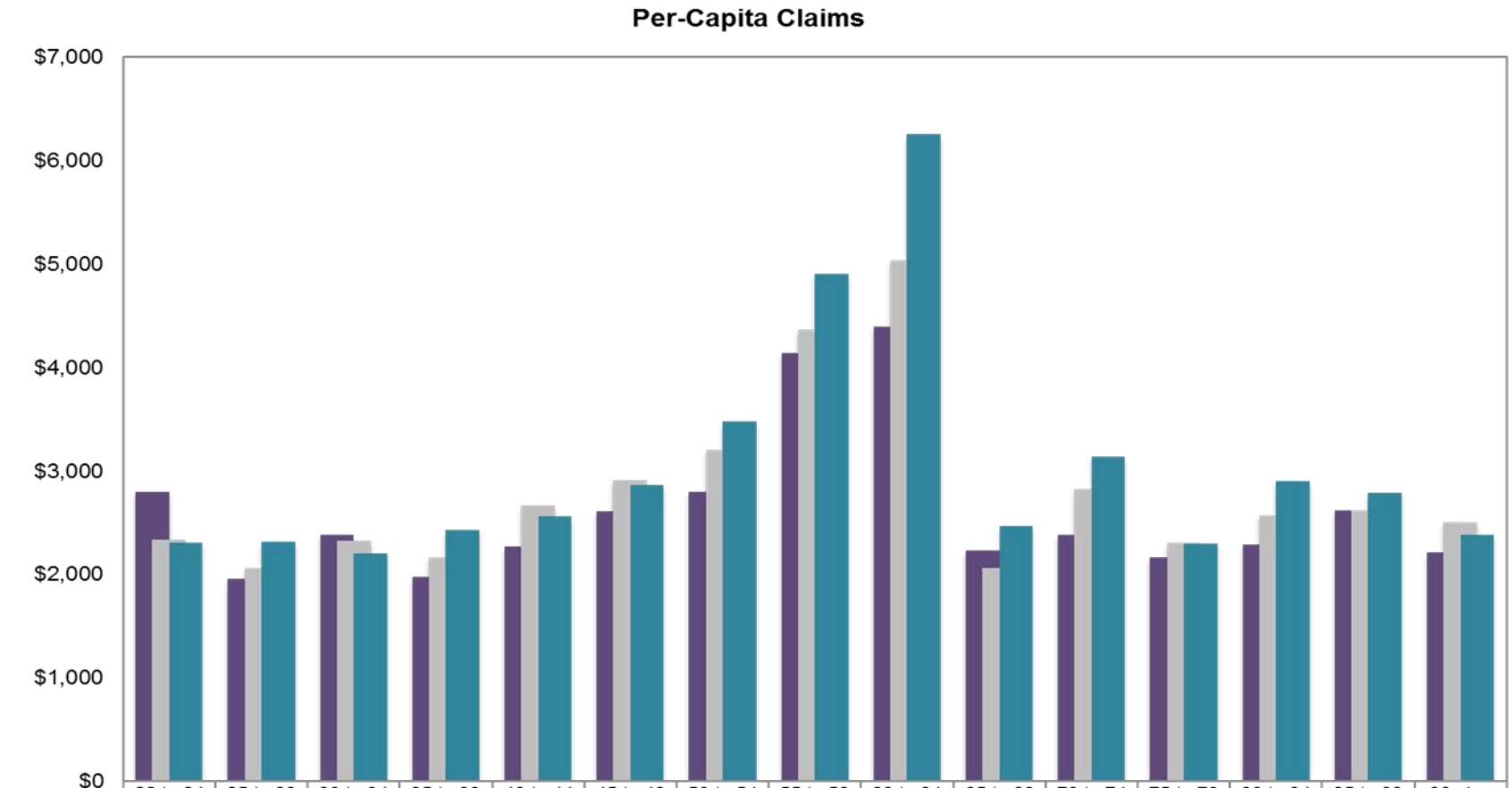
3. The Fiscal 2019 MRF funding allocations are summarized as follows:

Table 8 - Fiscal 2019 MRF Funding Allocations

Funding Allocation	Funding Rate (per month per member)
Health Insurance Department	$50.35
Bermuda Health Council	$0.55
Primary Care Pilot Program	$0.00
Bermuda Hospitals Board	$13.16
Dialysis and Transplants*	$37.40
Operational and Administrative	$0.51
Total	**$101.97**

* The multiplier for those over age 65 and not eligible for the government subsidy is 4 times the rate.

Appendix 1 – Standard Health Benefit (Total Annual Per-Capita Claim Costs – Local Claims)

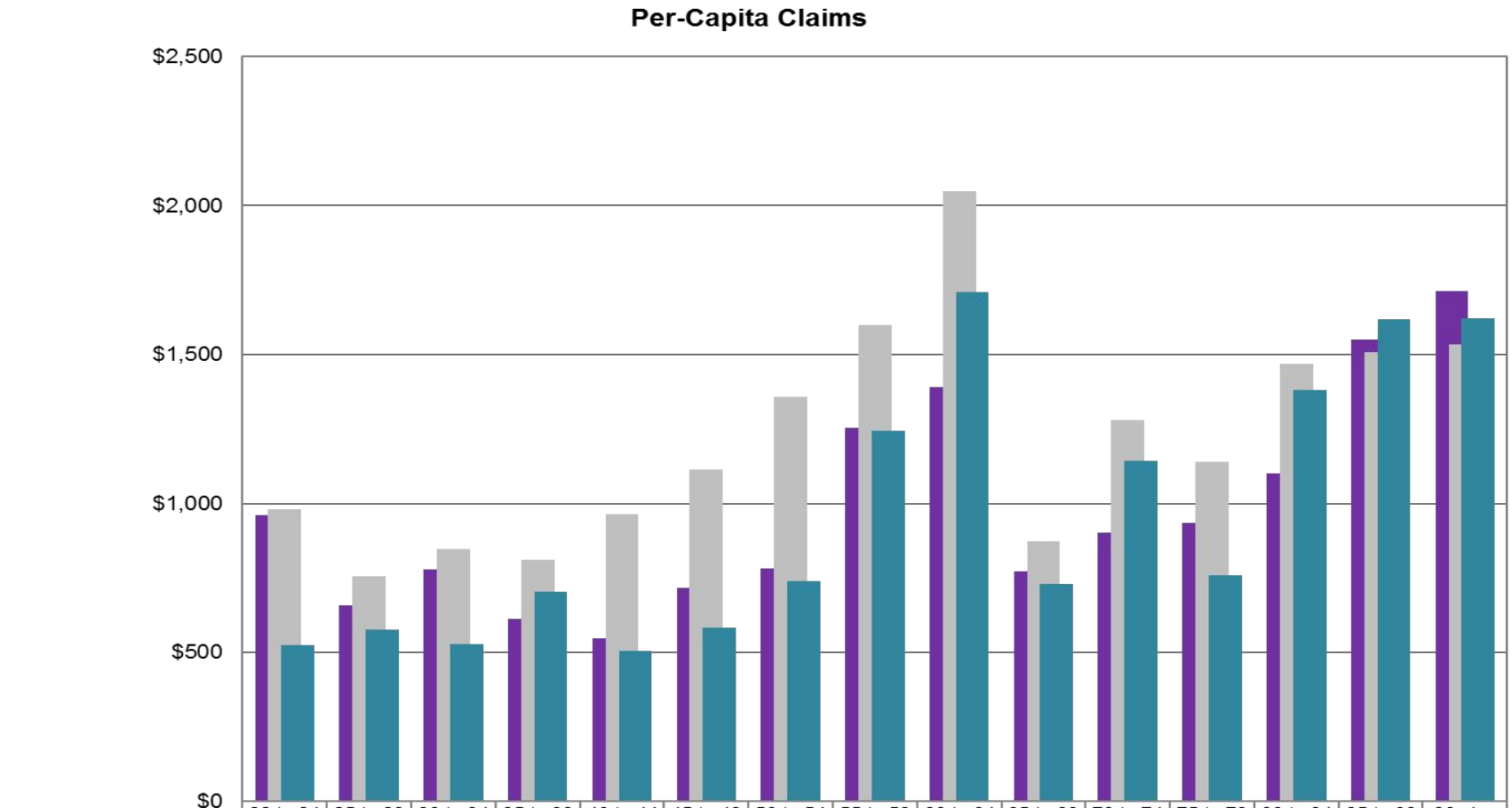


	22 to 24	25 to 29	30 to 34	35 to 39	40 to 44	45 to 49	50 to 54	55 to 59	60 to 64	65 to 69	70 to 74	75 to 79	80 to 84	85 to 89	90 plus
2015 Total	$2,795	$1,963	$2,386	$1,981	$2,273	$2,614	$2,801	$4,140	$4,397	$2,229	$2,383	$2,166	$2,287	$2,621	$2,211
2016 Total	$2,335	$2,064	$2,326	$2,171	$2,671	$2,910	$3,206	$4,371	$5,042	$2,063	$2,825	$2,312	$2,575	$2,618	$2,504
2017 Total	$2,308	$2,316	$2,204	$2,427	$2,564	$2,870	$3,482	$4,907	$6,255	$2,471	$3,141	$2,296	$2,902	$2,788	$2,386

Note:

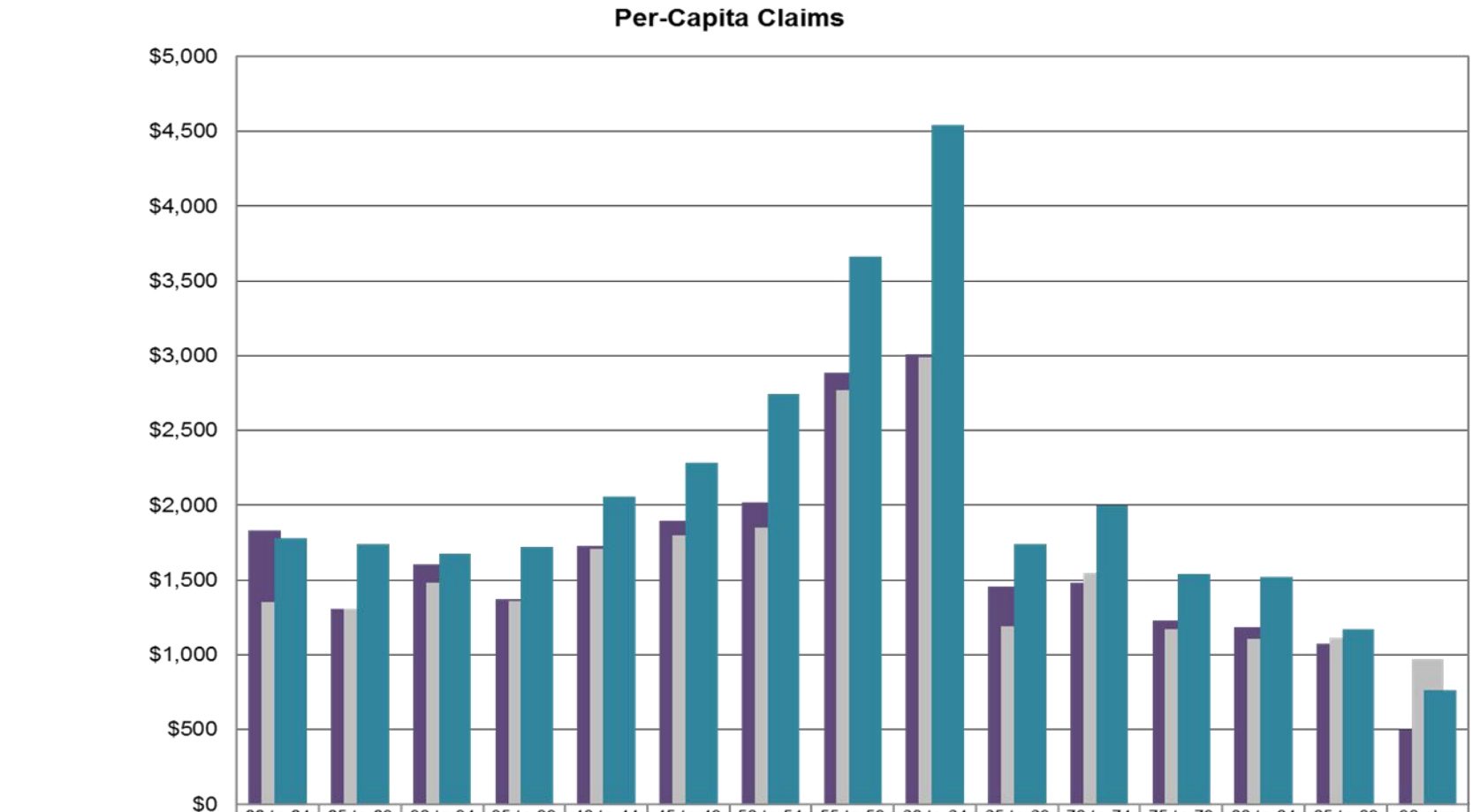
1. The decline in the cost per-capita at age 65 is due to the government subsidy.

Appendix 1a – Standard Health Benefit (Bermuda In-Patient Annual Per-Capita Claim Costs)



	22 to 24	25 to 29	30 to 34	35 to 39	40 to 44	45 to 49	50 to 54	55 to 59	60 to 64	65 to 69	70 to 74	75 to 79	80 to 84	85 to 89	90 plus
2015 Bermuda Inpatient	$962	$660	$778	$613	$547	$716	$782	$1,254	$1,391	$773	$904	$936	$1,101	$1,549	$1,712
2016 Bermuda Inpatient	$980	$755	$847	$813	$966	$1,113	$1,358	$1,599	$2,049	$872	$1,279	$1,139	$1,470	$1,507	$1,536
2017 Bermuda Inpatient	$526	$576	$527	$704	$504	$584	$739	$1,244	$1,710	$731	$1,145	$759	$1,381	$1,620	$1,623

Appendix 1b – Standard Health Benefit (Bermuda Out-Patient Annual Per-Capita Claim Costs)



	22 to 24	25 to 29	30 to 34	35 to 39	40 to 44	45 to 49	50 to 54	55 to 59	60 to 64	65 to 69	70 to 74	75 to 79	80 to 84	85 to 89	90 plus
2015 Bermuda Outpatient	$1,833	$1,304	$1,607	$1,368	$1,726	$1,898	$2,019	$2,886	$3,006	$1,456	$1,479	$1,230	$1,186	$1,072	$499
2016 Bermuda Outpatient	$1,355	$1,309	$1,479	$1,359	$1,705	$1,797	$1,848	$2,772	$2,992	$1,191	$1,546	$1,173	$1,105	$1,111	$968
2017 Bermuda Outpatient	$1,782	$1,740	$1,677	$1,724	$2,060	$2,287	$2,742	$3,663	$4,545	$1,740	$1,997	$1,537	$1,521	$1,168	$764

Appendix 2 – Bermuda Hospitals Board In-Patient Analysis - Admissions by Age

	Fiscal 2017				Fiscal 2016			
Age	Number of Admissions	Total DRG Fee (in '000)	% of Admissions	% of Total Cost	Number of Admissions	Total DRG Fee (in '000)	% of Admissions	% of Total Cost
<5	722	$3,957	12%	8%	808	$4,948	14%	10%
5-14	119	$761	2%	2%	141	$905	2%	2%
15-24	245	$1,916	4%	4%	286	$2,399	5%	5%
25-34	613	$4,001	10%	8%	683	$4,599	12%	9%
35-44	539	$4,179	9%	8%	597	$4,736	10%	10%
45-54	548	$5,173	9%	10%	566	$5,331	10%	11%
55-64	868	$8,910	15%	18%	800	$7,848	14%	16%
65-74	891	$8,906	15%	18%	760	$7,577	13%	15%
75-84	791	$7,445	13%	15%	714	$7,036	12%	14%
85-95	495	$4,379	8%	9%	412	$3,698	7%	7%
>95	33	$266	1%	1%	35	$290	1%	1%
Total	5,864	$49,893	100%	100%	5,802	$49,367	100%	100%

Data Source: BHB

Notes:

1. The total fees are the DRG charge only (prior to subsidy) and do not include the per-diem fee or any other fee charged for in-patient services.
2. The number of admissions in Fiscal 2017 has increased by 1.1% (this is due an increase in the over age 65 admissions).
3. The under 5 age group is mostly comprised of newborns.
4. The percentage of cost related to those aged 65 and over is 42% in Fiscal 2017 (which is a 4% increase over Fiscal 2016).
5. In Fiscal 2017 the change in the total cost for admissions for those under age 65/age 65 and over, is -6% and 13% respectively.

Appendix 2a - Admissions by Major Diagnostic Categories (MDC)

	Fiscal 2017				Fiscal 2016		
Major Diagnostic Category (sorted by F2017 Fee)	**Number of Admissions**	**Change in Admissions**	**Total DRG Fee (in '000)**	**% of Total Cost**	**Number of Admissions**	**Total DRG Fee (in '000)**	**% of Total Cost**
Musculoskeletal System And Connective Tissue	724	3%	$9,015	18%	702	$8,949	18%
Digestive System	683	15%	$6,624	13%	594	$5,824	12%
Circulatory System	632	-4%	$5,332	11%	655	$5,340	11%
Respiratory System	516	-2%	$3,993	8%	525	$4,090	8%
Nervous System	438	28%	$3,537	7%	341	$2,741	6%
Pregnancy, Childbirth And Puerperium	648	-4%	$3,211	6%	672	$3,310	7%
Newborn And Other Neonates (Perinatal Period)	561	-6%	$3,012	6%	598	$3,733	8%
Infectious and Parasitic DDs	231	11%	$2,965	6%	209	$2,415	5%
Kidney And Urinary Tract	274	-10%	$2,004	4%	303	$2,219	4%
Hepatobiliary System And Pancreas	201	18%	$1,836	4%	170	$1,596	3%
Skin, Subcutaneous Tissue And Breast	166	-4%	$1,319	3%	173	$1,423	3%
Ear, Nose, Mouth And Throat	152	-21%	$1,072	2%	193	$1,372	3%
Blood / Forming Organs and Immunological Disorders	123	14%	$928	2%	108	$814	2%
Endocrine, Nutritional And Metabolic System	134	-14%	$912	2%	155	$1,010	2%
Pre-MDC	25	-19%	$696	1%	31	$1,100	2%
Injuries, Poison And Toxic Effect of Drugs	83	-7%	$662	1%	89	$712	1%
All Other	273	-4%	$2,775	6%	284	$2,721	6%
Total	5,864	1%	$49,893	100%	5,802	$49,367	100%
Change from Prior Fiscal Period	1%		1%		3%	4%	

Data Source: BHB

Notes:

1. We have summarized the DRG codes into mutually exclusive diagnosis areas (referred to as Major Diagnostic Categories).
2. In Fiscal 2017, the average DRG charge per admission is unchanged from Fiscal 2016.

Appendix 2b - Fiscal 2017 Admissions, Days in Hospital

Days in Hospital	Number of Admissions	% of Admissions	% of Total Cost	Average days in Hospital	DRG Fees (in '000)
0-4	3,548	60%	51%	2.3	$25,448
5-9	1,407	24%	25%	6.3	$12,715
10-14	417	7%	9%	10.5	$4,329
15-19	178	3%	5%	15.3	$2,381
20-24	118	2%	3%	17.9	$1,707
25-29	49	1%	1%	24.8	$742
30-35	28	0%	1%	28.5	$504
>35	119	2%	4%	72.8	$2,062
	5,864	100%	100%	6.5	$49,888

Data Source: BHB

Notes:

1. Eighty-four percent of admissions are under 10 days, which is similar to prior fiscal periods.
2. For Fiscal 2017 admissions, the average days in hospitals has increased to 6.5 days. For Fiscal 2016 admissions, it was 5.7 days and for Fiscal 2015 admissions, it was 5.9 days.

Appendix 3 – Fiscal 2017 Hospital and Non-Hospital Laboratory and Diagnostic Imaging

Local Claims	Laboratory Tests	CT Scans	MRI scans	X-rays	Ultrasounds	Mammograms	Other Imaging	Total Imaging
Hospital	$23,070,900	$10,389,000	$4,081,400	$4,515,300	$1,371,800	$375,000	$2,110,500	$22,843,000
Non-Hospital Claims	$20,511,400	$1,428,000	$4,011,800	$376,900	$4,103,800	$1,228,700	$3,111,900	$14,261,000
Total	$43,582,300	$11,817,000	$8,093,200	$4,892,200	$5,475,600	$1,603,700	$5,222,400	$37,104,000