



Office of the Superintendent of
Financial Institutions Canada

Bureau du surintendant des
institutions financières Canada

Addendum to Actuarial Study No. 5 Old Age Security Program Mortality Experience

**November 2006
Office of the Chief Actuary**



OSFI
BSIF

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TABLE OF CONTENTS

	Page
I. Executive Summary	5
A. Purpose.....	5
B. Scope.....	5
C. Main Findings	5
D. Conclusion	7
II. Data and Methodology.....	8
A. Data	8
B. Methodology.....	9
III. Results.....	10
A. Exposures by Marital Status and Type of Benefit	10
B. Mortality Comparisons	12
1. Comparisons by Marital Status.....	12
2. Comparison by Marital Status and Type of Benefit	13
IV. Life Expectancies at Age 65	16
V. Conclusion	18
VI. Appendix – OAS Detailed Tables.....	19

LIST OF TABLES

	Page
Table 1 Proportions of Singles by Type of Benefit and Source of Data.....	8
Table 2 OAS Exposures by Marital Status and by Type of Benefit	11
Table 3 OAS Mortality Rates by Age, Sex and Marital Status.....	12
Table 4 OAS Mortality Rates by Age, Sex, Marital Status and Type of Benefit (Males)	13
Table 5 OAS Mortality Rates by Age, Sex, Marital Status and Type of Benefit (Females).....	14
Table 6 Life Expectancies at Age 65 by Marital Status and Type of Benefit (Years).....	16
Table 7 Proportions of Single Beneficiaries by Age, Sex and Type of Benefit.....	19
Table 8 Exposures by Age, Sex and Marital Status	20
Table 9 Exposures by Age, Sex, Marital Status and Type of Benefit.....	21
Table 10 Mortality Rates by Age, Sex and Marital Status.....	22
Table 11 Mortality Rates by Age, Sex, Marital Status and Type of Benefit	23
Table 12 Mortality Ratios by Age, Sex and Marital Status	24
Table 13 Mortality Ratios by Age, Sex, Marital Status and Type of Benefit	25
Table 14 Beneficiaries by Age, Sex and Marital Status as at 31 December 2003	26
Table 15 Beneficiaries by Age, Sex, Marital Status and Type of Benefit as at 31 December 2003.....	27

LIST OF CHARTS

	Page
Chart 1 Exposures by Age, Sex, Marital Status and Type of Benefit.....	10
Chart 2 Mortality Ratios by Age, Sex and Marital Status.....	12
Chart 3 OAS Mortality Ratios by Age, Sex, Marital Status and Type of Benefit (Males).....	14
Chart 4 OAS Mortality Ratios by Age, Sex, Marital Status and Type of Benefit (Females)	15

I. Executive Summary

A. Purpose

This is an addendum to Actuarial Study No. 5 on the Old Age Security (OAS) program mortality experience that was published by the Office of the Chief Actuary (OCA) in February 2006. It presents estimates of the level of mortality by marital status and type of benefits. This study reflects the mortality experience of OAS beneficiaries who were age 65 and over and Canadian residents in the period running from 1 January 1999 to 31 December 2003.

B. Scope

Section II presents a summary of the data and methodology used to determine mortality rates by marital status over the period 1999 to 2003. A detailed analysis of the results is then presented in Section III. Section IV presents life expectancies at age 65 while Section V presents conclusions of the study. Section VI is an Appendix showing more detailed mortality statistics.

C. Main Findings

Data

- Marital status has been classified as either married or single. Those who have been classified as married include legally married, common-law and same-sex relationships, while those who have been classified as single include singles, widowed, separated and divorced persons.
- Marital status information obtained from the OAS beneficiaries' database was found to be reliable only for OAS beneficiaries in receipt of the guaranteed income supplement (GIS) benefits.
- For OAS beneficiaries not in receipt of GIS benefits, the marital status information from the OAS database was found to be unreliable because of the misclassification of many records as being singles. Despite these data limitations, it was possible to estimate the mortality experience for this subgroup by using additional marital information from other databases.
- The proportion of singles increases significantly by age as a result of married individuals becoming single upon the death of their spouse.
- There is a significant difference by age in the distribution of exposures by marital status between the two sexes. For example for the age group 65 to 69, the proportion of married males not in receipt of GIS benefits represents 81%, while for females the corresponding proportion is 68%. For the age group 85 to 89, these proportions are 54% for males and 25% for females.
- For the age group 65 to 69, the proportion of single males in receipt of GIS benefits is 32%, while for females the corresponding proportion is 59%. For the age group 85 to 89, these proportions are 49% for males and 92% for females.

Mortality by Marital status

- Both married males and females experience lower mortality than singles. The differential in mortality between married and single individuals decreases faster with advancing ages for males than females.
- For the age group 65 to 69, married males experience mortality that is 17% lower than the overall male mortality but it is 8% lower at the advanced ages. Single males experience mortality for the age group 65 to 69 that is 55% higher than the overall male mortality but it is only 3% higher at the advanced ages.
- For the age group 65 to 69, married females experience mortality that is 15% lower than the overall female mortality but it is 9% lower for the age group 95 to 99. Single females experience mortality for the age group 65 to 69 that is 22% higher than the overall female mortality but it gradually converges to the overall mortality at the advanced ages of 90 and over.

Mortality by Marital status and Type of Benefit

- While there are a few exceptions, for both sexes in general, singles in receipt of GIS benefits experience the highest mortality at all ages. The subgroup with the second highest mortality differs for each sex as for females it is those who are married in receipt of GIS benefits while for males it is those who are single not in receipt of GIS benefits. For both sexes, the subgroup with the lowest mortality is for those who are married beneficiaries not in receipt of GIS benefits.

Life Expectancy at Age 65

- Males show higher differentials in life expectancy at age 65 than females by marital status. For example, an analysis of life expectancy at age 65 by marital status shows that married males live on average 17.9 years or 3.7 years more than single males at age 65. In comparison, married females live on average 21.0 years or 1.3 years more than single females at age 65.
- Married males without GIS benefits, are expected to live 3.5 years more than single males in that subgroup. In comparison, married females without GIS benefits are expected to live 0.6 year more than single females.
- The differential in life expectancy at age 65 by type of benefit received are also higher for males. Married males without GIS benefits are expected to live 2.3 years more than married males in receipt of GIS benefits while married females without GIS benefits are expected to live 1.7 years more than those in receipt of GIS benefits.

- The overall socio-economic differential measures the differential in life expectancy at age 65 between OAS beneficiaries who are associated with a high socio-economic level (that is, those who do not receive the GIS benefit and are subject to the OAS clawback) relative to those associated with a low socio-economic level (that is, those who receive the GIS benefit). Married males affected by the clawback are expected to live 4.3 years more than married males with GIS benefits. On the other hand, single males affected by the clawback will live 4.6 years more than those in receipt of GIS benefits. In comparison, for females the differentials are smaller as both married and single females are expected to live 3.5 years more than those in receipt of GIS benefits.

D. Conclusion

Despite limitations on marital status information for OAS beneficiaries without GIS benefits, the use of additional marital status information from other sources makes it possible to show that the level of OAS mortality varies by marital status and by type of benefit for both males and females.

This study also confirms that both males and females who are married experience better mortality than their single counterparts. Lower mortality levels have been observed for those who are married and not entitled to GIS benefits.

II. Data and Methodology

A. Data

As for the Actuarial Study No. 5 on the Old Age Security (OAS) program mortality experience that was published by the Office of the Chief Actuary (OCA) in February 2006, the main source of data for this study is the administrative seriatim OAS beneficiary database. The OAS database contains information on the marital status of OAS beneficiaries at each 31 December for years 1999 to 2003 inclusively. Marital status has been classified as either married or single. Those who have been classified as married include common-law and same-sex relationships while those who have been classified as single include widowed, separated and divorced persons. The marital status information of the OAS database was validated by comparing proportions of singles by type of benefit on an age by age basis with the corresponding proportions of singles obtained from the 2001 Canada Revenue Agency (CRA) database.

Table 1 shows that marital status information from the OAS database is reliable for OAS beneficiaries in receipt of the Guaranteed Income Supplement (GIS) benefit but is unreliable for OAS beneficiaries not in receipt of GIS benefits (No GIS). For example, for males in the age group 65 to 69, the proportion of singles from the OAS database is 79% and clearly overstates the 23% obtained from the 2001 CRA database. A misclassification is suspected due to the many records classified as singles in the OAS database. As will be described in the following methodology section, in order to be able to estimate the mortality experience for OAS beneficiaries not in receipt of GIS benefits by marital status who may or may not have been subject to the clawback provision, it was necessary to use a calibration process which used additional marital status information from other databases.

For OAS beneficiaries in receipt of GIS benefits, no calibration process was used as the proportions of singles from the OAS database compare well to the corresponding proportions obtained from the 2001 CRA database. For example, for males in the age group 65-69, the proportion of singles from the OAS is 32% and compares well with the 33% obtained from the CRA database. Table 7 in Appendix A compares the adjusted proportions of singles between the OAS database and the CRA database by individual ages, marital status and type of benefit.

Table 1 Proportions of Singles by Type of Benefit and Source of Data

Age Group	Males					Females				
	No GIS			GIS		No GIS			GIS	
	OAS	CRA ¹	OAS Adjusted	OAS	CRA	OAS	CRA	OAS Adjusted	OAS	CRA
65-69	79%	23%	19%	32%	33%	77%	37%	32%	59%	62%
70-74	75%	25%	20%	35%	36%	80%	46%	41%	68%	72%
75-79	74%	29%	25%	37%	39%	84%	58%	51%	77%	81%
80-84	76%	34%	33%	40%	43%	90%	72%	63%	86%	88%
85-89	81%	45%	46%	49%	52%	95%	85%	75%	92%	94%
90-94	85%	58%	62%	61%	64%	97%	93%	88%	97%	97%
95-99	89%	73%	78%	74%	78%	99%	98%	97%	99%	99%
100+	93%	60%	67%	86%	84%	99%	93%	93%	100%	97%
65+	77%	28%	24%	37%	39%	83%	54%	47%	76%	79%

¹CRA: This data was obtained from the Canada Revenue Agency on taxpayers aged 65 and over as at Dec. 2001.

B. Methodology

The mortality experience of the OAS program by marital status and type of benefit was derived as the weighted (by exposure) average of the mortality experience on an age by age basis for the following three subgroups of OAS beneficiaries:

- Canada less Québec residents receiving CPP retirement benefits,
- Canada less Québec residents not receiving CPP retirement benefits, and
- Québec residents.

The mortality experience for each of the above subgroups was analyzed based on whether or not OAS beneficiaries were entitled to GIS benefits. For OAS beneficiaries in receipt of GIS benefits, reliable marital status information was available from the OAS database for each of the above subgroups. As such, the exposures and graduated mortality rates were obtained directly by using the same methodology as in Actuarial Study No. 5.

For the subgroup of OAS beneficiaries not in receipt of GIS benefits but who had received CPP retirement benefits, the marital status information used was existing at the time of entitlement to the CPP retirement benefit. Distinct mortality rates by marital status were obtained by allocating the exposure by marital status over time based on probabilities of individuals becoming single over time using cohort mortality and assuming further that for married couples, males were on average three years older than their spouses. As an example, a married male aged 65 at the time of his effective CPP retirement in 1994 would have a probability of remaining married from 1994 to 2003 of about 90% and would therefore contribute 90% of his exposure in 2003 as married and 10% as single.

For the subgroup of OAS beneficiaries not in receipt of GIS benefits and not in receipt of CPP retirement benefits, the first step was to allocate the exposure between single and married persons for a given age by using the proportions of singles obtained from the CRA database. The second step was to derive married mortality rates by assuming that at each age, the married mortality relative to the overall mortality of OAS beneficiaries without GIS benefits but who had received CPP retirement benefits would apply. Finally, non GIS single mortality rates for each age were derived from the overall mortality rate and the assumed married mortality rate.

Despite reliability issues related to marital status information for OAS beneficiaries not entitled to GIS benefits, the above methodology provides a reasonable estimation of the mortality experienced by marital status and type of benefit. The weighted average mortality rates for all subgroups were found to be consistent with the mortality rates which were derived in Actuarial Study No. 5.

III. Results

A. Exposures by Marital Status and Type of Benefit

The age and sex structure of the amount of exposures by marital status and type of benefit over the period from 1999 to 2003 is displayed in Chart 1 and Table 2. Chart 1 is similar to Chart 9 of Actuarial Study No. 5. Table 2 shows that the proportions of singles (in terms of exposures) for each type of benefit increase with age as married individuals become single upon the death of their spouses.

There is a significant difference between the sexes in the distribution of exposure by age and marital status. For example for the age group 65 to 69, the proportion of exposures in respect of married male beneficiaries not in receipt of GIS benefits is 81%, while for females the corresponding proportion is 68%. For the age group 85 to 89, these proportions are 54% for males and 24% for females.

For the age group 65 to 69, the proportion of exposures in respect of single male beneficiaries in receipt of GIS benefits is 32%, while for females the corresponding proportion is 59%. For the age group 85 to 89, these proportions are 49% for males and 92% for females.

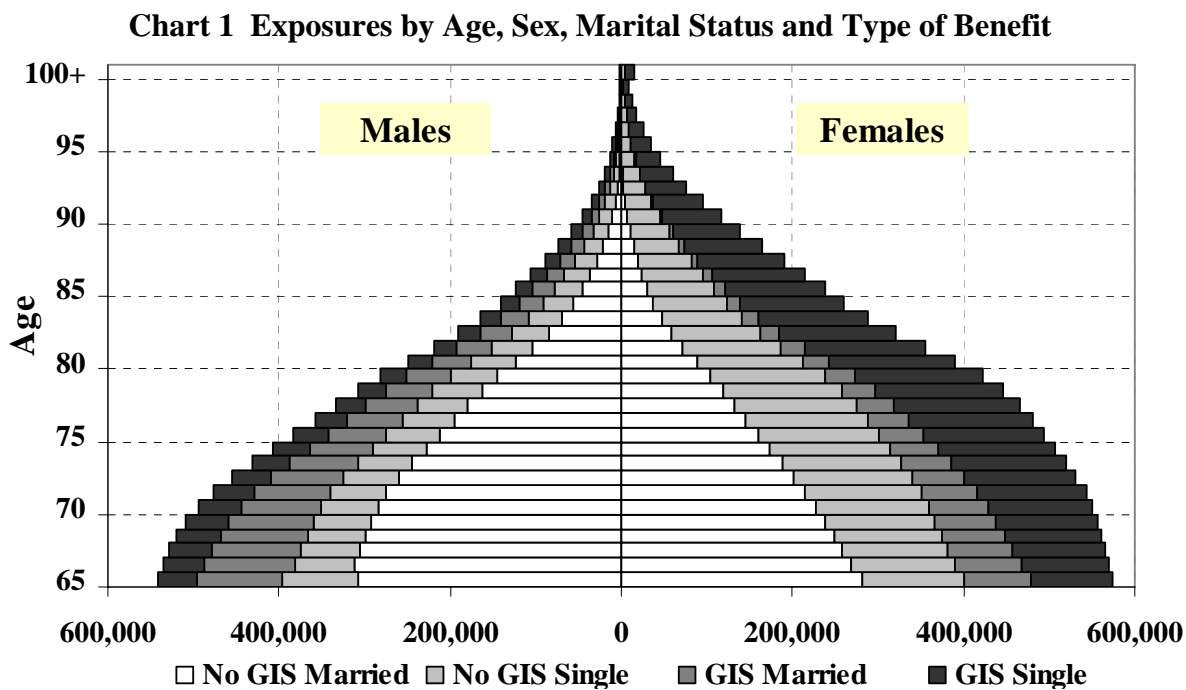


Table 2 shows that the proportions of singles for both males and females entitled to GIS benefits are generally higher than for those not entitled to GIS benefits. From the findings of the previous OAS mortality study which clearly demonstrated higher mortality for OAS beneficiaries entitled to GIS benefits relative to those not entitled to GIS benefits, higher mortality is therefore anticipated for those who are single relative to those who are married. Tables 8 and 9 in the Appendix show exposures by individual ages, marital status and type of benefit.

Table 2 OAS Exposures by Marital Status and by Type of Benefit

Males

Age Group	No GIS				GIS			
	Exposure Married	Exposure Single	Proportion of Married	Proportion of Single	Exposure Married	Exposure Single	Proportion of Married	Proportion of Single
65-69	1,504,606	358,210	81%	19%	504,899	242,505	68%	32%
70-74	1,291,124	324,529	80%	20%	417,941	227,592	65%	35%
75-79	895,248	293,169	75%	25%	298,645	175,802	63%	37%
80-84	440,097	213,704	67%	33%	183,772	125,074	60%	40%
85-89	148,314	128,742	54%	46%	89,183	84,925	51%	49%
90-94	27,916	46,616	37%	63%	25,914	40,020	39%	61%
95-99	2,526	8,930	22%	78%	3,648	10,586	26%	74%
100+	322	649	33%	67%	250	1,493	14%	86%
65+	4,310,153	1,374,550	76%	24%	1,524,253	907,997	63%	37%

Females

Age Group	No GIS				GIS			
	Exposure Married	Exposure Single	Proportion of Married	Proportion of Single	Exposure Married	Exposure Single	Proportion of Married	Proportion of Single
65-69	1,284,378	614,291	68%	32%	372,770	533,586	41%	59%
70-74	1,005,068	686,514	59%	41%	309,623	649,751	32%	68%
75-79	662,123	697,967	49%	51%	218,181	729,927	23%	77%
80-84	303,621	522,735	37%	63%	113,183	675,000	14%	86%
85-89	99,929	310,536	24%	76%	40,500	497,966	8%	92%
90-94	16,638	128,204	11%	89%	8,212	240,519	3%	97%
95-99	886	30,376	3%	97%	784	68,464	1%	99%
100+	295	3,671	7%	93%	50	11,068	0%	100%
65+	3,372,938	2,994,295	53%	47%	1,063,304	3,406,281	24%	76%

1. For OAS beneficiaries not entitled to GIS benefits (No GIS), the exposures and proportions of singles have been estimated based on available marital status information from the OCA's CPP retirement benefit file and from the 2001 CRA database.

B. Mortality Comparisons

In this section, male and female mortality rates by age, marital status and type of benefit are compared to their respective overall OAS beneficiary mortality rates as presented in Actuarial Study No. 5.

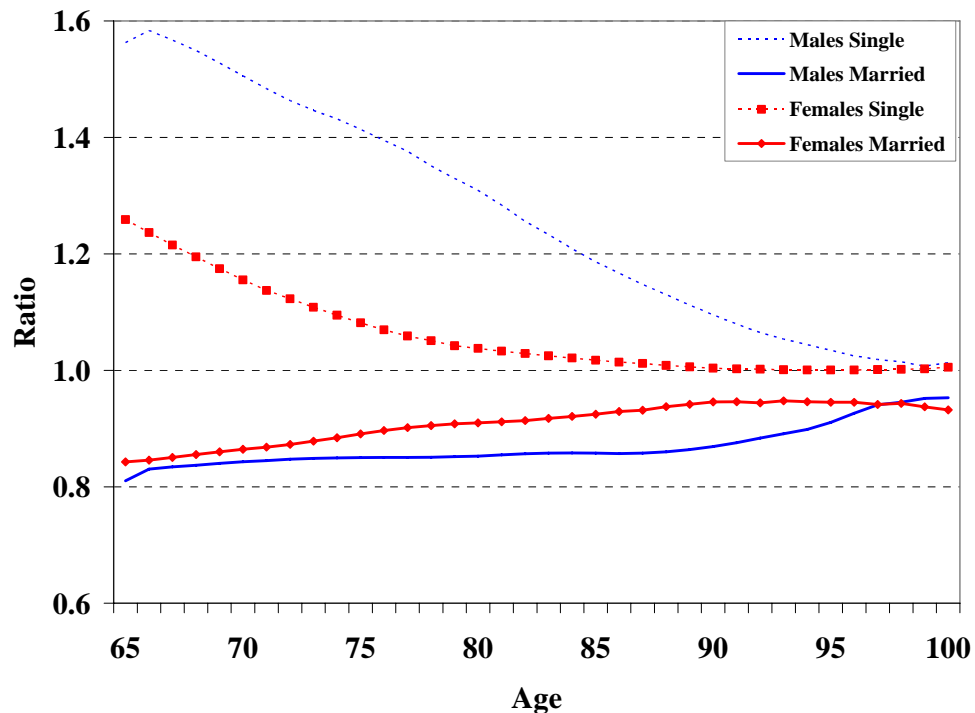
1. Comparisons by Marital Status

Table 3 and Chart 2 show a comparison of mortality experience by marital status, sex and age group. Both married males and females experience significantly lower mortality than singles; however the differential is smaller for females.

Table 3 OAS Mortality Rates by Age, Sex and Marital Status

Age Group	Males					Females				
	Overall Mortality Rate	Married		Single		Overall Mortality Rate	Married		Single	
		Mortality Rate	Ratio to Overall Mortality	Mortality Rate	Ratio to Overall Mortality		Mortality Rate	Ratio to Overall Mortality	Mortality Rate	Ratio to Overall Mortality
65-69	0.0203	0.0169	0.83	0.0315	1.55	0.0118	0.0100	0.85	0.0144	1.22
70-74	0.0328	0.0277	0.85	0.0482	1.47	0.0190	0.0165	0.87	0.0215	1.13
75-79	0.0532	0.0451	0.85	0.0734	1.38	0.0318	0.0282	0.89	0.0339	1.07
80-84	0.0858	0.0730	0.85	0.1092	1.27	0.0549	0.0490	0.89	0.0569	1.04
85-89	0.1377	0.1172	0.85	0.1599	1.16	0.0971	0.0879	0.91	0.0986	1.02
90-94	0.2085	0.1811	0.87	0.2252	1.08	0.1623	0.1474	0.91	0.1631	1.00
95-99	0.2957	0.2709	0.92	0.3038	1.03	0.2482	0.2263	0.91	0.2486	1.00

Chart 2 OAS Mortality Ratios by Age, Sex and Marital Status



For the age group 65 to 69, married males experience mortality that is 17% lower than the overall mortality level for males but it is 8% at advanced ages. Single males experience mortality that is 55% higher than the overall level for the age group 65 to 69, but then reduces to being only 3% at advanced ages.

For the age group 65 to 69, married females experience mortality that is 15% lower than the overall mortality level for females but it is 9% lower at advanced ages. Single females experience mortality that is 22% higher than the overall level for the age group 65 to 69, but then converges to the overall mortality at advanced ages.

Tables 10 and 12 in the Appendix show mortality rates and mortality ratios by individual ages and marital status.

2. Comparison by Marital Status and Type of Benefit

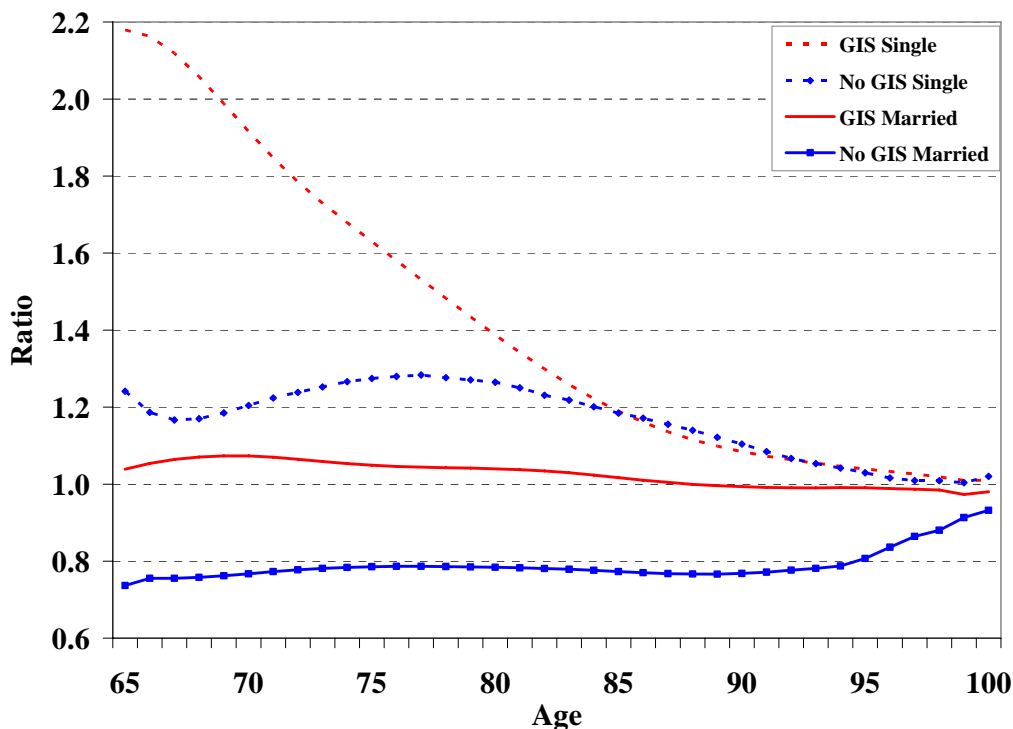
Males

Table 4 and Chart 3 show a comparison of male mortality rates by age, marital status and type of benefit. Single males in receipt of GIS benefits experience the highest mortality at all ages. For example, those in the age group 65 to 69 experience a mortality ratio of 2.10 (that is, a mortality rate that is more than two times the overall level) which rapidly converges to the overall mortality with advancing ages. Single males not in receipt of GIS benefits experience mortality that is lower than for single GIS beneficiaries but higher than for married beneficiaries. Married males in receipt of GIS benefits experience mortality that is higher than the overall level up to age 89. Married males not in receipt of GIS benefits experience the lowest mortality which remains relatively constant at about 22% lower than the overall level from ages 65 to 94 and then shows some convergence to the overall level. Tables 11 and 13 in the Appendix show mortality rates and ratios by sex, age, marital status and type of benefit.

Table 4 OAS Mortality Rates by Age, Sex, Marital Status and Type of Benefit (Males)

Age Group	Overall Mortality Rate	No GIS				GIS			
		Married		Single		Married		Single	
		Mortality Rate	Ratio	Mortality Rate	Ratio	Mortality Rate	Ratio	Mortality Rate	Ratio
65-69	0.0203	0.0153	0.75	0.0239	1.18	0.0216	1.06	0.0427	2.10
70-74	0.0328	0.0254	0.78	0.0409	1.25	0.0348	1.06	0.0587	1.79
75-79	0.0532	0.0416	0.78	0.0685	1.29	0.0555	1.04	0.0815	1.53
80-84	0.0858	0.0663	0.77	0.1068	1.25	0.0890	1.04	0.1131	1.32
85-89	0.1377	0.1044	0.76	0.1603	1.16	0.1384	1.01	0.1593	1.16
90-94	0.2085	0.1583	0.76	0.2251	1.08	0.2057	0.99	0.2253	1.08
95-99	0.2957	0.2434	0.82	0.3003	1.02	0.2899	0.98	0.3068	1.04

Chart 3 OAS Mortality Ratios by Age, Sex, Marital Status and Type of Benefit (Males)



Females

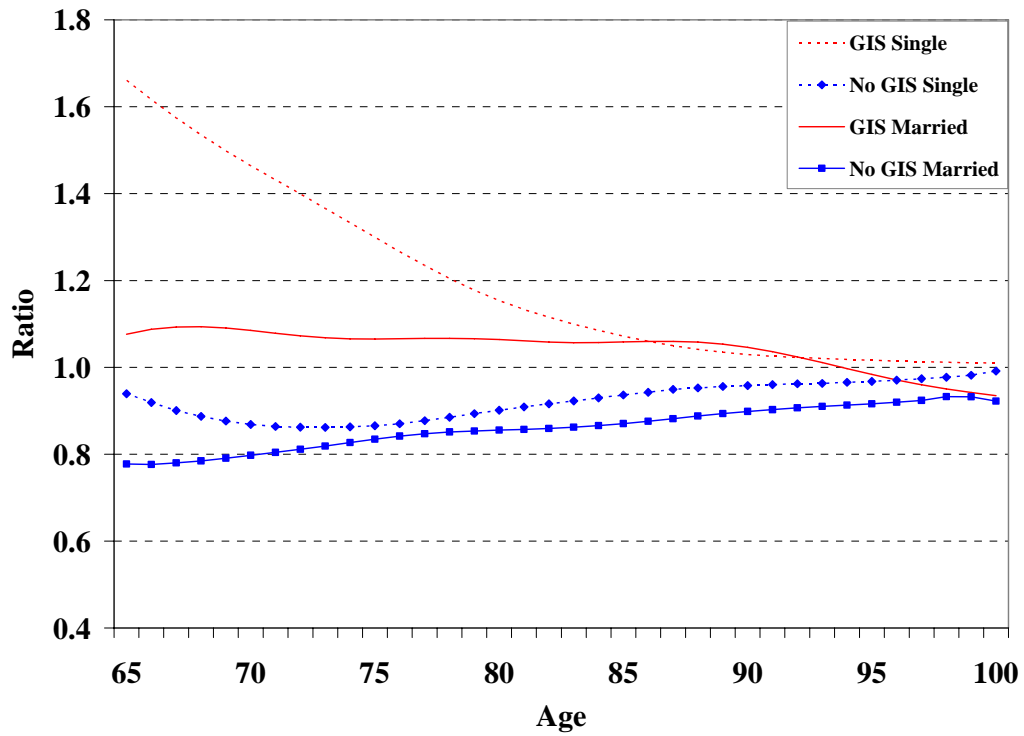
Table 5 and Chart 4 show a comparison of female mortality by age, marital status and type of benefit. Females experience lower mortality than males for each subgroup.

Single females in receipt of GIS benefits experience the highest mortality. For example, those aged 65 to 69 experience mortality that is 58% higher than the overall level. In comparison, married females not in receipt of GIS benefits experience the lowest mortality as the mortality is 22% lower than the overall level for those in the age group 65 to 69 and shows gradual convergence as it is 12% lower than the overall level for those in the age-group 95 to 99.

Table 5 OAS Mortality Rates by Age, Sex, Marital Status and Type of Benefit (Females)

Age Group	Overall Mortality Rate	No GIS				GIS			
		Married		Single		Married		Single	
		Mortality Rate	Ratio	Mortality Rate	Ratio	Mortality Rate	Ratio	Mortality Rate	Ratio
65-69	0.0118	0.0092	0.78	0.0107	0.91	0.0128	1.09	0.0187	1.58
70-74	0.0190	0.0153	0.80	0.0165	0.87	0.0203	1.07	0.0267	1.40
75-79	0.0318	0.0265	0.83	0.0281	0.88	0.0335	1.05	0.0395	1.24
80-84	0.0549	0.0460	0.84	0.0503	0.92	0.0571	1.04	0.0620	1.13
85-89	0.0971	0.0830	0.86	0.0918	0.95	0.1000	1.03	0.1029	1.06
90-94	0.1623	0.1404	0.87	0.1559	0.96	0.1616	1.00	0.1669	1.03
95-99	0.2482	0.2189	0.88	0.2404	0.97	0.2346	0.95	0.2523	1.02

Chart 4 OAS Mortality Ratios by Age, Sex, Marital Status and Type of Benefit (Females)



IV. Life Expectancies at Age 65

Table 6 shows a comparison in the life expectancies of OAS program beneficiaries by socio-economic level by comparing the differentials of life expectancy at age 65 by marital status and by type of OAS benefit received.

Males show higher differentials in life expectancy at age 65 than females by marital status. For example, the overall differential by marital status for males shows that married males live on average 17.9 years or 3.7 years more than single males at age 65. In comparison, married females live on average 21.0 years or 1.3 years more than single females at age 65.

Married males without GIS benefits are expected to live 3.5 years more than their single counterparts. In comparison, married females without GIS benefits are expected to live 0.6 year more than single females.

The differential in life expectancy at age 65 by type of benefit received are also higher for males. Married males without GIS benefits are expected to live 2.3 years more than married males in receipt of GIS benefits while married females without GIS benefits are expected to live 1.7 years more than those who are in receipt of GIS benefits.

Table 6 Life Expectancies at Age 65 by Marital Status and Type of Benefit (Years)

Type of Benefit	Males				Females			
	Overall	Single	Married	Differential by Marital Status	Overall	Single	Married	Differential by Marital Status
OAS Program	16.6	14.2	17.9	3.7	20.2	19.7	21.0	1.3
GIS	15.0	13.0	16.3	3.3	19.0	18.6	19.8	1.2
No GIS	17.4	15.1	18.6	3.5	21.1	20.9	21.5	0.6
Differential by Type of Benefit	2.4	2.1	2.3	-	2.1	2.3	1.7	-
No GIS without Clawback	17.2	14.8	18.4	3.6	21.1	20.8	21.4	0.6
No GIS with Clawback	19.5	17.6	20.6	3.0	22.4	22.1	23.3	1.2
Differential between No GIS with Clawback and No GIS without Clawback	2.3	2.8	2.2	-	1.3	1.3	1.9	-
Differential between No GIS without Clawback and GIS	2.2	1.8	2.1	-	2.1	2.2	1.6	-
Differential between No GIS with Clawback and GIS	4.5	4.6	4.3	-	3.4	3.5	3.5	-

Analysis by Associated Socio-Economic Level

The differential in mortality by socio-economic level can be measured as the difference in life expectancy at age 65 between OAS beneficiaries not in receipt of GIS benefits and subject to the clawback (that are, in a high socio-economic level) relative to those in receipt of GIS benefits (that are, in a low socio-economic level). From Table 6, it is observed that married males affected by the clawback are expected to live 4.3 years more than married males with GIS benefits. On the other hand, single males affected by the clawback will live 4.6 years more than those in receipt of GIS benefits. In comparison, for females the differentials are smaller as both married and single females are expected to live 3.5 years more than those in receipt of GIS benefits. It is possible to analyse further the differential in life expectancy at age 65 by socio-economic level by examining the following subgroups of OAS beneficiaries:

- i. OAS beneficiaries not receiving the GIS benefit without Clawback and GIS beneficiaries

The differential in life expectancy at age 65 between these two subgroups provides a measure of the differential between beneficiaries at an average socio-economic level and those at a low socio-economic level. The differential for single males is 1.8 years as compared to 2.1 years for married males. In comparison, for females the differential for those who are single is 2.2 years as compared to 1.6 years for those who are married.

- ii. OAS beneficiaries not receiving the GIS benefit, with and without the Clawback

The differential in life expectancy at age 65 between these two subgroups provides a measure of the differential between beneficiaries at a high socio-economic level and those at an average socio-economic level. The differential for single males is 2.8 years as compared to 2.2 years for males who are married. In comparison, single females have a differential of 1.3 years as compared to 1.9 years for those who are married.

V. Conclusion

Despite limitations on marital status information for OAS beneficiaries not in receipt of GIS benefits, the use of additional marital status information from other sources makes it possible to show that the level of OAS mortality varies by marital status and by type of benefit for both males and females.

This study also confirms that both males and females who are married experience better mortality than their single counterparts. Lower mortality levels have been observed for those who are married and not entitled to GIS benefits.

VI. Appendix – OAS Detailed Tables

Table 7 Proportions of Single Beneficiaries by Age, Sex and Type of Benefit

Age	No GIS (OAS) ¹		No GIS (CRA) ²		GIS (OAS)		GIS (CRA)	
	Males	Females	Males	Females	Males	Females	Males	Females
65	22%	30%	22%	35%	32%	55%	33%	55%
66	19%	31%	23%	36%	32%	57%	33%	60%
67	18%	32%	23%	37%	32%	59%	33%	62%
68	18%	34%	23%	38%	33%	61%	33%	64%
69	19%	35%	23%	40%	34%	62%	34%	66%
70	19%	37%	23%	42%	34%	64%	34%	68%
71	19%	39%	24%	44%	35%	66%	35%	70%
72	20%	41%	25%	46%	35%	68%	36%	72%
73	21%	43%	25%	49%	36%	69%	37%	74%
74	22%	45%	26%	51%	36%	71%	38%	76%
75	22%	47%	27%	53%	37%	73%	38%	77%
76	24%	49%	28%	56%	37%	75%	38%	79%
77	25%	52%	29%	59%	37%	77%	39%	81%
78	26%	53%	30%	61%	37%	79%	39%	83%
79	28%	57%	31%	64%	38%	81%	40%	84%
80	29%	59%	32%	67%	39%	83%	41%	85%
81	31%	61%	33%	70%	39%	84%	41%	87%
82	33%	64%	35%	73%	40%	86%	44%	89%
83	36%	67%	36%	76%	42%	87%	44%	90%
84	39%	69%	38%	78%	44%	89%	47%	91%
85	42%	72%	41%	81%	45%	90%	48%	92%
86	45%	74%	44%	83%	47%	92%	51%	93%
87	48%	75%	46%	85%	49%	93%	53%	94%
88	51%	79%	48%	87%	51%	94%	54%	95%
89	54%	82%	51%	90%	54%	95%	58%	96%
90	57%	85%	53%	92%	56%	96%	60%	96%
91	61%	87%	57%	92%	59%	96%	63%	97%
92	65%	89%	58%	94%	62%	97%	65%	98%
93	68%	93%	63%	95%	65%	98%	69%	98%
94	72%	94%	66%	96%	68%	98%	71%	99%
95	75%	96%	71%	97%	71%	99%	75%	99%
96	78%	97%	72%	98%	74%	99%	78%	99%
97	80%	98%	75%	99%	75%	99%	80%	99%
98	81%	99%	75%	98%	79%	99%	81%	99%
99	84%	99%	79%	99%	82%	99%	87%	100%
100+	67%	93%	60%	93%	86%	100%	84%	97%
65+	24%	47%	28%	54%	37%	76%	39%	79%

¹ For OAS beneficiaries not entitled to GIS benefits (No GIS), the proportions of singles have been adjusted based on available marital status information from the CPP retirement benefit file and from the 2001 CRA database.

² CRA: Canada Revenue Agency database on taxpayers aged 65 and over as at 31 December 2001.

Table 8 Exposures by Age, Sex and Marital Status

Age	Married		Single		OAS Program*	
	Males	Females	Males	Females	Males	Females
65	391,289	345,750	128,681	205,243	519,970	550,992
66	415,557	345,953	119,269	223,184	534,826	569,136
67	409,607	334,319	118,536	231,470	528,143	565,789
68	401,341	322,035	117,563	239,740	518,904	561,775
69	391,711	309,091	116,666	248,241	508,378	557,332
70	378,571	295,563	115,118	255,656	493,689	551,219
71	362,660	280,615	113,237	262,290	475,897	542,905
72	343,152	263,688	110,910	267,450	454,063	531,138
73	322,723	246,232	108,216	272,745	430,939	518,977
74	301,958	228,594	104,640	278,124	406,598	506,717
75	281,552	211,608	101,400	282,936	382,952	494,544
76	259,693	193,700	97,614	286,138	357,307	479,838
77	239,636	176,404	93,865	289,066	333,500	465,470
78	217,499	159,818	90,340	285,956	307,838	445,774
79	195,514	138,774	85,753	283,798	281,268	422,572
80	169,930	118,947	79,112	270,122	249,042	389,069
81	145,613	98,958	73,232	256,326	218,845	355,285
82	122,058	81,107	67,602	239,546	189,660	320,653
83	101,996	65,119	61,790	223,991	163,786	289,110
84	84,272	52,672	57,042	207,750	141,314	260,422
85	70,628	43,060	53,303	195,821	123,931	238,881
86	57,926	34,345	48,420	181,062	106,346	215,407
87	46,316	27,956	43,176	162,510	89,492	190,466
88	35,826	20,462	37,289	144,323	73,115	164,785
89	26,800	14,605	31,480	124,786	58,280	139,391
90	19,626	9,792	25,967	106,102	45,592	115,894
91	13,957	6,657	21,125	88,255	35,082	94,912
92	9,599	4,436	16,811	71,906	26,410	76,342
93	6,466	2,484	12,961	57,721	19,427	60,205
94	4,183	1,481	9,772	44,739	13,955	46,220
95	2,669	819	7,160	34,049	9,829	34,868
96	1,623	427	5,089	25,230	6,712	25,658
97	993	237	3,437	18,129	4,431	18,366
98	578	109	2,312	12,722	2,890	12,831
99	310	77	1,519	8,709	1,828	8,786
100+	572	345	2,142	14,740	2,714	15,085
Total	5,834,404	4,436,242	2,282,549	6,400,576	8,116,952	10,836,818

Note: Exposures by type of marital status may not total exactly to the exposures of the OAS program mortality study published in February 2006 due to missing marital status information for some OAS beneficiaries.

Table 9 Exposures by Age, Sex, Marital Status and Type of Benefit

Age	No GIS Married		No GIS Single		GIS Married		GIS Single	
	Males	Females	Males	Females	Males	Females	Males	Females
65	295,758	270,610	84,600	114,352	95,531	75,139	44,081	90,891
66	311,163	268,925	70,733	121,501	104,394	77,028	48,536	101,683
67	305,075	258,827	68,650	123,374	104,532	75,493	49,887	108,096
68	299,461	248,375	67,383	125,800	101,880	73,660	50,180	113,940
69	293,148	237,641	66,845	129,265	98,563	71,450	49,821	118,976
70	284,793	227,008	66,374	132,550	93,778	68,555	48,744	123,106
71	274,451	215,252	66,006	136,052	88,210	65,363	47,231	126,238
72	259,536	201,626	65,259	137,584	83,617	62,062	45,651	129,866
73	244,026	187,583	64,228	139,408	78,697	58,649	43,988	133,337
74	228,319	173,599	62,663	140,920	73,639	54,994	41,978	137,203
75	212,450	160,174	61,609	141,909	69,102	51,434	39,791	141,026
76	195,555	146,147	60,218	142,127	64,138	47,553	37,396	144,011
77	180,058	132,586	58,777	141,881	59,578	43,818	35,087	147,185
78	162,483	120,088	57,577	137,251	55,016	39,729	32,763	148,705
79	144,703	103,127	54,988	134,798	50,812	35,646	30,765	149,000
80	124,261	88,062	50,522	124,286	45,668	30,885	28,590	145,836
81	104,436	72,562	46,545	114,580	41,177	26,397	26,687	141,747
82	85,467	58,875	42,768	103,889	36,591	22,232	24,833	135,656
83	69,756	46,614	38,620	94,636	32,240	18,505	23,170	129,355
84	56,176	37,508	35,248	85,344	28,096	15,164	21,794	122,405
85	45,961	30,648	32,827	78,687	24,667	12,412	20,476	117,134
86	36,891	24,415	29,609	71,136	21,035	9,930	18,811	109,925
87	28,605	20,193	26,094	61,612	17,710	7,763	17,082	100,898
88	21,449	14,467	22,048	53,682	14,378	5,995	15,240	90,640
89	15,408	10,205	18,164	45,417	11,392	4,399	13,316	79,369
90	10,831	6,650	14,579	37,988	8,794	3,142	11,388	68,114
91	7,334	4,501	11,586	31,059	6,623	2,156	9,539	57,196
92	4,789	3,018	8,927	24,718	4,810	1,418	7,884	47,188
93	3,065	1,564	6,653	19,633	3,401	920	6,307	38,088
94	1,897	906	4,871	14,805	2,286	576	4,901	29,934
95	1,162	468	3,453	10,945	1,507	351	3,707	23,104
96	663	216	2,394	7,841	960	212	2,695	17,390
97	373	122	1,534	5,440	621	115	1,903	12,688
98	219	43	957	3,705	359	66	1,355	9,017
99	109	36	593	2,444	201	41	926	6,265
100+	322	295	649	3,671	250	50	1,493	11,068
Total	4,310,153	3,372,938	1,374,550	2,994,295	1,524,253	1,063,304	907,997	3,406,281

Note: Exposures by type of marital status may not total exactly to the exposures of the OAS program mortality study published in February 2006 due to missing marital status information for some OAS beneficiaries.

Table 10 Mortality Rates by Age, Sex and Marital Status

Age	Married		Single		OAS Program	
	Males	Females	Males	Females	Males	Females
65	0.0133	0.0082	0.0256	0.0123	0.0164	0.0098
66	0.0151	0.0090	0.0288	0.0132	0.0182	0.0107
67	0.0168	0.0100	0.0316	0.0142	0.0202	0.0117
68	0.0187	0.0110	0.0345	0.0154	0.0223	0.0129
69	0.0207	0.0121	0.0376	0.0166	0.0246	0.0141
70	0.0228	0.0134	0.0408	0.0179	0.0271	0.0155
71	0.0252	0.0149	0.0442	0.0195	0.0298	0.0171
72	0.0278	0.0165	0.0480	0.0212	0.0328	0.0189
73	0.0307	0.0183	0.0522	0.0231	0.0361	0.0209
74	0.0338	0.0204	0.0570	0.0253	0.0398	0.0231
75	0.0374	0.0228	0.0621	0.0277	0.0439	0.0256
76	0.0412	0.0255	0.0676	0.0304	0.0485	0.0284
77	0.0455	0.0285	0.0736	0.0335	0.0535	0.0316
78	0.0502	0.0319	0.0797	0.0370	0.0590	0.0352
79	0.0554	0.0357	0.0865	0.0410	0.0650	0.0393
80	0.0612	0.0400	0.0939	0.0456	0.0718	0.0440
81	0.0677	0.0449	0.1016	0.0509	0.0792	0.0493
82	0.0749	0.0506	0.1098	0.0569	0.0874	0.0553
83	0.0827	0.0571	0.1189	0.0637	0.0964	0.0622
84	0.0913	0.0644	0.1286	0.0714	0.1064	0.0699
85	0.1006	0.0727	0.1390	0.0800	0.1172	0.0786
86	0.1105	0.0820	0.1505	0.0895	0.1289	0.0883
87	0.1215	0.0921	0.1624	0.1001	0.1415	0.0989
88	0.1333	0.1038	0.1752	0.1116	0.1550	0.1107
89	0.1463	0.1163	0.1883	0.1243	0.1694	0.1235
90	0.1604	0.1301	0.2022	0.1380	0.1846	0.1375
91	0.1757	0.1443	0.2165	0.1530	0.2006	0.1526
92	0.1922	0.1592	0.2315	0.1690	0.2174	0.1686
93	0.2094	0.1759	0.2476	0.1858	0.2349	0.1856
94	0.2274	0.1924	0.2642	0.2035	0.2531	0.2034
95	0.2475	0.2097	0.2812	0.2220	0.2718	0.2219
96	0.2695	0.2277	0.2982	0.2412	0.2910	0.2409
97	0.2922	0.2452	0.3163	0.2608	0.3106	0.2605
98	0.3123	0.2646	0.3353	0.2809	0.3305	0.2804
99	0.3339	0.2819	0.3532	0.3015	0.3507	0.3007
100	0.3537	0.2993	0.3760	0.3229	0.3711	0.3211

Table 11 Mortality Rates by Age, Sex, Marital Status and Type of Benefit

Age	No GIS Married		No GIS Single		GIS Married		GIS Single	
	Males	Females	Males	Females	Males	Females	Males	Females
65	0.0121	0.0076	0.0204	0.0092	0.0170	0.0105	0.0357	0.0162
66	0.0138	0.0083	0.0216	0.0098	0.0192	0.0116	0.0394	0.0173
67	0.0152	0.0091	0.0235	0.0106	0.0215	0.0128	0.0427	0.0184
68	0.0169	0.0101	0.0261	0.0114	0.0239	0.0141	0.0459	0.0197
69	0.0187	0.0112	0.0291	0.0124	0.0264	0.0154	0.0489	0.0212
70	0.0208	0.0124	0.0326	0.0135	0.0290	0.0169	0.0519	0.0227
71	0.0230	0.0138	0.0364	0.0148	0.0319	0.0185	0.0550	0.0245
72	0.0255	0.0153	0.0406	0.0163	0.0349	0.0203	0.0585	0.0264
73	0.0282	0.0171	0.0452	0.0180	0.0382	0.0223	0.0625	0.0285
74	0.0312	0.0191	0.0504	0.0199	0.0420	0.0246	0.0669	0.0308
75	0.0345	0.0214	0.0560	0.0222	0.0461	0.0273	0.0716	0.0333
76	0.0381	0.0239	0.0620	0.0247	0.0507	0.0303	0.0766	0.0360
77	0.0420	0.0268	0.0686	0.0277	0.0558	0.0337	0.0819	0.0390
78	0.0463	0.0300	0.0753	0.0312	0.0615	0.0376	0.0874	0.0424
79	0.0511	0.0336	0.0827	0.0351	0.0677	0.0419	0.0933	0.0463
80	0.0563	0.0376	0.0907	0.0397	0.0746	0.0468	0.0995	0.0508
81	0.0620	0.0423	0.0990	0.0448	0.0822	0.0523	0.1063	0.0559
82	0.0682	0.0476	0.1076	0.0507	0.0904	0.0586	0.1135	0.0617
83	0.0751	0.0536	0.1175	0.0574	0.0993	0.0657	0.1214	0.0684
84	0.0825	0.0605	0.1278	0.0650	0.1089	0.0739	0.1300	0.0759
85	0.0906	0.0684	0.1388	0.0736	0.1192	0.0832	0.1394	0.0842
86	0.0993	0.0773	0.1510	0.0832	0.1302	0.0935	0.1496	0.0936
87	0.1086	0.0873	0.1635	0.0939	0.1422	0.1049	0.1608	0.1039
88	0.1188	0.0983	0.1767	0.1055	0.1550	0.1171	0.1729	0.1153
89	0.1298	0.1104	0.1900	0.1181	0.1687	0.1301	0.1860	0.1278
90	0.1418	0.1236	0.2038	0.1317	0.1834	0.1438	0.2002	0.1416
91	0.1547	0.1377	0.2176	0.1465	0.1989	0.1580	0.2153	0.1565
92	0.1689	0.1529	0.2319	0.1623	0.2154	0.1726	0.2312	0.1725
93	0.1836	0.1689	0.2475	0.1788	0.2326	0.1876	0.2477	0.1894
94	0.1993	0.1858	0.2636	0.1964	0.2508	0.2029	0.2649	0.2071
95	0.2194	0.2033	0.2798	0.2147	0.2692	0.2183	0.2825	0.2255
96	0.2433	0.2216	0.2956	0.2338	0.2876	0.2340	0.3005	0.2445
97	0.2683	0.2406	0.3134	0.2537	0.3065	0.2501	0.3186	0.2639
98	0.2909	0.2616	0.3334	0.2741	0.3254	0.2665	0.3366	0.2837
99	0.3202	0.2804	0.3519	0.2953	0.3413	0.2832	0.3541	0.3039
100	0.3459	0.2962	0.3786	0.3184	0.3637	0.3002	0.3749	0.3244

Table 12 Mortality Ratios by Age, Sex and Marital Status

Age	Married		Single	
	Males	Females	Males	Females
65	0.81	0.84	1.56	1.26
66	0.83	0.85	1.58	1.24
67	0.83	0.85	1.57	1.22
68	0.84	0.86	1.55	1.20
69	0.84	0.86	1.53	1.17
70	0.84	0.86	1.51	1.16
71	0.84	0.87	1.48	1.14
72	0.85	0.87	1.46	1.12
73	0.85	0.88	1.45	1.11
74	0.85	0.88	1.43	1.09
75	0.85	0.89	1.41	1.08
76	0.85	0.90	1.39	1.07
77	0.85	0.90	1.38	1.06
78	0.85	0.91	1.35	1.05
79	0.85	0.91	1.33	1.04
80	0.85	0.91	1.31	1.04
81	0.85	0.91	1.28	1.03
82	0.86	0.91	1.26	1.03
83	0.86	0.92	1.23	1.02
84	0.86	0.92	1.21	1.02
85	0.86	0.92	1.19	1.02
86	0.86	0.93	1.17	1.01
87	0.86	0.93	1.15	1.01
88	0.86	0.94	1.13	1.01
89	0.86	0.94	1.11	1.01
90	0.87	0.95	1.10	1.00
91	0.88	0.95	1.08	1.00
92	0.88	0.94	1.06	1.00
93	0.89	0.95	1.05	1.00
94	0.90	0.95	1.04	1.00
95	0.91	0.95	1.03	1.00
96	0.93	0.95	1.02	1.00
97	0.94	0.94	1.02	1.00
98	0.95	0.94	1.01	1.00
99	0.95	0.94	1.01	1.00
100	0.95	0.93	1.01	1.01

Table 13 Mortality Ratios by Age, Sex, Marital Status and Type of Benefit

Age	No GIS Married		No GIS Single		GIS Married		GIS Single	
	Males	Females	Males	Females	Males	Females	Males	Females
65	0.74	0.78	1.24	0.94	1.04	1.08	2.18	1.66
66	0.76	0.78	1.19	0.92	1.05	1.09	2.16	1.62
67	0.76	0.78	1.17	0.90	1.06	1.09	2.12	1.57
68	0.76	0.78	1.17	0.89	1.07	1.09	2.06	1.53
69	0.76	0.79	1.18	0.88	1.07	1.09	1.99	1.50
70	0.77	0.80	1.20	0.87	1.07	1.09	1.92	1.46
71	0.77	0.80	1.22	0.86	1.07	1.08	1.85	1.43
72	0.78	0.81	1.24	0.86	1.06	1.07	1.78	1.40
73	0.78	0.82	1.25	0.86	1.06	1.07	1.73	1.37
74	0.78	0.83	1.27	0.86	1.05	1.07	1.68	1.33
75	0.79	0.83	1.27	0.87	1.05	1.07	1.63	1.30
76	0.79	0.84	1.28	0.87	1.05	1.07	1.58	1.27
77	0.79	0.85	1.28	0.88	1.04	1.07	1.53	1.23
78	0.79	0.85	1.28	0.89	1.04	1.07	1.48	1.20
79	0.79	0.85	1.27	0.89	1.04	1.07	1.43	1.18
80	0.78	0.86	1.26	0.90	1.04	1.06	1.39	1.15
81	0.78	0.86	1.25	0.91	1.04	1.06	1.34	1.13
82	0.78	0.86	1.23	0.92	1.03	1.06	1.30	1.12
83	0.78	0.86	1.22	0.92	1.03	1.06	1.26	1.10
84	0.78	0.87	1.20	0.93	1.02	1.06	1.22	1.09
85	0.77	0.87	1.18	0.94	1.02	1.06	1.19	1.07
86	0.77	0.88	1.17	0.94	1.01	1.06	1.16	1.06
87	0.77	0.88	1.16	0.95	1.00	1.06	1.14	1.05
88	0.77	0.89	1.14	0.95	1.00	1.06	1.12	1.04
89	0.77	0.89	1.12	0.96	1.00	1.05	1.10	1.03
90	0.77	0.90	1.10	0.96	0.99	1.05	1.08	1.03
91	0.77	0.90	1.08	0.96	0.99	1.04	1.07	1.03
92	0.78	0.91	1.07	0.96	0.99	1.02	1.06	1.02
93	0.78	0.91	1.05	0.96	0.99	1.01	1.05	1.02
94	0.79	0.91	1.04	0.97	0.99	1.00	1.05	1.02
95	0.81	0.92	1.03	0.97	0.99	0.98	1.04	1.02
96	0.84	0.92	1.02	0.97	0.99	0.97	1.03	1.01
97	0.86	0.92	1.01	0.97	0.99	0.96	1.03	1.01
98	0.88	0.93	1.01	0.98	0.98	0.95	1.02	1.01
99	0.91	0.93	1.00	0.98	0.97	0.94	1.01	1.01
100	0.93	0.92	1.02	0.99	0.98	0.93	1.01	1.01

Table 14 Beneficiaries by Age, Sex and Marital Status as at 31 December 2003

Age	Married		Single		OAS Program	
	Males	Females	Males	Females	Males	Females
65	77,379	65,028	25,733	44,868	103,112	109,896
66	80,663	67,443	27,710	48,671	108,373	116,114
67	79,414	64,142	27,793	50,561	107,207	114,703
68	76,502	61,443	27,461	51,488	103,963	112,931
69	73,960	57,922	26,809	52,579	100,769	110,501
70	71,946	54,876	26,390	52,894	98,336	107,770
71	71,498	54,153	27,138	56,121	98,636	110,274
72	68,754	50,774	26,515	57,721	95,269	108,495
73	66,834	47,799	26,354	59,798	93,188	107,597
74	60,165	42,922	24,550	58,768	84,715	101,690
75	57,316	39,821	24,170	60,279	81,486	100,100
76	52,943	35,635	23,148	61,106	76,091	96,741
77	48,537	32,198	22,105	61,740	70,642	93,938
78	44,613	29,442	21,473	62,391	66,086	91,833
79	40,380	25,877	19,959	62,134	60,339	88,011
80	36,014	22,324	18,571	60,556	54,585	82,880
81	32,583	19,242	17,551	60,251	50,134	79,493
82	28,970	16,113	16,610	58,595	45,580	74,708
83	25,001	12,992	15,043	55,666	40,044	68,658
84	18,694	9,309	12,075	46,547	30,769	55,856
85	15,491	7,366	10,989	42,738	26,480	50,104
86	12,438	5,573	9,833	38,679	22,271	44,252
87	10,250	4,434	8,830	35,823	19,080	40,257
88	8,334	3,347	7,989	32,569	16,323	35,916
89	6,653	2,433	6,968	29,569	13,621	32,002
90	4,896	1,650	5,769	24,818	10,665	26,468
91	3,588	1,142	4,702	20,660	8,290	21,802
92	2,435	768	3,521	16,154	5,956	16,922
93	1,676	495	2,877	13,357	4,553	13,852
94	1,115	269	2,096	10,131	3,211	10,400
95	684	161	1,621	7,868	2,305	8,029
96	441	94	1,155	5,822	1,596	5,916
97	266	51	767	4,173	1,033	4,224
98	155	28	502	2,844	657	2,872
99	73	17	303	1,948	376	1,965
100+	156	70	438	3,366	594	3,436
Total	1,180,818	837,349	525,517	1,413,257	1,706,335	2,250,606

Table 15 Beneficiaries by Age, Sex, Marital Status and Type of Benefit as at 31 December 2003

Age	No GIS Married		No GIS Single		GIS Married		GIS Single	
	Males	Females	Males	Females	Males	Females	Males	Females
65	59,637	50,047	17,228	27,316	17,742	14,981	8,505	17,552
66	60,489	51,723	17,902	28,609	20,174	15,720	9,808	20,062
67	58,808	48,434	17,509	28,998	20,606	15,708	10,284	21,563
68	56,146	45,695	16,851	28,477	20,356	15,748	10,610	23,011
69	54,009	42,472	16,306	28,735	19,951	15,450	10,503	23,844
70	52,702	40,070	16,109	28,775	19,244	14,806	10,281	24,119
71	52,658	39,488	16,691	30,685	18,840	14,665	10,447	25,436
72	50,914	36,815	16,643	31,249	17,840	13,959	9,872	26,472
73	49,248	34,430	16,503	32,460	17,586	13,369	9,851	27,338
74	44,085	30,584	15,409	31,557	16,080	12,338	9,141	27,211
75	41,711	27,985	15,237	31,790	15,605	11,836	8,933	28,489
76	38,323	24,787	14,655	31,824	14,620	10,848	8,493	29,282
77	34,981	22,198	14,134	32,073	13,556	10,000	7,971	29,667
78	32,133	20,322	13,998	31,794	12,480	9,120	7,475	30,597
79	28,905	17,485	13,031	31,419	11,475	8,392	6,928	30,715
80	25,799	15,067	12,230	30,104	10,215	7,257	6,341	30,452
81	23,235	12,804	11,608	29,317	9,348	6,438	5,943	30,934
82	20,456	10,519	11,142	28,053	8,514	5,594	5,468	30,542
83	17,284	8,175	9,891	25,877	7,717	4,817	5,152	29,789
84	12,643	5,667	7,751	20,437	6,051	3,642	4,324	26,110
85	9,973	4,315	6,831	18,128	5,518	3,051	4,158	24,610
86	7,862	3,204	6,064	15,893	4,576	2,369	3,769	22,786
87	6,434	2,538	5,406	14,342	3,816	1,896	3,424	21,481
88	5,121	1,875	4,796	12,813	3,213	1,472	3,193	19,756
89	3,937	1,283	4,145	11,166	2,716	1,150	2,823	18,403
90	2,855	847	3,265	9,186	2,041	803	2,504	15,632
91	1,937	588	2,599	7,128	1,651	554	2,103	13,532
92	1,309	373	1,842	5,612	1,126	395	1,679	10,542
93	848	214	1,462	4,426	828	281	1,415	8,931
94	534	125	1,023	3,179	581	144	1,073	6,952
95	329	77	814	2,439	355	84	807	5,429
96	194	36	505	1,766	247	58	650	4,056
97	111	19	339	1,233	155	32	428	2,940
98	69	13	203	756	86	15	299	2,088
99	31	6	120	504	42	11	183	1,444
100+	88	56	133	745	68	14	305	2,621
Total	855,799	600,332	330,374	698,869	325,019	237,017	195,143	714,388