LABOUR FORCE LIFE TABLES FOR GUYANA

An Occasional Working Paper Demographic Department, Bureau of Statistics

By

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INTRODUCTION

1.1 Brief Description of Age Pattern of Work in Guyana

The age pattern of labour force participation rates among the working age population in Guyana is generally dome shape irrespective of gender as observed in many developing countries. The age specific labour force participation rates gradually rise from a low at the entry age of 15 years to a maximum point, and thereafter falling consistently to a bare minimum within the retirement age groups for both males and females (See Compendium 3 –P.12)².

The age pattern for women according to the 2012 census results does not seem to exhibit the usual undulation shown generally by women in labour force participation. This irregular pattern is traditionally due to women's tendency of entering and withdrawing from the labour force many times during the course of their active working life. Cotter, Hermsen and Vanneman (2004) described women's age pattern of participation as double maxima pattern; noting that the likelihood that an average woman will be in the labour force varies substantially over her life; and that many of them exit the labour force when they become mothers; as such, labour force participation rates have traditionally been lower for women in their late 20s through early 40s than they were for younger women or older women.

Although female participation rate in Guyana according to the 2012 Census is two times lower than their males' counterparts, it does not reflect the female irregular age pattern observed in many of the developing countries. This enables us to construct working life tables for the women in comparison to the men.

1.2 Objectives of the study

This study attempts to construct a series of labour force life tables for Guyana. The specific objectives include:

- Compute the length of active life;
- Calculate the loss of active years by mortality;
- Estimate basic indices of labour force growth, such as labour force entry and replacement rates, and rates due to losses by deaths and retirements, and other related measures; and
- Conclusions and recommendations.

²Bureau of Statistics; available at: http://www.statisticsguyana.gov.gy/census.html#comp

2.0 METHODOLOGY

2.1 Definition

By definition, the Working Life Expectancy (WLE) refers to the average number of years that a person is likely to spend in the labour force during his/her lifetime. It begins with a hypothetical cohort of 10,000 newborns, who are subject to age-specific mortality risks and rates of labour force accession.

2.2 Data Requirements

The following data are required in the computation of an abridged working life table:

- Population in five year age groups;
- Mortality life tables³; and
- Age specific labour force participation rates.

2.3 Basic Assumptions for the Construction of Labour Force Life Tables

The construction of the abridged working life tables follows earlier techniques developed by the United Nations $(1968)^4$ and G.M.K. Kpedekpo $(1969)^5$, which were based on the following assumptions:

- That all persons who enter the labour force at any time in their lives do so prior to the age at which the activity rate reaches its maximum, and no survivors retire into inactive status prior to that age;
- That the ages at which individuals retire are independent of the ages at which they enter the labour force; and
- That the rate of mortality at each age is the same for economically active and inactive persons.

³Bureau of Statistics, available at:

http://www.statisticsguyana.gov.gy/pubs/2012_Census_Life_Table.pdf

http://www.un.org/esa/population/techcoop/SocInd/methods_censusdata/chapter1.pdf

⁵Kpedekpo, G.M.K. (1969) "Working Life Tables for Males in Ghana 1960". Journal of the American Statistical Association 62(320)

⁴ United Nations (1968) Methods of Analysing Census Data on Economic Activities of the Population: available at:

3.0 THE RESULTS

3.1 Measures of the Length of Active Life

Table 1.1 presents the numerical findings of the economically active life expectancies for Guyana and it is illustrated graphically in Figure 1.1. The expectation of inactive years for each age group was obtained as a difference between the total life expectancy in that age group and the economically active life in that same age group for each sex and both sexes combined (i.e., male's inactive years (col.4) = col.2 minus col.3). These estimates were extracted from columns 10 to 12 of Appendices 1.1, 1.3 and 1.5 respectively and transcribed in Table 1.1 for easy reference in the comparison between male and female estimates of length of active life.

The results reflect a common pattern of working life, for instance, declining gradually with age. The differences between males and females are more noticeable in early ages and diminish gradually with increasing age, but with male's average remaining years of active work life being greater than females throughout across the ages (see Table 1.1). For example, a newly born baby boy and baby girl would expect to live for 65.44 years and 71.64 years respectively, out of which 35.84 years and 16.95 years would be spent in the labour force. This reciprocally, implies that, they would spend an average of 29.60 years and 54.68 years respectively in an inactive life. Considering both sexes combined, the findings indicates 68.15 years as total life expectancy and 26.61 years as average remaining years to be in the labour force. Also, this implies that at birth a total of 41.55 years would represent expected average inactive years for both sexes combined.

Similarly, an inactive male who has reached the working age of 15 years old in Guyana, could expect to live for 54.07 years of which 37.91 years would be spent in the labour force. For a female reaching the similar working age of 15 years old, she could expect to live for 59.69 years of which 17.70 years would be spent in the labour force.

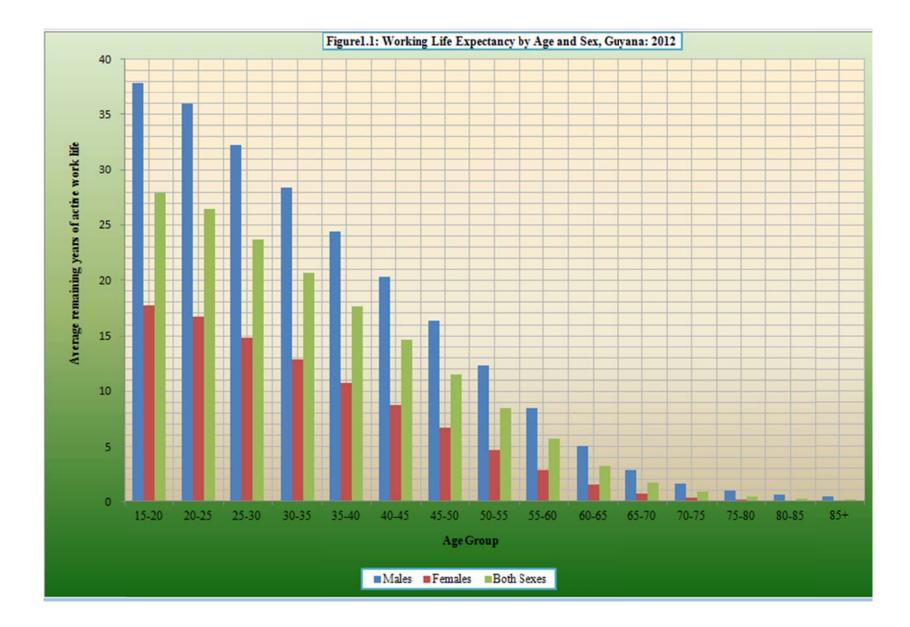
On the whole at the official working age, the number of years spent by females in an inactive life is approximately two and half times more than their male's counterparts (i.e., 41.99 years against 16.16 years). This is an undisputable finding not only for Guyanese women, but a situation which depicts the universal interruption of female's labour force participation due to various factors such as marriage, child-bearing and rearing, etc (Table 1.1 and Figure 1.1).

For instance, Arnaud Chevalier and Tarja K. Viitanen (2001) concluded in their studies that the lack of childcare facilities limits the participation of women in the labour force⁶. Also, George Psacharopoulos and Zafiris Tzannatos (1989) stated that because children and work make simultaneous demands, the more time a woman spends on one, the less time is available for the other. Consequently, women's participation during the age of bearing and rearing children should be lower than those of women outside this age⁷.

⁶A. Chevalier and T. K Viitanen (2001) The causality between female labour force participation and the availability of childcare. available at: https://www.tandfonline.com/doi/abs/10.1080/13504850210138469

⁷George Psacharopoulos and Zafiris Tzannatos (1989) Female Labor Force Participation: An International Perspective. available at: https://academic.oup.com/wbro/article-abstract/4/2/187/1681327

	Table	e 1.1: Measur	es of Length of	Active and In	nactive Life, C	lassified by Se	ex, Guyana	n: 2012	
	Ex	Males pectation of L	ife:	Ex	Females	ife:	Ех	Both Sexo	
Age Group	In total years	In labour force	In inactive	In total years	In labour force	In inactive	In total years	In labour force	In inactive
	(e_{0x})	(e _{wx})	years	(e_{0x})	(e _{wx})	years	(e_{0x})	(e _{wx})	years
(1)	(2)	(3)	(4)=(2)-(3)	(5)	(6)	(7)=(5)-(6)	(8)	(9)	(10)= (8)-(9)
0 - 1	65.44	35.84	29.60	71.64	16.95	54.68	68.15	26.61	41.55
1 - 5	66.81	37.14	29.67	72.70	17.44	55.25	69.40	27.48	41.92
5 - 10	63.39	37.47	25.92	69.20	17.57	51.64	65.95	27.70	38.24
10 - 15	58.73	37.68	21.05	64.53	17.65	46.88	61.28	27.85	33.43
15 - 20	54.07	37.91	16.16	59.69	17.70	41.99	56.53	27.97	28.56
20 - 25	49.69	35.96	13.73	55.08	16.77	38.32	52.04	26.50	25.54
25 - 30	45.69	32.31	13.38	50.57	14.87	35.71	47.79	23.70	24.10
30 - 35	41.79	28.42	13.37	46.19	12.80	33.39	43.65	20.70	22.95
35 - 40	37.88	24.43	13.45	41.78	10.77	31.01	39.49	17.67	21.83
40 - 45	33.90	20.35	13.55	37.51	8.75	28.75	35.36	14.61	20.76
45 - 50	30.07	16.35	13.73	33.09	6.69	26.40	31.25	11.52	19.74
50 - 55	26.13	12.27	13.86	28.88	4.74	24.14	27.17	8.48	18.69
55 - 60	22.70	8.49	14.21	25.26	2.92	22.34	23.64	5.65	17.99
60 - 65	19.38	5.06	14.32	21.49	1.50	19.99	20.08	3.24	16.84
65 - 70	16.55	2.89	13.66	17.79	0.70	17.09	16.78	1.73	15.05
70 - 75	13.92	1.62	12.29	14.31	0.33	13.98	13.67	0.90	12.77
75 - 80	11.57	0.99	10.58	11.00	0.16	10.84	10.72	0.48	10.24
80 - 85	9.45	0.60	8.86	8.56	0.07	8.49	8.25	0.25	8.01
85+	7.74	0.47	7.27	6.00	0.04	5.96	5.73	0.15	5.58
Note: Trar	sferred from A	Appendices 1.1	, 1.3 and 1.5.						



3.2 Loss of Active Years by Mortality

3.2.1 Gross years of active life

The estimate of average remaining years of active life for survivors in the labour force at the beginning of year of age and inactive life as presented in Table 1.1 is an aggregate, since not all members of the labour force would pass those stages. Accordingly, some may die while passing through and others would survive, and exit from the labour force either by means of voluntary retirement due to exhaustion of age, and forced retirement due to employer's rules and regulation as well as inability to continue working. As such, the second intermediate variable, which is death of active persons, is presented to account for the loss of active years by mortality.

The calculation to first derive the gross years of active life is carried out in Table 1.2 by applying the age-specific activity or participation rates to the five-year age interval or number of years expected in each age group. The interval for the open age, eighty-five years and over was set at five years because an insignificant number of persons continue to work or look for work in Guyana after 90 years.

The gross active years are therefore calculated and reflected in Table 1.2, giving the number of years an individual passing through each age interval would be economically active. For instance, the gross active years for the males, 20-25 years is 4.36 years, 25-30 years is 4.65 years, and so on up to eighty-five years and over given as 0.30 years.

The gross active years of the entire age range, 15 years upward (15 years and over), is derived as a summation of the gross active years across the age groups, while those 15-65 and 15-85 were equally derived by summation. For instance, the summation of the active gross years over the whole range of ages from fifteen years upward comes to 44.95 years for Guyanese males, 19.25 years for females and 31.79 years for both sexes combined, out of a potential maximum of seventy-five years.

Refining the age range to fifteen to sixty-five years, the estimates for the total gross years yield to 41.18 years of active life of males, 18.43 years for females and 29.64 years for both sexes combined, out of a potential maximum of fifty years, if all persons were economically active from the age of fifteen to sixty-five years.

If on the other hand one considers the age range fifteen to eighty-five years, the gross years would be 44.65 years for males, 19.22 years for females and 31.66 years for both sexes combined out of a potential maximum of seventy years, again if all persons were economically active from the age of fifteen to eighty-five years (see Table 1.2).

However, our main interest is not simply the gross years of active life, but to indicate:

✤ the effects of mortality on the expectation of active life at birth; and

Г

the effects of mortality at the beginning age of entries into the labour force.

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		Males		Fem	ales	Both	Sexes
Age Group	Number of years in age interval	Age specific activity rates	Average number of active years in age interval	Age specific activity rates	Average number of active years in age interval	Age specific activity rates	Average number of active years in age interval
(1)	(2)	(3)	(4) = (2)*(3)	(5)	(6) = (2)*(5)	(7)	(8) = (2)*(7)
15-20	5	47.87	2.39	21.00	1.05	34.51	1.73
20-25	5	87.23	4.36	40.92	2.05	63.66	3.18
25-30	5	93.07	4.65	44.81	2.24	68.20	3.41
30-35	5	94.23	4.71	43.89	2.19	68.46	3.42
35-40	5	94.45	4.72	43.85	2.19	68.69	3.43
40-45	5	93.48	4.67	43.73	2.19	68.74	3.44
45-50	5	92.22	4.61	42.03	2.10	67.03	3.35
50-55	5	88.87	4.44	40.21	2.01	64.68	3.23
55-60	5	79.38	3.97	30.65	1.53	54.14	2.71
60-65	5	52.86	2.64	17.48	0.87	34.65	1.73
65-70	5	32.39	1.62	8.45	0.42	19.93	1.00
70-75	5	18.00	0.90	4.04	0.20	10.53	0.53
75-80	5	12.34	0.62	2.35	0.12	6.73	0.34
80-85	5	6.62	0.33	0.97	0.05	3.34	0.17
85+	5	6.04	0.30	0.64	0.03	2.58	0.13
otal potential years, 15-65	50		41.18		18.43		29.64
otal potential years, 15-85	70		44.65		19.22		31.66
otal potential years, 15 -∞	75		44.95		19.25		31.79

3.2.2 The influence of mortality on active life

The loss by mortality, derived as a difference between total gross years of active life and expectation of active life or "net years of active life" is reflected in Table 1.3. And, given that the expectation of active life at birth was estimated at 35.84 years for males, 16.95 years for females and 26.61 years for both sexes combined, indicate that 9.11 years, 2.30 years and 5.19 years respectively represent loss of active years due to mortality. Similarly, loss of active years by mortality at the age of entry into the labour force (15 years) was estimated at 7.05 years for the males, 1.55 years for females, and 3.82 years for the national total (Table 1.3).

Subsequently, these estimates imply that mortality affected males' active life at all levels, either at birth or at the age at entry into the labour force more than females (i.e., active years in all ages 15 years and over, all ages 15 and 85 years, and all ages 15 and 65 years respectively). For instance, mortality effect at birth was estimated at approximately 25.42 percent for males compared to 13.54 percent among the females, and 19.50 percent for the whole country. At the entry age into the labour force, mortality effect was estimated at 18.59 percent for males, 8.77 percent for females and 13.67 percent for the entire country (see Table 1.3 for further details).

In all cases, despite the higher longevity of women in Guyana, the estimates of gross and active life expectancies are higher for men than women (see Tables 1.2 and 1.3). These findings provide the argument that the dome-shape age pattern of women has less influence over their work-life expectancy. The shape may most probably be on account of gender differences in labour force participation in the country, where the overall participation rates for males over the years are seen to be two times higher than the rates for females (See compendium 3 –Page 12)⁸.

⁸Bureau of Statistics, available at: http://www.statisticsguyana.gov.gy/census.html#comp

Table 1.3: Sum	Table 1.3: Summary Measures of Mortality Influence on Labour Force, Guyana: 2012											
		Males			Females		Both Sexes					
Indicators of mortality influence on labour force	Active years in all ages 15 and over	Active years in all ages between 15 & 85	ages	years in all	Active years in all ages between 15 & 85	ages	years in all ages 15	ages	Active years in all ages between 15 & 65			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)			
1. Gross years of active life	44.95	44.65	41.18	19.25	19.22	18.43	31.79	31.66	29.64			
2. Expectation of active life at birth	35.84	35.74	34.11	16.95	16.94	16.44	26.61	26.57	25.46			
3. Loss of active years by mortality $(r_1 - r_2)$	9.11	8.91	7.08	2.30	2.28	1.98	5.19	5.10	4.18			
4. Expectation of active life at age 15	37.91	37.80	36.07	17.70	17.69	17.17	27.97	27.93	26.77			
5. Loss of active years by mortality after age 15 $(r_1 - r_4)$	7.05	6.85	5.11	1.55	1.53	1.26	3.82	3.73	2.87			
6. Percent of active years lost due to mortality at birth (%)	25.42	24.92	20.74	13.54	13.43	12.07	19.50	19.19	16.41			
7. Percent of active years lost due to mortality at age 15 (%)	18.59	18.12	14.17	8.77	8.66	7.35	13.67	13.37	10.73			
Note: Derived from Appendices 1.1, 1.3 and 1.5 and Table 1	.2											

3.3 Indices of Labour Force Growth

One of the major applications of the economically active life tables is to estimate the indices of labour force growth or crude rates of the labour force replenishment. This is measured by new entrants on the one hand, and its depletion by deaths and retirements on the other. These crude rates were derived by applying the age-specific rates (i.e., the age specific mortality rates, annual rates of entries and retirements from labour force) presented in Appendices 1.1, 1.3 and 1.5 to the figures for the corresponding age groups in the actual labour force and the inactive population in Table 1.4. The age specific rates in Table 1.4 in columns 5, 7 and 9 are portions of the economically active life tables which were extracted from columns 16, 18 and 20 of Appendices 1.1, 1.3 and 1.5 respectively.

The calculations are carried out in Table 1.4 and the summary results are given in Table 1.5. For example, the entry rate for males was calculated by dividing the total estimated number of net annual entries in column 8, by the total active male population in column 3, multiply by 1000. The calculations for male's entry and retirement rates and losses by deaths are illustrated as an example below:

a). Entry rate = $(total \ estimated \ entries/total \ active \ pop)x1000 = (7091/191975)x1000 = 36.94;$

b). Retirement rate = (total estimated retirements/total active pop) x1000 = (1734/191975) x1000 = 9.03; and

c). Losses by deaths = (total estimated deaths/total active pop) x1000 = (1482/191975) x1000 = 7.72.

This procedure for males was then repeated for females and both sexes combined separately.

Disaggregating the factors of labour force growth into its component parts, the entry rate of 36.94 per 1000 accounts for male's labour force supply. On the other hand, the retirement and death rates of 9.03 and 7.72 per 1000 respectively account for the depletion factors of the male's labour force.

As a consequence, the difference between the rate of entries and the sum of the rates of retirements and losses by deaths is known as labour force replacement rate. The replacement rate, also considered to be an index of potential labour force growth or rate of annual increase, comes to 20.18 per 1000 of the male's labour force and 20.97 per 1000 of the female's labour force for Guyana in 2012. For the both sexes combined, the annual increase or replacement rate is 20.70 per 1000 labour force (see Table 1.5).

Another important index is the labour force supply and depletion factors, measured by the replacement ratio, generated from Table 1.4 and the result summarized in Table 1.5 for easy reference. The ratio is referred to as "an index of the pressure the labour market represented by demands of entering workers for jobs, in proportion to number of jobs being vacated by retirement and death" (UN 1968)⁹. The replacement ratio is derived by dividing the annual number of entries into the labour force by the sum of retirements and losses by death multiply by 100. It is given as:

Replacement ratio = total estimated entries/(total estimated deaths + retirements)x100

a). Male = 7091/(1482+1734)x100 = 220.45%;
b). Female = 3316/(385+1066)x100 = 228.49%; and
c). Both sexes = 10222/(1905+2503)x100 = 231.88%

This result implies that of the population factors which influence labour force growth, deaths and retirements account for a lesser proportion; and as such, the replacement ratio is significantly high or more than twice the size of those exiting the labour force as a result of deaths and retirements in Guyana. For example, every 100 males and females leaving the labour force by deaths and retirements, they are subsequently replaced by approximately 220 and 228 new entrants, and for every 1000, by 2,205 and 2,285 new entrants, and so on respectively. For the entire country, the ratio is 232 per every 100 or 2,319 per every 1000 persons leaving the labour force due to retirements and deaths (Table 1.5).

This issue of high replacement ratio was an expected phenomenon, because the fertility rate which mainly determines the new entrants into the labour force in Guyana had been relatively constant at 2.8 per woman for almost two decades (see Compendium 4 –Page 38)¹⁰. And, where infant and childhood mortality rates too had simultaneously been on a decline (Compendium 4-Page 53)11, such a high rate is more likely to occur in the absence of full or hundred percent employment to presumably counteract the labour supply. Regrettably, this scenario of full employment is highly impossible to achieve in many developing countries.

⁹ United Nations (1968) Methods of Analysing Census Data on Economic Activities of the Population: available at:

http://www.un.org/esa/population/techcoop/SocInd/methods_censusdata/chapter1.pdf

¹⁰ Bureau of Statistics, available at: http://www.statisticsguyana.gov.gy/census.html#comp ¹¹ Ibid

Age		Population			s from labour y death	Annual entrie for		Annual retirement from labour force		
Group	Total	Labour force/active	Inactive	Rate per 1000 labour force	Estimated number	Rate per 1000 labour force	Estimated number	Rate per 1000 labour force	Estimated number	
(1)	(2)	(3)	(4)=2-3	(5)	(6)=3*5	(7)	(8)=4*7	(9)	(10)=3*9	
					Males					
15-20	40787	19524	21263	2.41	47	259.65	5521			
20-25	29871	26057	3814	4.25	111	356.70	1361			
25-30	24380	22689	1691	5.16	117	103.49	175			
30-35	25102	23655	1447	5.43	128	23.93	35			
35-40	24455	23098	1357	5.70	132			0.79	18	
40-45	23366	21844	1522	7.35	160			2.39	52	
45-50	20842	19220	1622	7.50	144			4.99	96	
50-55	18281	16246	2035	12.83	208			14.31	233	
55-60	13630	10820	2810	15.73	170			44.68	483	
60-65	10148	5364	4784	24.32	130			89.30	479	
65-70	6444	2087	4357	31.44	66			108.62	227	
70-75	4665	840	3825	43.09	36			114.94	97	
75-80	2931	362	2569	54.80	20			92.13	33	
80-85	1634	108	1526	82.94	9			103.51	11	
85+	1043	63	980	51.68	3			83.81	5	
Total	247579	191975	55604	X	1482	X	7091	X	1734	
		· · · · ·		1	Females					
15-20	40312	8465	31847	1.36	12	78.45	2,498			
20-25	30967	12673	18294	1.88	24	40.42	740			
25-30	25905	11607	14298	2.59	30	5.46	78			
30-35	26341	11561	14780	2.70	31			2.18	25	
35-40	25369	11125	14244	3.66	41			0.36	4	
40-45	23130	10115	13015	3.31	34			4.16	42	
45-50	20993	8823	12170	5.09	45			8.38	74	
50-55	18076	7268	10808	10.09	73			27.92	203	
55-60	14642	4487	10155	10.54	47			73.87	331	
60-65	10755	1880	8875	13.34	25			127.56	240	
65-70	6996	591	6405	19.24	11			161.04	95	
70-75	5372	217	5155	27.56	6			154.14	33	
75-80	3750	88	3662	52.84	5			131.70	12	
80-85	2267	22	2245	42.97	1			217.96	5	
85+	1867	12	1855	83.37	1		2217	125.48	2	
Total	256742	88934	167808	X	385	X	3316	X	1066	
Note ₁ : C		& 9 from Apper nales will not tall								

	Table 1.4 Continued: Both Sexes											
(1)	(2)	(3)	(4)=2-3	(5)	(6)=3*5	(7)	(8)=4*7	(9)	(10)=3*9			
15-20	81099	27989	53110	2.69	75	150.55	7996					
20-25	60838	38729	22109	1.71	66	90.89	2009					
25-30	50285	34296	15989	1.31	45	9.96	159					
30-35	51443	35216	16227	4.08	144	1.61	26					
35-40	49824	34222	15602	4.98	170	1.57	24					
40-45	46496	31959	14537	7.93	254	0.46	7					
45-50	41835	28042	13793	6.83	192			5.51	155			
50-55	36357	23514	12843	19.12	450			12.01	282			
55-60	28272	15307	12965	17.21	263			50.82	778			
60-65	20903	7244	13659	16.71	121			101.07	732			
65-70	13440	2678	10762	21.18	57			126.13	338			
70-75	10037	1057	8980	26.02	28			137.22	145			
75-80	6681	450	6231	51.78	23			109.15	49			
80-85	3901	130	3771	54.04	7			155.01	20			
85+	2910	75	2835	149.80	11			50.55	4			
Total	504321	280909	223412	X	1905	X	10222	X	2503			
Note ₁ : (Columns 5, 7 &	k 9 from Appe	ndices 1.1, 1.3	and 1.5.					-			
	-		•		-		blication of inde					
Note ₃ : "Others" and "Not Stated" Categories of the Principal Activities of the Working Age Population" were added and prorated to get the												
labour fo	orce population	n across the age	es.									

Table 1.5: Labour Force Entry and Exit Rates, Replacement Rate and Ratio, Classified by Sex; Guyana: 2012										
Indicators of labour force growth										
indicators of labour force growth	Males	Females	Both Sexes							
1. Gains by entries per 1000 labour force	36.94	37.29	36.39							
2. Losses by retirements per 1000 labour force	9.03	11.99	8.91							
3. Losses by deaths per 1000 labour force	7.72	4.33	6.78							
4. Replacement rate per 1000 labour force $\{(r_1) - (r_2+r_3)\}$	20.18	20.97	20.70							
5. Replacement ratio per 100	220.45	228.49	231.88							
Note: Derived from Table1.4										

3.4 Average Age of Entry and Exit from Labour Force

The mean age of entry and exit is an important indicator for policy formulation relating to the length of working life. It enables policy makers to set employment rate targets for the new entrants and senior citizens and ensure that the public pension system is able to meet the demands of the retired population.

The calculation is carried out by taking the net entry and retirement by age as reflected in Table 1.4, columns 8 and 10 to represent the gross figures. The result of the calculation is reflected in Table 1.6, and shows that the median age or about 50 percent of both males and females in Guyana who entered the labour force do so around age 18 years (males (18.28 years), females (18.35 years) and both sexes combined (18.13 years) respectively.

This finding is in line with the school enrolment pattern in Guyana, where by age eighteen (18) (Compendium 4, Page 6)¹², only a very small percentage (less than 4 percent) of the school-going age children (5-24 years) attending school full time or part-time are still in school.

Although 50 percent of males and females who entered the labour force do so approximately by age 18 years, on average the males remain for about three years longer than the females. The result also shows that the male median age of retirement from the labour force is 59.28 years and females, 56.20 years.

Table 1.6: Average Age of Entry and Exit/Retirement from Labour Force by Sex, Guyana: 2012										
Measure	Males	Females	Both Sexes							
1. Average age of entry into labour force (in years)	18.28	18.35	18.13							
2. Average age of exit/retirement from labour force (in years)	59.28	56.20	60.14							
Note: Derived from Table 1.4										

¹²Bureau of Statistics, available at: http://www.statisticsguyana.gov.gy/census.html#comp

4.0 CONCLUSIONS AND RECOMMENDATIONS

Work-life expectancy represents the expected length of life spent in the labour force. It is an estimate of the average expected number of years every male and female in Guyana will work. The calculation begins with a hypothetical cohort of 10,000 births of employed males and females and both sexes combined who survived to each specific age. It provides useful indicators such as labour force replacement rate and replacement ratio, and average expected working years of entry into and exit or withdrawal from the labor force.

These measures are very useful to policy-makers, for they are used to determine changes in the labour force, expected total consumption, and output by different age groups. Social security system also uses working life table estimates to settle social security claims and benefit payments arising from occupational injury by their contributors.

Taking into consideration that the average remaining years of active life could be disrupted by periods of unemployment arising from factors such as occupational injuries, redundancies, sickness, etc., one would conclude that working life for females in Guyana is short, despite their dome shape age pattern of labour force participation and the longevity of life for females as compared to the males.

Finally, the low working life for females implies that there is a need to set clear targets to increase the participation rate of women and establish policy to delay their exit from the labour force. Apart from this, research on developing working life tables for Guyana should be prioritized because of its usefulness. In the absence of such scientific means of computing benefits, lawyers or the court system in Guyana may arrive at compensation claims arbitrarily for workers affected due to injuries or death.

5.0 APPENDIX TABLES

	Age specific ac	tivity rates (%)	0	e x of 10,000 born live	• 1	pulation in age erval		d stationary in age x -∞	Average remain	ning life time at b group years of:	eginning of age
Age interval	In age interval	At beginning of age (x)	Total (l _{x)}	Economically active	Total (5L _{x)}	Economically active	Total (Tx)	Economically active (T _{wx})	Total years e _x	Economically active years (e _{wx)}	Inactive year
(1)	(2)	$(3) = (l_5 + l_6)/2$	(4)	(5) = (4)*(3)	(6)	(7) = (6)*(2)	(8)	(9)	(10) = (8)÷(4)	(11) = (9)÷(4)	(12)=(10)-(11)
0 - 1	0	0	10000	0	9700	0	654434	358428	65.44	35.84	29.60
1 - 5	0	0	9650	0	38393	0	644734	358428	66.81	37.14	29.67
5 - 10	0	0	9565	0	47695	0	606341	358428	63.39	37.47	25.92
10 - 15	0	0	9512	0	47420	0	558646	358428	58.73	37.68	21.05
15 - 20	47.87	0	9455	0	47024	22510	511226	358428	54.07	37.91	16.16
20 - 25	87.23	67.55	9343	6311	46254	40348	464202	335918	49.69	35.96	13.73
25 - 30	93.07	90.15	9148	8246	45179	42046	417948	295570	45.69	32.31	13.38
30 - 35	94.23	93.65	8920	8354	44004	41467	372769	253524	41.79	28.42	13.37
35 - 40	94.45	94.34	8680	8189	42801	40426	328765	212057	37.88	24.43	13.45
40 - 45	93.48	93.97	8435	7927	41429	38729	285963	171632	33.90	20.35	13.55
45 - 50	92.22	92.85	8131	7550	39934	36825	244535	132902	30.07	16.35	13.73
50 - 55	88.87	90.54	7830	7090	37986	33758	204601	96077	26.13	12.27	13.86
55 - 60	79.38	84.12	7339	6174	35337	28050	166614	62319	22.70	8.49	14.21
60 - 65	52.86	66.12	6774	4479	32003	16916	131277	34268	19.38	5.06	14.32
65 - 70	32.39	42.62	5999	2557	27869	9027	99275	17352	16.55	2.89	13.66
70 - 75	18.00	25.20	5131	1293	23259	4187	71406	8326	13.92	1.62	12.29
75 - 80	12.34	15.17	4160	631	18303	2259	48146	4138	11.57	0.99	10.58
80 - 85	6.62	9.48	3156	299	13227	876	29843	1880	9.45	0.60	8.86
85+	6.04	6.33	2148	136	16616	1004	16616	1004	7.74	0.47	7.27
Note (1): (Columns 4, 6, 8	and 10 were	extracted from	n Male Life Table	es for Guyana	l					
Note (2): (Computations for	or columns 15,	17 and 19 we	ere done in Appe	endix 1.2, and	$l \operatorname{col}(14) = \operatorname{Succ}$	cessive differe	nce of $col.(5)$.			

Note (3): The labour force population was adjusted by prorating the "Others" and "Not Stated" categories of the principal activities of the working age population before calculating the age specific activity rates used in the estimation.

				0			nically Act	tive Persons	
Age interval	Average active years per active survivors of	Net increase (+) or		of active sons		tries into ally active	Net retirements into inactive status		
	age x	decrease (-)	Number	Rate per 1000 active	Number	Rate per 1000 active	Number	Rate per 1000 active	
(1)	(13)	(14)	(15)	(16) =(15)÷(7)	(17)	(18) = (17÷(6-7)	(19)	(20) =(19)÷(7)	
0 - 1	0	0	0	0	0	0	0	0	
1 - 5	0	0	0	0	0	0	0	0	
5 - 10	0	0	0	0	0	0	0	0	
10 - 15	0	0	0	0	0	0	0	0	
15 - 20	43.01	6311	54	2.41	6365	259.65	0	0	
20 - 25	38.66	1936	171	4.25	2107	356.70	0	0	
25 - 30	34.43	107	217	5.16	324	103.49	0	0	
30 - 35	30.24	-165	225	5.43	61	23.93	0	0	
35 - 40	25.90	-262	230	5.70			32	0.79	
40 - 45	21.65	-377	285	7.35			92	2.39	
45 - 50	17.60	-460	276	7.50			184	4.99	
50 - 55	13.55	-916	433	12.83			483	14.31	
55 - 60	10.09	-1695	441	15.73			1253	44.68	
60 - 65	7.65	-1922	411	24.32			1511	89.30	
65 - 70	6.79	-1264	284	31.44			980	108.62	
70 - 75	6.44	-662	180	43.09			481	114.94	
75 - 80	6.56	-332	124	54.80			208	92.13	
80 - 85	6.28	-299	73	82.94			91	103.51	
85 +	7.38	-136	52	51.68			84	83.81	

Note (2): Computations for columns 15, 17 and 19 were done in Appendix 1.2, and col.(14) = Successive difference of col.(5).

			-		nge in Numbers Gains by Entries		•		0	Age Intervals	s, and
Age	of 10,0	s at age x 00 born ive	populati	onary on in age rval	Increase (+) or decrease (-) of economically active		onomically activ ing age interva	Net entries into economic activity (+) or net retirement (-) during ago intervals			
Interval	Total (l _{x)}	Economi cally active	Total (5L _{x)}	Economi cally active	survivors during age intervals	Mortality rate 1000 nMx	First estimate of deaths	Adjusted estimates of deaths	Entries or retireme nt rate	First estimates entries or retirements	Adjusted estimates entries or retirements
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8) = (7)*(5)	(9)	(10)	(11)	(12)
15 - 20	9455	0	47024	22510	6311	2.40	54	54	67.55	6353	6365
20 - 25	9343	6311	46254	40348	1936	4.21	170	171	22.60	2090	2107
25 - 30	9148	8246	45179	42046	107	5.04	212	217	3.50	316	324
30 - 35	8920	8354	44004	41467	-165	5.45	226	225	0.69	61	61
35 - 40	8680	8189	42801	40426	-262	5.72	231	230	-0.37	-32	-32
40 - 45	8435	7927	41429	38729	-377	7.35	285	285	-1.12	-93	-92
45 - 50	8131	7550	39934	36825	-460	7.52	277	276	-2.31	-184	-184
50 - 55	7830	7090	37986	33758	-916	12.95	437	433	-6.42	-488	-483
55 - 60	7339	6174	35337	28050	-1695	15.97	448	441	-18.01	-1273	-1253
60 - 65	6774	4479	32003	16916	-1922	24.21	410	411	-23.50	-1504	-1511
65 - 70	5999	2557	27869	9027	-1264	31.15	281	284	-17.43	-971	-980
70 - 75	5131	1293	23259	4187	-662	41.75	175	180	-10.02	-466	-481
75 - 80	4160	631	18303	2259	-332	54.85	124	124	-5.69	-208	-208
80-84	3156	299	13227	876	-163	76.25	67	73	-3.15	-83	-91
85+	2148	136	16616	1004	-136	129.26	130	52	-6.33	-210	-84

		Appen	dix 1.3: Ab	ridged Table o	f Economical	ly Active Life,	Female Pop	ulation of Guy	ana: 2012		
	01	activity rates %)		at age x of born alive	•	population in nterval		d stationary in age x -∞	Average remaining life time at beginning of age group years of:		
Age interval	In age interval	At beginning of age (x)	Total (l _{x)}	Economicall y active	Total (5L _{x)}	Economicall y active	Total (Tx)	Economicall y active (T _{wx})	Total years e _x	Economicall y active years	Inactive years
		(3)=							(10) =	(11) =	(12)=(10)-
(1)	(2)	$(l_5 + l_6)/2$	(4)	$(5) = (4)^*(3)$	(6)	$(7) = (6)^*(2)$	(8)	(9)	(8)÷(4)	(9)÷(4)	(11)
0 - 1	0	0	10000	0	9758	0	716374	169549	71.64	16.95	54.68
1 - 5	0	0	9720	0	38707	0	706617	169549	72.70	17.44	55.25
5 - 10	0	0	9651	0	48138	0	667910	169549	69.20	17.57	51.64
10 - 15	0	0	9604	0	47958	0	619772	169549	64.53	17.65	46.88
15 - 20	21.00	0	9579	0	47751	10027	571814	169549	59.69	17.70	41.99
20 - 25	40.92	30.96	9514	2946	47361	19382	524062	159523	55.08	16.77	38.32
25 - 30	44.81	42.87	9426	4040	46839	20987	476701	140141	50.57	14.87	35.71
30 - 35	43.89	44.35	9306	4127	46230	20290	429863	119154	46.19	12.80	33.39
35 - 40	43.85	43.87	9182	4028	45499	19952	383633	98864	41.78	10.77	31.01
40 - 45	43.73	43.79	9015	3948	44714	19555	338134	78911	37.51	8.75	28.75
45 - 50	42.03	42.88	8867	3802	43825	18418	293420	59357	33.09	6.69	26.40
50 - 55	40.21	41.12	8643	3554	42195	16965	249595	40939	28.88	4.74	24.14
55 - 60	30.65	35.43	8212	2909	40015	12263	207400	23973	25.26	2.92	22.34
60 - 65	17.48	24.06	7789	1874	37737	6596	167385	11710	21.49	1.50	19.99
65 - 70	8.45	12.96	7287	945	34853	2945	129648	5114	17.79	0.70	17.09
70 - 75	4.04	6.25	6625	414	31157	1260	94794	2170	14.31	0.33	13.98
75 - 80	2.35	3.20	5785	185	25667	603	63637	910	11.00	0.16	10.84
80 - 85	0.97	1.66	4438	74	19036	185	37970	307	8.56	0.07	8.49
85+	0.64	0.81	3154	25	18934	122	18934	122	6.00	0.04	5.96
Note (1): Columns 4, 6, 8 and 10 were extracted from Female Life Tables for Guyana.											
		for columns 15,									
			-		'Others" and "	Not Stated" cate	egories of the	principal activiti	es of the worki	ing age populat	ion before
Note (3): The labour force population was adjusted by prorating the "Others" and "Not Stated" categories of the principal activities of the working age population before calculating the age specific activity rates used the estimation.											

			Appendi	x 1.3: Continu	ed - Females	8						
	Average active years per active survivors of	Component of Annual Change in Number of Economically Active Persons During Age Interval										
Age interval		Net increase (+) or	Death of ac	tive persons		tries into ally activity	Net retirements into inactive status					
	age x	decrease (-)	Number Rate per 1000 active		Number	Rate per 1000 active	Number	Rate per 1000 active				
(1)	(13)	(14)	$\begin{array}{c} 1000 \text{ active} \\ (15) & (16) \\ = (15) \div (7) \end{array}$		(17)	(18) = (17÷(6-7)	(19)	(20) =(19)÷(7)				
0 - 1	0	0	0	0	0	0	0	0				
1 - 5	0	0	0	0	0	0	0	0				
5 - 10	0	0	0	0	0	0	0	0				
10 - 15	0	0	0	0	0	0	0	0				
15 - 20	42.84	2946	14	1.36	2959	78.45	0	0				
20 - 25	38.22	1095	36	1.88	1131	40.42	0	0				
25 - 30	33.55	87	54	2.59	141	5.46	0	0				
30 - 35	28.87	-99	55	2.70			44	2.18				
35 - 40	24.54	-80	73	3.66			7	0.36				
40 - 45	19.99	-146	65	3.31			81	4.16				
45 - 50	15.61	-248	94	5.09			154	8.38				
50 - 55	11.52	-645	171	10.09			474	27.92				
55 - 60	8.24	-1,035	129	10.54			906	73.87				
60 - 65	6.25	-929	88	13.34			841	127.56				
65 - 70	5.41	-531	57	19.24			474	161.04				
70 - 75	5.24	-229	35	27.56			194	154.14				
75 - 80	4.92	-111	32	52.84			79	131.70				
80 - 85	4.16	-74	8	42.97			40	217.96				
85+	4.79	-25	10	83.37			15	125.48				
		6, 8 and 10 were			Ÿ							
Note (2)	: Computations	s for columns 15	, 17 and $19 w$	ere done in App	endix 1.4, and	$d \operatorname{col}(14) = \operatorname{Suc}$	ccessive differ	rence of col.(5).				

Appendix 1.4: Calculation of Component of Change in Numbers of Economically Active Survivors During 5 Years Age Intervals, and Annual Losses by Deaths and Retirements and Gains by Entries from Inactive Population: Females, Guyana: 2012												
Age Interval	Survivors at age x of 10,000 born alive		Stationary population in age interval		Increase (+) or decrease (-) of economically		onomically activ ring age interva	•	Net entries into economic activity (+)of net retirement (-) during age intervals			
	Total (l _{x)}	Economi cally active	Total (5L _x) Economi cally active		active survivors during age intervals	Mortality rate 1000 nMx	First estimate of deaths	Adjusted estimates of deaths	Entries or retirement rate	First estimates entries or retirements	Adjusted estimates entries or retirements	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	$(8) = (7)^*(5)$	(9)	(10)	(11)	(12)	
15 - 20	9579	0	47751	10027	2946	1.36	14	14	30.96	2957	2959	
20 - 25	9514	2946	47361	19382	1095	1.87	36	36	11.90	1128	1131	
25 - 30	9426	4040	46839	20987	87	2.55	53	54	1.48	139	141	
30 - 35	9306	4127	46230	20290	-99	2.69	55	55	-0.48	-44	-44	
35 - 40	9182	4028	45499	19952	-80	3.66	73	73	-0.08	-7	-7	
40 - 45	9015	3948	44714	19555	-146	3.33	65	65	-0.91	-82	-81	
45 - 50	8867	3802	43825	18418	-248	5.09	94	94	-1.76	-155	-154	
50 - 55	8643	3554	42195	16965	-645	10.23	173	171	-5.69	-480	-474	
55 - 60	8212	2909	40015	12263	-1035	10.58	130	129	-11.36	-909	-906	
60 - 65	7789	1874	37737	6596	-929	13.28	88	88	-11.10	-838	-841	
65 - 70	7287	945	34853	2945	-531	18.99	56	57	-6.72	-468	-474	
70 - 75	6625	414	31157	1260	-229	26.97	34	35	-3.05	-190	-194	
75 - 80	5785	185	25667	603	-111	52.49	32	32	-1.54	-79	-79	
80-84	4438	74	19036	185	-48	67.43	12	8	-1.66	-63	-40	
85+	3154	25	18934	122	-25	166.59	20	10	-0.81	-31	-15	

Age interval	Age specific activity rates (%)		Survivors at age x of 10,000 born alive		Stationary population in age interval		Both Sexes Population of G Cumulated stationary population in age x -∞		Average remaining life time at beginning of age group years of:		
	In age interval	At beginning of age (x)	Total (l _{x)}	Economically active	Total (5L _{x)}	Economically active	Total (Tx)	Economically active (T _{wx})	Total years e _x	Economically active years (e _{wx)}	Inactive years
(1)	(2)	(3)= $(l_5+l_6)/2$	(4)	(5) = (4)*(3)	(6)	(7) = (6)*(2)	(8)	(9)	(10) = (8)÷(4)	(11) = (9)÷(4)	(12)=(10)- (11)
0 - 1	0	0	10000	0	9723	0	681546	266050	68.15	26.61	41.55
1 - 5	0	0	9680	0	38533	0	671823	266050	69.40	27.48	41.92
5 - 10	0	0	9603	0	47891	0	633290	266050	65.95	27.70	38.24
10 - 15	0	0	9553	0	47662	0	585400	266050	61.28	27.85	33.43
15 - 20	34.51	0	9512	0	47359	16345	537738	266050	56.53	27.97	28.56
20 - 25	63.66	49.09	9423	4625	46779	29780	490378	249705	52.04	26.50	25.54
25 - 30	68.20	65.93	9281	6119	45984	31363	443599	219926	47.79	23.70	24.10
30 - 35	68.46	68.33	9109	6224	45095	30870	397615	188563	43.65	20.70	22.95
35 - 40	68.69	68.57	8927	6121	44127	30310	352520	157693	39.49	17.67	21.83
40 - 45	68.74	68.71	8720	5992	43038	29582	308393	127383	35.36	14.61	20.76
45 - 50	67.03	67.88	8490	5763	41831	28039	265354	97800	31.25	11.52	19.74
50 - 55	64.68	65.85	8226	5417	40032	25891	223524	69761	27.17	8.48	18.69
55 - 60	54.14	59.41	7762	4611	37608	20361	183492	43870	23.64	5.65	17.99
60 - 65	34.65	44.40	7267	3226	34778	12052	145884	23509	20.08	3.24	16.84
65 - 70	19.93	27.29	6620	1807	31220	6221	111106	11457	16.78	1.73	15.05
70 - 75	10.53	15.23	5845	890	27022	2846	79886	5236	13.67	0.90	12.77
75 - 80	6.73	8.63	4931	426	21788	1467	52864	2390	10.72	0.48	10.24
80 - 85	3.34	5.04	3765	190	16029	535	31075	923	8.25	0.25	8.01
85+	2.58	2.96	2628	78	15047	388	15047	388	5.73	0.15	5.58
· · · ·		· · · · · · · · · · · · · · · · · · ·		rom Male Life Ta were done in Ap		na. nd col. $(14) = Suc$	ccessive differ	rence of col.(5).			
()		Force population cific activity rates	•	•••	"Others" and	"Not Stated" cate	egories of the	principal activitie	es of the worki	ng age populatio	on before

	•	Appendix 1.5: Continued - Both Sexes Component of Annual Change in Number of Economically Active Persons During Age Interval									
Age interval	Average active years per active survivors of	Net increase (+) or	Death of perso		Net entri economicall		Net retirements into inactive status				
	age x	decrease (-)	Number	Rate per 1000 active	Number	Rate per 1000 active	Number	Rate per 1000 active			
(1)	(13)	(14)	(15)	(16) =(15)÷(7)	(17)	(18) = (17÷(6-7)	(19)	(20) =(19)÷(7)			
0 - 1	0	0	0	0	0	0	0	0			
1 - 5	0	0	0	0	0	0	0	0			
5 - 10	0	0	0	0	0	0	0	0			
10 - 15	0	0	0	0	0	0	0	0			
15 - 20	43.60	4625	44	2.69	4669	150.55	0	0			
20 - 25	38.99	1494	51	1.71	1545	90.89	0	0			
25 - 30	34.54	105	41	1.31	146	9.96	0	0			
30 - 35	30.15	-103	126	4.08	23	1.61	0	0			
35 - 40	25.71	-129	151	4.98	22	1.57	0	0			
40 - 45	21.26	-229	235	7.93	6	0.46	0	0			
45 - 50	16.97	-346	191	6.83			155	5.51			
50 - 55	12.88	-806	495	19.12			311	12.01			
55 - 60	9.51	-1385	350	17.21			1035	50.82			
60 - 65	7.29	-1420	201	16.71			1218	101.07			
65 - 70	6.34	-917	132	21.18			785	126.13			
70 - 75	5.88	-465	74	26.02			391	137.22			
75 - 80	5.61	-236	76	51.78			160	109.15			
80 - 85	4.87	-112	29	54.04			83	155.01			
85+	4.99	-78	58	149.80			20	50.55			

Appendi	ix 1.6: Ca		-	0	Numbers of Econ Gains by Entries	•		0	0	-	nual Losses
Age Interval		rs at age x of) born alive	Stationary population in age interval		Increase (+) or decrease (-) of economically active		nomically activ ing age interva	•	Net entries into economic activity (+)of net retirement (-) during age intervals		
	Total (l _{x)}	Economically active	Total (5L _{x)}	Economically active	 survivors during age 	Mortality rate 1000 nMx	First estimate of deaths	•	Entries or retirement rate	First estimates entries or retirements	Adjusted estimates entries or retirements
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8) = (7)*(5)	(9)	(10)	(11)	(12)
15 - 20	9512	0	47359	16345	4625	1.88	31	44	34.51	3269	4669
20 - 25	9423	4625	46779	29780	1494	3.02	90	51	29.15	2727	1545
25 - 30	9281	6119	45984	31363	105	3.75	118	41	4.54	418	146
30 - 35	9109	6224	45095	30870	-103	4.04	125	126	0.25	23	23
35 - 40	8927	6121	44127	30310	-129	4.67	142	151	0.23	20	22
40 - 45	8720	5992	43038	29582	-229	5.35	158	235	0.05	4	6
45 - 50	8490	5763	41831	28039	-346	6.30	177	191	-1.70	-143	-155
50 - 55	8226	5417	40032	25891	-806	11.59	300	495	-2.35	-189	-311
55 - 60	7762	4611	37608	20361	-1385	13.18	268	350	-10.53	-792	-1035
60 - 65	7267	3226	34778	12052	-1420	18.59	224	201	-19.49	-1355	-1218
65 - 70	6620	1807	31220	6221	-917	24.82	154	132	-14.73	-920	-785
70 - 75	5845	890	27022	2846	-465	33.84	96	74	-9.40	-508	-391
75 - 80	4931	426	21788	1467	-236	53.53	79	76	-3.80	-166	-160
80-84	3765	190	16029	535	-112	70.93	38	29	-3.40	-109	-83
85+	2628	78	15047	388	-78	174.63	68	58	-0.76	-23	-20

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