

# 2017 Business of Ageing Update: October 2017

## Background

This Summary reports on the results of the '2017 Business of Ageing Update.' The Update is the fourth of a series of studies that began in 2010 which seek to monitor and assess trends in the economic value and business opportunities associated with New Zealand's increasing population of Older People [65+ years].

This report should be read in conjunction with the previous reports which deal with a variety of relevant technical and data issues [including sensitivity and probability issues].

As noted in the third report, the November 2014 National Population Projections prepared by Statistics NZ comment that:

*The number of people aged 65+ doubled between 1984 and 2014 to reach 650,000. The number is projected to double again by 2039. It is highly likely that there will be 1.28–1.37 million people aged 65+ in 2041, and 1.57–1.81 million in 2068. The largest growth will occur between 2011 and 2037 as the baby boomers move into the 65+ age group.*

*By 2032, it is expected that 21–22 percent of New Zealanders will be aged 65+, compared with 14 percent in 2014. By 2050, this proportion is expected to reach 22–26 percent, and reach 24–32 percent by 2068.*

*Within the 65+ age group, the number of people aged 85 and over (85+) is expected to increase significantly. From 78,000 in 2014, it is likely that 220,000–270,000 people will be aged 85+ in 2041 and 320,000–450,000 in 2068. By the 2050s, about 1 in 4 people aged 65+ will be 85+ compared with 1 in 8 in 2014.*

The newest 2015 projections of the National Labour Force by Statistics NZ project that:

*there will be around 319,000 people aged 65+ in the national workforce by 2036 [183,500 males and 135,500 females] and that the total could rise to almost 400,000 by 2061. The largest growth will occur in the period to 2031, as the baby boomers move into the 65+ age group.*

Given the magnitude of these trends and their potential impact on the national economy, regular monitoring is clearly appropriate.

## Purpose

The Deliverables for this Update are specified as follows:

1. Update the Economic Model to include:
  - Population and Labour Force projections as used by Treasury in the 2016 Long Term Fiscal Statement
  - Review and update if necessary the proxy wage used to represent the economic value of unpaid/voluntary work
  - Re-base the Model to 2016 dollars
  - Provide a copy of the final output page of the Model and the Population and Labour Force projections for inclusion on the MSD website.
2. Update the website's One-Page Summary of the Model Results
3. Provide a brief report on the changes undertaken to the Model, for future reference by MSD.

The requirements of this Update are simple in comparison to those of previous Updates and do not warrant extensive reporting. Readers are referred to the extensive detail provided at the Ministry of

Social Development's Business of Ageing Website [ <https://www.msd.govt.nz/about-msd-and-our-work/publications-resources/research/business-of-ageing/> for additional information.

## **Basis of the Work**

The need for a 2017 Update has been triggered by the release by SNZ of new Labour Force Projections (December 2015, 2015 Base).

The work centres on the development and refinement of a quantitative model that projects, on an 'other things being equal' basis the \$ values of the earnings, tax paid, and consumption expenditures of Older New Zealanders and the implications that additional paid work might have on their voluntary work contributions.

The primary model inputs are the projected population of Older People and the projected numbers of Older People in the Labour Force [[i.e. the denominator and the numerator of the 'Participation Rate']. Participation Rates for Older New Zealanders have been rising steadily in New Zealand over the last few years from 12 percent in 2006 to 24 percent in 2016.

The model projects trends in the economic value of Older People, consistent with Treasury's Long Term Fiscal Model and progressive updates of Demographic and Labour Force Projections by Statistics NZ (StatsNZ).

An early draft of the work was submitted to StatsNZ for peer review. This has resulted in the adoption of slightly refined / updated Median Projections for the Population of Older People and the associated Labour Force - see Tables 2 and 3.

The correspondence on the review also raised two substantive issues regarding:

1. The desirability of emphasizing that the projected Participation Rates are subject to wide variations in probability
2. The desirability of refining the assumptions that have been made in previous modelling concerning the levels of remuneration received by Older People from Paid Work and Self-Employment.

These issues are addressed in the Technical Appendix to the Report.

## **Results of Updating the Basic Model**

The Updated Participation Rate Projections for Older New Zealanders (applying current Median Projections for the Population and the Labour Force) suggest that while around 52 percent of men between the ages of 65 and 69 participate in the Labour Force at present, 62 percent of this group are likely to participate by 2061. The comparable figures for women in this cohort are 36 percent current and 48 percent by 2061. By mid-century, nine percent of males over 80 and five percent of women over 80 are likely to be working.

The overall Participation Rate for Older People is projected to rise slightly from around 24 percent (current) to around 25 percent by 2051-2061. However, there is considerable uncertainty surrounding the projections and StatsNZ have provided probability bounds for the projections in a statistical series that has been specially developed for this study [see Table 8]. These illustrate, for example, that there is a 5 percent probability that the labour force participation rate for older people will be lower than 16 percent in 2061, and a 5 percent probability that it will be higher than 33 percent in 2061.

The percentage of Older People in the overall Labour Force is likely to rise from around 7 percent at present to around 12 percent by 2061 (Median projections).

According to this set of projections, Wage and Salary [i.e. Paid Work] earnings by Older People are likely to rise from around \$4.8 billion in 2016 to around \$10.7 billion in 2031, \$13.6 billion in 2041 and \$22.8 billion in 2061.

Remuneration from Self-employment by Older People is similarly likely to rise from around \$1.7 billion in 2016 to around \$3.8 billion in 2031, \$4.8 billion in 2041 and \$8.1 billion in 2061 (2016 \$).

Income Tax paid by Older People on Remunerated Work is projected to rise from around \$1.0 billion in 2016 to \$2.1 bn in 2031, 2.7 bn in 2041 and \$4.6 bn in 2061.

The value of all tax paid by Older People (including payments on pensions including NZ Super, investments and GST) is projected to rise from around \$5.5 billion in 2016 to \$11.3 bn in 2031, \$15.3 bn in 2041 and \$25.1 bn in 2061.

The value of the Unpaid Work of Older People could rise from around \$11 billion per year at present to around \$21 billion per year in 2031, \$29.3 billion in 2041 and \$47.5 billion in 2061, assuming a proxy value of \$16.50 [the 'Carer Wage' adjusted for inflation 2014-2016].

The total value of expenditures by Older People [inclusive of GST] is projected to rise from around \$20.7 billion per year in 2016 to around \$42.4 billion in 2031, \$57.4 billion in 2041 and \$94 Billion per year in 2061. On current patterns of expenditure, some 28 percent of these sums are expected to be spent on Foodstuffs, Alcoholic Drinks and Tobacco and Clothing and Footwear, and a further 22 percent is expected to be spent on Housing and Housing related items. Health (11%), Transport (13%) and Recreation and Culture (11%) constitute other important market segments.

Table 1

<b>2017 Update Report [2016 Prices]</b>	Adjuster to JuneQ 2016 Prices				=	1.024144256	adjusted Carer Wage =				16.49	per hour
	2011	2016	2021	2026	2031	2036	2041	2046	2051	2056	2061	
<b>OLDER PEOPLE (65+)</b>												
<b>POPULATION &amp; WORKFORCE</b>												
Numbers of Older People	587,020	700,959	829,073	978,040	1,123,970	1,244,793	1,324,726	1,364,021	1,407,922	1,488,203	1,583,993	
Participating Males	65,490	98,400	123,600	150,000	171,300	183,500	185,900	182,900	189,500	212,900	238,100	
Participating Females	48,380	67,300	87,100	108,500	124,800	135,500	136,900	133,900	138,000	150,900	159,100	
<b>TOTAL OLDER WORKFORCE</b>	<b>113,870</b>	<b>165,700</b>	<b>210,700</b>	<b>258,500</b>	<b>296,100</b>	<b>319,000</b>	<b>322,800</b>	<b>316,800</b>	<b>327,500</b>	<b>363,800</b>	<b>397,200</b>	
Participation Rate - Males	0.24	0.30	0.32	0.33	0.33	0.32	0.31	0.30	0.30	0.31	0.32	
Participation Rate - Females	0.15	0.18	0.20	0.21	0.21	0.20	0.19	0.18	0.18	0.19	0.19	
Overall Participation Rate	0.19	0.24	0.25	0.26	0.26	0.26	0.24	0.23	0.23	0.24	0.25	
<b>VALUE OF REMUNERATED WORK</b>												
Paid Work (\$ Bn)	3.12	4.80	6.58	8.74	10.67	12.44	13.63	14.43	16.14	19.37	22.84	
Self-Employment (\$ Bn)	1.11	1.71	2.34	3.11	3.80	4.43	4.85	5.13	5.75	6.89	8.13	
<b>TOTAL VALUE (\$ Bn)</b>	<b>4.23</b>	<b>6.51</b>	<b>8.92</b>	<b>11.85</b>	<b>14.47</b>	<b>16.87</b>	<b>18.48</b>	<b>19.56</b>	<b>21.89</b>	<b>26.26</b>	<b>30.97</b>	
<b>VALUE OF TAX PAID (\$ Bn)</b>												
Tax on Earnings from Remunerated Work (\$ Bn)	0.63	0.96	1.32	1.75	2.14	2.50	2.74	2.89	3.24	3.89	4.58	
Tax on Government Transfers (\$ Bn)	1.04	1.31	1.67	2.13	2.61	3.13	3.61	4.01	4.48	5.11	5.87	
Tax on Investments and Other Income (\$ Bn)	0.44	0.55	0.70	0.90	1.10	1.32	1.52	1.68	1.88	2.15	2.47	
GST (all income spent)	2.02	2.68	3.48	4.50	5.50	6.54	7.43	8.14	9.10	10.53	12.20	
All Tax including GST (\$ Bn)	4.12	5.50	7.17	9.28	11.35	13.49	15.29	16.73	18.70	21.68	25.12	
<b>VALUE OF UNPAID WORK</b>	<b>8.67</b>	<b>10.68</b>	<b>13.48</b>	<b>17.11</b>	<b>20.97</b>	<b>25.26</b>	<b>29.32</b>	<b>32.78</b>	<b>36.61</b>	<b>41.49</b>	<b>47.46</b>	
<b>TOTAL INCOME</b>												
Remunerated Work (\$ Bn)	4.23	6.51	8.92	11.85	14.47	16.87	18.48	19.56	21.89	26.26	30.97	
Government Transfers (\$ Bn)	9.88	12.48	15.91	20.31	24.87	29.82	34.36	38.15	42.63	48.66	55.94	
Investments & Other (\$ Bn)	3.45	4.36	5.55	7.09	8.68	10.41	11.99	13.31	14.88	16.98	19.52	
<b>TOTAL VALUE (\$ Bn)</b>	<b>17.56</b>	<b>23.35</b>	<b>30.38</b>	<b>39.25</b>	<b>48.01</b>	<b>57.10</b>	<b>64.83</b>	<b>71.02</b>	<b>79.39</b>	<b>91.91</b>	<b>106.43</b>	
<b>EXPENDITURE (\$ Bn)</b>												
Groceries, Clothing, Alcohol & Tobacco	4.36	5.79	7.53	9.73	11.90	14.15	16.08	17.62	19.69	22.79	26.38	
Housing & Household Utilities	3.42	4.54	5.90	7.62	9.33	11.10	12.60	13.81	15.44	17.87	20.68	
Health	1.64	2.18	2.83	3.66	4.47	5.32	6.04	6.62	7.41	8.57	9.92	
Transport & Communication	2.62	3.47	4.52	5.84	7.14	8.49	9.65	10.57	11.82	13.67	15.83	
Recreation, Culture & Education	1.74	2.32	3.01	3.89	4.76	5.66	6.43	7.05	7.88	9.12	10.55	
Miscellaneous	1.50	1.99	2.59	3.35	4.09	4.87	5.53	6.06	6.77	7.84	9.08	
Interest	0.28	0.37	0.48	0.62	0.76	0.91	1.03	1.13	1.26	1.46	1.69	
<b>TOTAL</b>	<b>15.56</b>	<b>20.66</b>	<b>26.87</b>	<b>34.70</b>	<b>42.45</b>	<b>50.50</b>	<b>57.36</b>	<b>62.86</b>	<b>70.27</b>	<b>81.31</b>	<b>94.14</b>	

## APPENDIX: TECHNICAL ISSUES

### Participation Rate Projection Probabilities

The first draft of this report raised the issue that the most recent Median Projection Participation Rates for Older New Zealanders appear to be somewhat lower than those previously calculated from LTFM and Stats NZ for earlier updates [see Tables 4 and 5].

StatsNZ advised as follows:

*Our Labour Force Participation Rate [LFPR] assumptions are based on observed age-and-sex-specific trends from two key data sources: Census of Population and Dwellings; and the Household Labour Force Survey.*

*Between mid-2012 and late 2015, LFPRs for men and women in the 65-69 and 70-74 age groups did not exhibit the same increases as observed in the previous 10-15 years. This prompted a lowering of LFPR assumptions through those ages in the more recent LF projections.*

*Partly related, the decline in LFPRs with age, beyond age 65, is assumed to be steeper/quicker in the more recent projections. That is more consistent with the current age profile in LFPRs.*

*The latest LFPR assumptions for the 65+ age group, have the median rising from 22% in 2013-14 to 27% in the late 2020s, before it eases to 25% in the 2060s. Note that the assumptions are actually derived by single year of age. This apparent easing of the broad 65+ age group reflects changes in age composition within that broad age group, as the median SYOA LFPRs do not decline at any ages within that 65+ group.*

*The 5th and 95th percentiles for the 65+ LFPR by the 2060s are 16% and 33%, respectively. That is, there is an estimated 90% chance that the 65+ LFPR will be between 16% and 33% in the 2060s.*

*Among the prime LF ages, 20-59 years, LFPRs are much more stable historically. Hence, the assumptions have changed relatively little from one set of LF projections to the next. Some small increases for females are assumed reflecting recent trends and assumed further small declines in fertility rates.*

*At the youngest ages, LFPRs are assumed to decrease slightly, reflecting recent trends and increasing participation in tertiary education.*

...

*We can provide LFPR percentiles (including the median) for any age-sex grouping. We haven't looked at the HLFS trend data since 2015 – we'll be doing this later this year to derive the updated LF projections.*

The special tabulations generated by StatsNZ are summarized in Tables 6, 7 and 8. These illustrate that considerable uncertainty surrounds the projections and that the overall level of participation in the labour force by Older New Zealanders by 2061 could be as low as 16 percent (5<sup>th</sup> Percentile Estimate) and as high as 33 percent (95<sup>th</sup> Percentile Estimate).

Table 2

<b>MEDIAN PROJECTION POPULATION AS AT SEPTEMBER 2017</b>														
		<b>AGE</b>	<b>2011</b>	<b>2016</b>	<b>2021</b>	<b>2026</b>	<b>2031</b>	<b>2036</b>	<b>2041</b>	<b>2046</b>	<b>2051</b>	<b>2056</b>	<b>2061</b>	
		<b>OLDER MALES</b>												
		65-69	87,970	114,137	120,777	136,364	143,720	141,250	133,991	126,471	139,185	167,914	184,550	
		70-74	69,580	82,081	106,783	114,078	129,905	137,522	136,262	129,757	123,278	136,189	164,770	
		75-79	49,190	59,803	72,997	96,160	103,916	119,557	127,820	127,984	122,652	117,509	130,705	
		80+	61,540	69,406	85,318	105,894	140,662	170,717	203,847	233,244	254,255	262,735	263,768	
		<b>TOTAL MALES</b>	<b>268,280</b>	<b>325,248</b>	<b>385,282</b>	<b>452,988</b>	<b>518,212</b>	<b>569,409</b>	<b>602,099</b>	<b>617,720</b>	<b>639,016</b>	<b>683,975</b>	<b>743,657</b>	
		<b>OLDER FEMALES</b>												
		65-69	92,240	119,530	129,900	148,737	157,821	158,357	149,821	139,351	149,586	170,721	176,297	
		70-74	75,630	88,186	114,741	125,633	144,120	153,566	155,030	147,239	137,386	147,579	168,870	
		75-79	56,700	68,090	82,389	107,589	118,856	136,949	147,513	149,573	142,138	133,473	143,993	
		80+	94,170	100,614	116,459	143,826	185,633	225,843	271,460	311,034	339,316	351,830	351,630	
		<b>TOTAL FEMALES</b>	<b>318,740</b>	<b>375,699</b>	<b>444,164</b>	<b>525,059</b>	<b>605,687</b>	<b>675,407</b>	<b>722,669</b>	<b>746,368</b>	<b>768,893</b>	<b>804,259</b>	<b>840,299</b>	
		<b>ALL OLDER PEOPLE</b>												
		65-69	180,210	233,677	250,665	285,074	301,345	299,787	283,624	265,638	288,766	338,813	360,847	
		70-74	145,210	170,280	221,511	239,634	274,069	291,429	291,285	276,925	260,650	284,120	333,670	
		75-79	105,890	128,733	154,578	203,094	222,624	256,562	275,152	277,463	265,335	250,965	274,761	
		80+	155,710	167,729	202,337	249,456	326,270	396,551	475,044	544,028	593,915	614,821	613,708	
		<b>TOTAL OLDER PEOPLE</b>	<b>587,020</b>	<b>700,959</b>	<b>829,073</b>	<b>978,040</b>	<b>1,123,970</b>	<b>1,244,793</b>	<b>1,324,726</b>	<b>1,364,021</b>	<b>1,407,922</b>	<b>1,488,203</b>	<b>1,583,993</b>	

Table 3

<b>MEDIAN PROJECTION LABOUR FORCE AS AT SEPTEMBER 2017</b>														
		<b>AGE</b>	<b>2011</b>	<b>2016</b>	<b>2021</b>	<b>2026</b>	<b>2031</b>	<b>2036</b>	<b>2041</b>	<b>2046</b>	<b>2051</b>	<b>2056</b>	<b>2061</b>	
		<b>OLDER MALES</b>												
		65-69	39,830	59,200	67,100	79,200	85,500	86,000	82,100	78,500	86,800	105,200	115,000	
		70-74	15,340	24,800	36,100	42,000	50,400	54,700	55,600	53,100	51,200	56,800	69,100	
		75-79	6,720	9,900	13,800	19,700	22,700	27,100	29,300	29,900	28,500	27,700	30,900	
		80+	3,600	4,500	6,600	9,000	12,700	15,600	18,900	21,400	23,000	23,200	23,100	
		<b>TOTAL MALES</b>	<b>65,490</b>	<b>98,400</b>	<b>123,600</b>	<b>150,000</b>	<b>171,300</b>	<b>183,500</b>	<b>185,900</b>	<b>182,900</b>	<b>189,500</b>	<b>212,900</b>	<b>238,100</b>	
		<b>OLDER FEMALES</b>												
		65-69	29,040	43,300	52,600	64,600	70,800	73,800	70,100	66,700	72,100	82,900	84,700	
		70-74	11,000	14,900	21,900	26,400	32,100	34,900	36,400	34,400	32,800	35,400	40,800	
		75-79	4,940	5,700	7,900	11,200	13,200	15,800	17,200	17,800	16,800	16,000	17,300	
		80+	3,400	3,400	4,700	6,400	8,800	10,900	13,300	15,100	16,300	16,500	16,300	
		<b>TOTAL FEMALES</b>	<b>48,380</b>	<b>67,300</b>	<b>87,100</b>	<b>108,500</b>	<b>124,800</b>	<b>135,500</b>	<b>136,900</b>	<b>133,900</b>	<b>138,000</b>	<b>150,900</b>	<b>159,100</b>	
		<b>ALL OLDER PEOPLE</b>												
		65-69	68,870	102,500	119,700	143,800	156,200	159,900	152,100	145,100	158,900	188,200	199,700	
		70-74	26,340	39,700	58,000	68,400	82,500	89,700	92,000	87,500	84,000	92,300	109,900	
		75-79	11,660	15,700	21,600	30,800	35,900	42,900	46,500	47,700	45,400	43,700	48,200	
		80+	7,000	7,800	11,300	15,400	21,500	26,500	32,200	36,500	39,300	39,700	39,300	
		<b>TOTAL OLDER PEOPLE</b>	<b>113,870</b>	<b>165,700</b>	<b>210,600</b>	<b>258,500</b>	<b>296,100</b>	<b>319,000</b>	<b>322,800</b>	<b>316,800</b>	<b>327,500</b>	<b>363,800</b>	<b>397,200</b>	

Table 4

<b>PARTICIPATION RATES APPLIED SEPTEMBER 2017</b>														
			<b>AGE</b>	<b>2011</b>	<b>2016</b>	<b>2021</b>	<b>2026</b>	<b>2031</b>	<b>2036</b>	<b>2041</b>	<b>2046</b>	<b>2051</b>	<b>2056</b>	<b>2061</b>
			<b>OLDER MALES</b>											
			65-69	0.45	0.52	0.56	0.58	0.59	0.61	0.61	0.62	0.62	0.63	0.62
			70-74	0.22	0.30	0.34	0.37	0.39	0.40	0.41	0.41	0.42	0.42	0.42
			75-79	0.14	0.17	0.19	0.20	0.22	0.23	0.23	0.23	0.23	0.24	0.24
			80+	0.06	0.06	0.08	0.08	0.09	0.09	0.09	0.09	0.09	0.09	0.09
			<b>TOTAL MALES</b>	0.24	0.30	0.32	0.33	0.33	0.32	0.31	0.30	0.30	0.31	0.32
			<b>OLDER FEMALES</b>											
			65-69	0.31	0.36	0.40	0.43	0.45	0.47	0.47	0.48	0.48	0.49	0.48
			70-74	0.15	0.17	0.19	0.21	0.22	0.23	0.23	0.23	0.24	0.24	0.24
			75-79	0.09	0.08	0.10	0.10	0.11	0.12	0.12	0.12	0.12	0.12	0.12
			80+	0.04	0.03	0.04	0.04	0.05	0.05	0.05	0.05	0.05	0.05	0.05
			<b>TOTAL FEMALES</b>	0.15	0.18	0.20	0.21	0.21	0.20	0.19	0.18	0.18	0.19	0.19
			<b>ALL OLDER PEOPLE</b>											
			65-69	0.38	0.44	0.48	0.50	0.52	0.53	0.54	0.55	0.55	0.56	0.55
			70-74	0.18	0.23	0.26	0.29	0.30	0.31	0.32	0.32	0.32	0.32	0.33
			75-79	0.11	0.12	0.14	0.15	0.16	0.17	0.17	0.17	0.17	0.17	0.18
			80+	0.04	0.05	0.06	0.06	0.07	0.07	0.07	0.07	0.07	0.06	0.06
			<b>TOTAL OLDER PEOPLE</b>	0.19	0.24	0.25	0.26	0.26	0.26	0.24	0.23	0.23	0.24	0.25



Table 5

<b>MOST RECENT PREVIOUS PARTICIPATION RATE PROJECTIONS [2013 LTFM]</b>														
		<b>AGE</b>	<b>2011</b>	<b>2016</b>	<b>2021</b>	<b>2026</b>	<b>2031</b>	<b>2036</b>	<b>2041</b>	<b>2046</b>	<b>2051</b>	<b>2056</b>	<b>2061</b>	
	<b>OLDER MALES</b>													
		65-69	0.45	0.52	0.58	0.62	0.64	0.65	0.64	0.65	0.65	0.65	0.65	
		70-74	0.22	0.27	0.31	0.34	0.36	0.37	0.39	0.39	0.40	0.40	0.40	
		75-79	0.14	0.18	0.21	0.23	0.25	0.26	0.27	0.27	0.27	0.28	0.28	
		80+	0.06	0.08	0.10	0.11	0.12	0.13	0.13	0.13	0.13	0.12	0.12	
	<b>TOTAL MALES</b>		<b>0.24</b>	<b>0.30</b>	<b>0.33</b>	<b>0.35</b>	<b>0.35</b>	<b>0.34</b>	<b>0.33</b>	<b>0.32</b>	<b>0.32</b>	<b>0.33</b>	<b>0.34</b>	
	<b>OLDER FEMALES</b>													
		65-69	0.31	0.40	0.47	0.55	0.54	0.52	0.51	0.60	0.63	0.56	0.55	
		70-74	0.15	0.20	0.24	0.27	0.29	0.31	0.32	0.33	0.33	0.33	0.33	
		75-79	0.09	0.13	0.16	0.18	0.20	0.21	0.22	0.23	0.23	0.23	0.23	
		80+	0.04	0.05	0.07	0.08	0.09	0.10	0.10	0.10	0.10	0.09	0.09	
	<b>TOTAL FEMALES</b>		<b>0.15</b>	<b>0.21</b>	<b>0.25</b>	<b>0.28</b>	<b>0.28</b>	<b>0.27</b>	<b>0.26</b>	<b>0.26</b>	<b>0.27</b>	<b>0.26</b>	<b>0.26</b>	
	<b>ALL OLDER PEOPLE</b>													
		65-69	0.38	0.46	0.52	0.58	0.59	0.58	0.57	0.62	0.64	0.60	0.60	
		70-74	0.18	0.23	0.27	0.30	0.33	0.34	0.35	0.36	0.36	0.36	0.37	
		75-79	0.11	0.15	0.18	0.20	0.22	0.24	0.24	0.25	0.25	0.25	0.25	
		80+	0.04	0.06	0.08	0.10	0.11	0.11	0.11	0.11	0.11	0.10	0.10	
	<b>TOTAL OLDER PEOPLE</b>		<b>0.19</b>	<b>0.25</b>	<b>0.28</b>	<b>0.31</b>	<b>0.31</b>	<b>0.30</b>	<b>0.29</b>	<b>0.29</b>	<b>0.29</b>	<b>0.29</b>	<b>0.30</b>	

Table 6: Participation Rate Projection Probabilities - Males [Special tabulations from StatsNZ]

<b>National Labour Force Projections, 2013-base published December 2015</b>											
<b>Assumed male labour force participation rates</b>											
Age group	6/30/2013	6/30/2016	6/30/2021	6/30/2026	6/30/2031	6/30/2036	6/30/2041	6/30/2046	6/30/2051	6/30/2056	6/30/2061
	50th percentile (median)										
65-69	0.50	0.52	0.56	0.58	0.59	0.61	0.61	0.62	0.62	0.63	0.62
70-74	0.27	0.30	0.34	0.37	0.39	0.40	0.41	0.41	0.42	0.42	0.42
75-79	0.15	0.17	0.19	0.20	0.22	0.23	0.23	0.23	0.23	0.24	0.24
80+	0.06	0.06	0.08	0.08	0.09	0.09	0.09	0.09	0.09	0.09	0.09
Total 65+	0.28	0.30	0.32	0.33	0.33	0.32	0.31	0.30	0.30	0.31	0.32
	5th percentile										
65-69	0.45	0.45	0.45	0.46	0.46	0.46	0.46	0.47	0.47	0.47	0.47
70-74	0.23	0.24	0.24	0.25	0.25	0.25	0.25	0.25	0.26	0.26	0.26
75-79	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12
80+	0.05	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04
Total 65+	0.25	0.25	0.24	0.24	0.23	0.22	0.20	0.19	0.19	0.21	0.21
	95th percentile										
65-69	0.55	0.59	0.66	0.70	0.73	0.75	0.76	0.78	0.78	0.78	0.78
70-74	0.31	0.37	0.43	0.49	0.52	0.54	0.56	0.57	0.58	0.58	0.58
75-79	0.17	0.21	0.26	0.29	0.32	0.33	0.34	0.35	0.35	0.35	0.35
80+	0.07	0.09	0.11	0.13	0.14	0.14	0.15	0.14	0.14	0.14	0.14
Total 65+	0.32	0.36	0.40	0.42	0.43	0.43	0.41	0.40	0.40	0.41	0.43

Table 7: Participation Rate Projection Probabilities - Females [Special tabulations from StatsNZ]

<b>National Labour Force Projections, 2013-base published December 2015</b>											
<b>Assumed female labour force participation rates</b>											
Age group	6/30/2013	6/30/2016	6/30/2021	6/30/2026	6/30/2031	6/30/2036	6/30/2041	6/30/2046	6/30/2051	6/30/2056	6/30/2061
	50th percentile (median)										
65-69	0.34	0.36	0.40	0.43	0.45	0.47	0.47	0.48	0.48	0.49	0.48
70-74	0.15	0.17	0.19	0.21	0.22	0.23	0.23	0.23	0.24	0.24	0.24
75-79	0.07	0.08	0.10	0.10	0.11	0.12	0.12	0.12	0.12	0.12	0.12
80+	0.03	0.03	0.04	0.04	0.05	0.05	0.05	0.05	0.05	0.05	0.05
Total 65+	0.16	0.18	0.20	0.21	0.21	0.20	0.19	0.18	0.18	0.19	0.19
	5th percentile										
65-69	0.29	0.29	0.31	0.32	0.33	0.33	0.33	0.34	0.34	0.34	0.34
70-74	0.13	0.13	0.14	0.15	0.15	0.15	0.16	0.16	0.16	0.16	0.16
75-79	0.06	0.06	0.06	0.06	0.07	0.07	0.07	0.07	0.07	0.07	0.07
80+	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
Total 65+	0.19	0.19	0.19	0.19	0.18	0.17	0.16	0.15	0.15	0.16	0.16
	95th percentile										
65-69	0.39	0.43	0.50	0.55	0.57	0.60	0.60	0.62	0.62	0.63	0.62
70-74	0.17	0.20	0.24	0.27	0.29	0.30	0.31	0.31	0.32	0.32	0.32
75-79	0.09	0.10	0.13	0.14	0.16	0.16	0.17	0.17	0.17	0.17	0.17
80+	0.04	0.05	0.06	0.07	0.07	0.08	0.08	0.08	0.08	0.07	0.07
Total 65+	0.25	0.28	0.32	0.34	0.35	0.34	0.33	0.31	0.31	0.33	0.33

Table 8: Participation Rate Projection Probabilities - All Older People [Special tabulations from StatsNZ]

<b>National Labour Force Projections, 2013-base published December 2015</b>											
<b>Assumed total (male and female combined) labour force participation rates</b>											
Age group	6/30/2013	6/30/2016	6/30/2021	6/30/2026	6/30/2031	6/30/2036	6/30/2041	6/30/2046	6/30/2051	6/30/2056	6/30/2061
	<b>50th percentile (median)</b>										
65-69	0.42	0.44	0.48	0.50	0.52	0.53	0.54	0.55	0.55	0.56	0.55
70-74	0.21	0.23	0.26	0.29	0.30	0.31	0.32	0.32	0.32	0.32	0.33
75-79	0.11	0.12	0.14	0.15	0.16	0.17	0.17	0.17	0.17	0.17	0.18
80+	0.04	0.05	0.06	0.06	0.07	0.07	0.07	0.07	0.07	0.06	0.06
Total 65+	0.22	0.24	0.25	0.26	0.26	0.26	0.24	0.23	0.23	0.24	0.25
	<b>5th percentile</b>										
65-69	0.37	0.38	0.39	0.39	0.39	0.39	0.40	0.40	0.41	0.40	0.40
70-74	0.19	0.19	0.20	0.20	0.20	0.20	0.20	0.20	0.21	0.21	0.21
75-79	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09
80+	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03
Total 65+	0.19	0.19	0.19	0.18	0.17	0.16	0.15	0.15	0.16	0.16	0.16
	<b>95th percentile</b>										
65-69	0.47	0.51	0.57	0.62	0.65	0.67	0.68	0.69	0.70	0.71	0.70
70-74	0.24	0.28	0.33	0.37	0.40	0.42	0.43	0.43	0.44	0.44	0.45
75-79	0.12	0.15	0.19	0.21	0.23	0.24	0.25	0.25	0.25	0.26	0.26
80+	0.05	0.06	0.08	0.09	0.10	0.10	0.11	0.11	0.11	0.10	0.10
Total 65+	0.25	0.28	0.32	0.34	0.35	0.34	0.33	0.31	0.31	0.33	0.33

## Remuneration of Older New Zealanders

In their review, StatsNZ also questioned the validity of the way in which the earnings data abstracted from the NZ Income Surveys had been incorporated in previous modelling exercises.

The data previously used is shown below in Table 9. This source has the advantage that it differentiates income sources for Older New Zealanders by five classes, including Investments and Other Transfers.

Table 9

Average Weekly Income from All Sources or People Receiving Income from Heading Sources									
<a href="http://www.stats.govt.nz/browse_for_stats/income-and-work/Income/NZIncomeSurvey_HOTPJun">http://www.stats.govt.nz/browse_for_stats/income-and-work/Income/NZIncomeSurvey_HOTPJun</a>									
Date	Average weekly income from:					Average: all sources collected	Median: all sources collected	Number of people (000)	
	Wages and salaries	Self-employment	Government transfers	Investments	Other transfers				
(\$)									
<b>Overall Average and Median Weekly Income - All 65+ [Table 1]</b>									
June Q 2012	85	47	314	85	29	560	398	574.8	
June Q 2013	99	35	316	78	30	557	389	597.8	
June Q 2014	109	49	319	77	22	575	393	620.1	
June Q 2015	124	41	330	85	23	602	423	637.3	
<b>Average and Median Weekly Income for People 65+ in Paid Employment by Source [Table 5]</b>									
June Q 2012	439	243	283	70	18	1049	888	110.6	
June Q 2013	518	184	277	73	30	1087	941	114.2	
June Q 2014	557	251	280	116	16	1222	1006	122.3	
June Q 2015	592	197	279	67	19	1161	1004	133.6	
June Q 2016									
<b>Average and Median Weekly Income for People 65+ Not in Paid Employment by Source [Table 7]</b>									
June Q 2012			322	88	32	441	365	464.2	
June Q 2013			325	79	30	433	360	483.4	
June Q 2014			329	68	24	418	357	497.8	
June Q 2015			344	90	24	456	381	503.8	
<b>Numbers of People 65+ by Income Source ('000) [Table 12]</b>									
June Q 2012	70.00	42.90	562.10	329.60	56.90				
June Q 2013	80.40	35.10	581.50	318.50	56.00				
June Q 2014	90.00	34.00	599.40	318.00	58.00				
June Q 2015	98.40	37.90	614.60	346.40	49.90				

Stats NZ advised that it would be preferable to use data that specifically relates to defined populations of Older People who receive income from 1. Wages and Salaries, and 2. Self-employment, as shown in Table 10.

Table 10.

Average Weekly Income for People from Specific Sources									
<a href="http://nzdotstat.stats.govt.nz/wbos/Index.aspx?DataSetCode=TABLECODE7473#">http://nzdotstat.stats.govt.nz/wbos/Index.aspx?DataSetCode=TABLECODE7473#</a>									
YEAR	Average weekly income from Single Source				Numbers of People ('000s)				
	Wages and salaries	Self-employment	Government transfers	All sources	Wages and salaries	Self-employment	Total Earning	Government transfers	All sources
	(\$)								
2012	699	630	321	447	69.4	42.8	112.2	556.1	569
2013	739	603	325	451	80.0	34.9	114.9	575.3	591.4
2014	762	899	330	478	89.7	34	123.7	593.5	614.6
2015	805	693	342	495	98.4	37.9	136.3	614.4	637.4
2016	844	756	345	510	93.3	57.9	151.2	635.3	660.4

As StatsNZ explain:

While earning sources are presented in Table 9 for the population that is defined as those Older New Zealanders who are 'In Paid Employment', the table covers their total incomings - and receipts from each category are averaged over the that population in its entirety. For example, there were 114,200 Older New Zealanders who were recorded as receiving Wages and Salaries and/or remuneration from Self-employment in 2013. Averaged across the 114,200, weekly income from Wages and Salaries was \$518 per week.

On the other hand, the data in Table 10 shows that there were 80,000 Older New Zealanders who specifically received Wages and Salaries in 2013 that averaged \$739 per week.

In brief, the arguments advanced by StatsNZ were accepted and the Model has been amended accordingly. The adjustment raises average receipts from Paid Employment by 739/518 or 42.6 percent for 2013, for example.

A full assessment of these issues lies beyond the scope of this Update but the tabulations raise two concerns that could be explored in future work.

1. There is considerable variability by year in the figures for receipts other than Government Transfers, which confirms once again the need to recognize that the Model Projections relating to earnings are subject to significant uncertainty
2. Both StatsNZ data sources suggest that earnings of Older New Zealanders [i.e. receipts other than Government Transfers] have been increasing relatively rapidly in recent years - above the rate of national inflation.

However, as previously noted, the problem with using the data shown in Table 10 for the modelling exercise is that it takes no account of incomings from Investments and Other Transfers – sources of income (rather than earnings) that bear on the 'economic value and business opportunities associated with New Zealand's increasing population of Older People'.

The Updated Model therefore uses data drawn from both Tables 9 and 10.

## **Other Model Calibration Issues**

Given the limited objectives of this Update, it was decided to leave the remaining Input coefficients as they were in the 2014 Update, while applying a general adjustment for inflation 2014-16.

For example, in the case of the proxy value adopted for Unpaid Work, the figure of \$16.10 per hour has been retained [\$16.50 per hour in 2016 \$] as no higher figures have since been justified. Similar arguments for retaining the other 2014 Model Run inputs.

StatsNZ has questioned some of the fine detail of these inputs but has not raised any substantive issues. In all cases, the data concerned has been justified in prior reports of the Business of Ageing Project:

<https://www.msd.govt.nz/about-msd-and-our-work/publications-resources/research/business-of-ageing/>