



# LABOUR FORCE PROJECTIONS

AUSTRALIA

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- For further information about these and related statistics, contact Tim Carlton on Canberra 02 6252 6128, or Client Services in any ABS office as shown on the back cover of this publication.

## NOTES

**ABOUT THIS PUBLICATION** This publication presents projections of the labour force and labour force participation rates by age and by sex for the period 1999–2016. The projections are based on Labour Force Survey participation rate data to December 1998, and the most recently released ABS population projections for the period 1997–2051.

**PROJECTION METHOD** The estimates in this publication are not predictions or forecasts. They show the outcome of extrapolating historic trends in labour force participation rates into the future, and applying them to projections of the population.

These projections represent a reasoned assessment of past trends. Nevertheless, future population growth (or future labour market behaviour) may differ markedly from the assumptions made. For more information about the projection method and the possible impact of the underlying assumptions, see Appendix 1, Appendix 2, and the Technical Notes.

**SYMBOLS AND OTHER USAGES**

ABS Australian Bureau of Statistics  
LFS Labour Force Survey  
OLS Ordinary least squares

As estimates have been rounded, discrepancies may occur between sums of the component items and totals.

W. McLennan  
Australian Statistician

## SUMMARY OF FINDINGS

WHAT ARE THESE PROJECTIONS?

The projections presented in this publication show the outcome for the labour force of extrapolating historic trends in labour force participation rates into the future, and applying them to projections of the population (which have their own assumptions about fertility, mortality and migration). These projections are not forecasts.

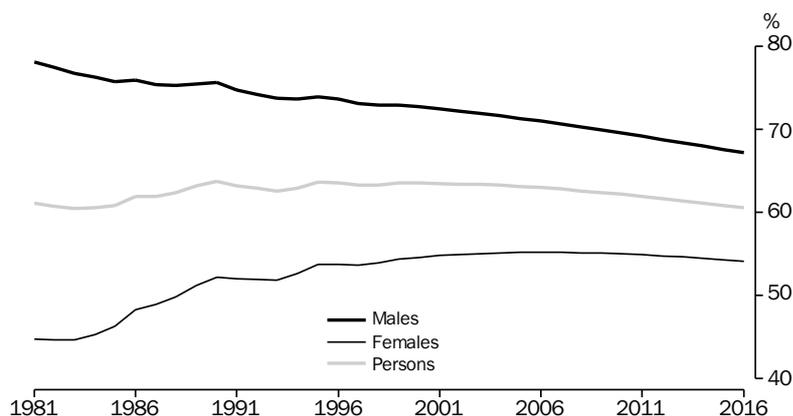
WHAT IS PROJECTED TO HAPPEN TO THE LABOUR FORCE?

Australia's civilian labour force aged 15 and over is projected to grow to 10.8 million in 2016, an increase of 1.5 million or 16% from the 1998 labour force of 9.3 million.

This represents an average annual growth rate of 0.8% between 1998 and 2016 compared with an average annual growth of 1.9% between 1979 and 1998. The annual growth rate is projected to decline from 1.6% in 1998–99 to 0.4% in 2015–16. (See page 8.)

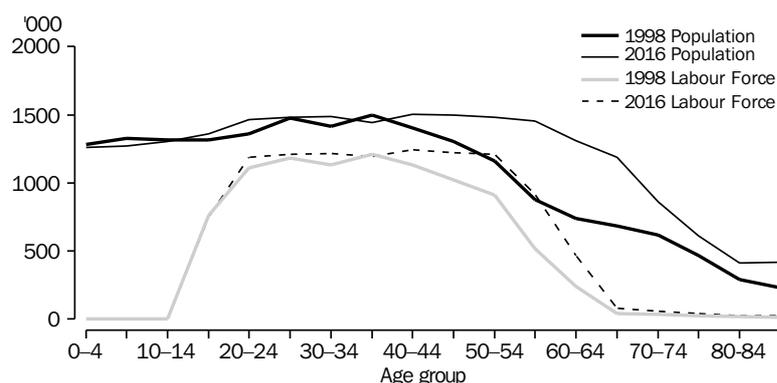
The overall labour force participation rate is projected to decline slightly, to 60.6%. This rate was last experienced in 1984. In 1990, the labour force participation rate peaked at 63.7%—the highest level since it has been measured. It will not reach this level again during the projection period. (See page 9.)

PARTICIPATION RATES ESTIMATES AND PROJECTIONS



The labour force is projected to age quite dramatically, with over 80% of the projected labour force growth occurring in the 45 years and over age group. (See page 8.)

### AGE STRUCTURE OF THE POPULATION AND THE LABOUR FORCE



Source: Unpublished data, Labour Force Projections.

Females are projected to increase from 43% to 45% of the labour force. (See page 9.)

HOW LIKELY IS IT THAT THESE PROJECTIONS WILL EVENTUATE?

The bulk of the labour force in 2016 will be made up of people who are currently alive and in Australia. The size and age distribution of the current Australian population is the most important factor in determining the size and age distribution of the labour force in 2016. Changes in participation rates, and the components of population growth (birth and death rate and overseas migration levels) will have a relatively small impact on the future labour force. (See page 6.)

THE FUTURE WON'T BE LIKE THE PAST

Because of the ageing of the population, population growth will slow. Therefore, it will not be possible for labour force growth to continue at historic rates.

Immigration and labour force participation rates may rise, which would moderate the fall in employment growth. However, any increase in these components is unlikely to be large enough to prevent a significant fall in employment growth from historical levels. (See page 7.)

## AUSTRALIA'S CHANGING DEMOGRAPHIC PROFILE

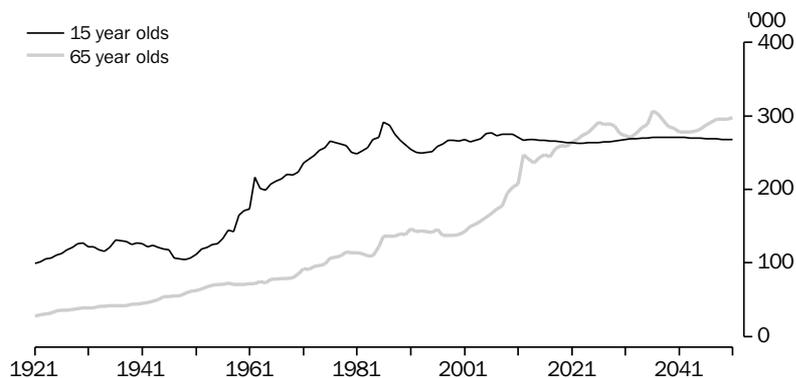
### AGEING

Australia's population is ageing. This is primarily occurring as people born in the baby boom (1947–61) get older. Due to the relatively low fertility of the 1970s, 80s and 90s there are relatively fewer people taking their place in the younger age group. In 1998, 21% of the population were aged 55 years or over; by 2016, this is projected to increase to 29%.

While there are similar numbers of people entering the labour force compared to the recent past, there will be significant growth in the number of people leaving the labour force. The impact of this demographic change on the labour force is illustrated by examining the changing numbers of people turning 15 and 65 years old each year. This gives a broad indication of the entry and exit rates of the labour force.

There will be a significant increase in the number of people turning 65 during the next 20 years, reflecting baby boomers reaching that age. If people tend to retire before 65, then the increase in retirements will occur earlier. Conversely, the number of persons turning 15 years old is projected to remain relatively constant. Irrespective of whether people enter the labour force at 15 or at, say, 24, the number of labour force entrants is likely to be relatively stable.

POPULATION AT SELECTED AGES—1921–2051



Source: Unpublished data, Population Projections and Estimates.

### SLOWING POPULATION GROWTH

Comparatively low fertility in Australia over the last 2 or 3 decades is the primary reason for the ageing of the population (fewer young people means relatively more old people) and a major contributor to the projected slowing in population growth. The number of people moving into the older ages (where death rates are higher) will increase, also slowing population growth rates.

In the 1950s, Australia's population growth averaged 2.3% per year. In the 1960s, this had fallen to 2.0%, and in the 1970s and 1980s to around 1.5% per year. The annual growth rate through the 1990s has been only 1.1% per year. In the first decade of next century, population growth is projected to fall to 0.9% per year, and in the following decade it is projected to drop to 0.7%.

## SLOWING POPULATION GROWTH *continued*

While there will be significant changes in the age structure over this period, the slowing of the growth of the total population will be reflected in a slowing of growth rates of the working age population.

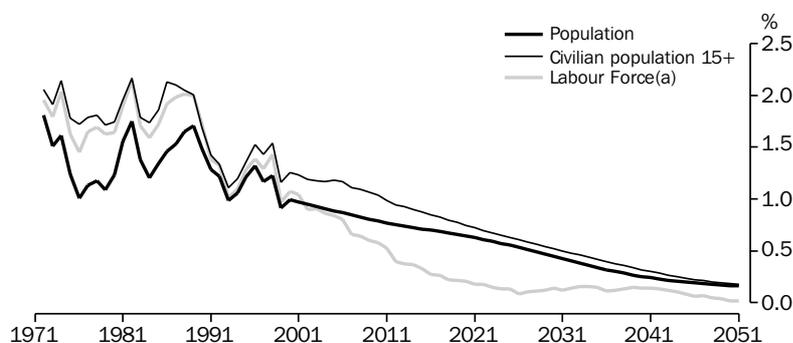
## LONGER TERM IMPACT OF POPULATION GROWTH RATES

The population projections that underlie these labour force projections have been produced for the period 1997–2051.

To illustrate the long-term impact of the changing population on the labour force, the chart below shows 1998 labour force participation rates applied to these population projections.

The growth rate of the total population is projected to fall from 1.3% per year over the last 10 years to about 0.2% per year by the middle of next century. However, most of this growth will be in the older age groups, which have lower labour force participation rates. In this example, therefore, projected labour force growth is even lower than projected population growth, falling below 0.2% a year by 2021, and virtually static by 2051.

PROJECTED RATES OF POPULATION AND LABOUR FORCE GROWTH



(a) Assumes 1998 participation rates apply through period.

Source: Unpublished data, Labour Force Projections.

## SLOWING OF EMPLOYMENT GROWTH

The projected population and labour force suggest a dramatic slowing of employment growth. The likelihood of this outcome is supported by the following:

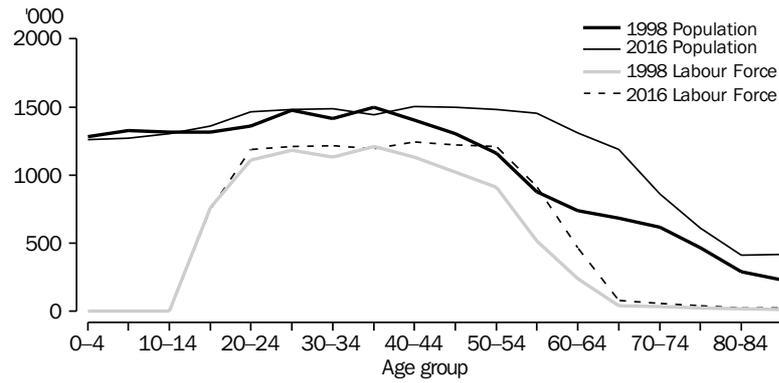
- Population growth from an increase in the birth rate cannot be achieved rapidly. Furthermore, there is an inevitable lag of at least 15 years before any increase could affect the labour force. Therefore, changes to the birthrate are not going to have any significant effect on employment growth.
- Population growth from increased immigration can be achieved by a change in government policy. All other things being equal, to achieve a 1.8% increase in employment each year, Australia's net overseas migration would need to increase from 70,000 per year to 150,000 in the first year of the projection, and up to 280,000 a year by 2016.
- Labour force participation rates could increase. However, to achieve the level of employment growth experienced in recent decades, the participation rate would need to increase to 72%, instead of the projected fall to below 61%.

IMPACTS ON THE AGE  
STRUCTURE OF THE  
LABOUR FORCE

Between 1998 and 2016, Australia's population is projected to increase by 16%, or 3.0 million people, with 94% of this growth among people aged 45 years and over. This demographic shift will be the main driving force behind the changes to the age structure of the labour force. As a result, the labour force is projected to grow by 16%, or 1.5 million people, with 81% of them 45 and over.

In 1998, 10% of the labour force were aged 55 years or over. By 2016, this is projected to be 15%. The number of people retiring each year will, therefore, increase considerably.

AGE STRUCTURE OF THE POPULATION AND THE LABOUR FORCE



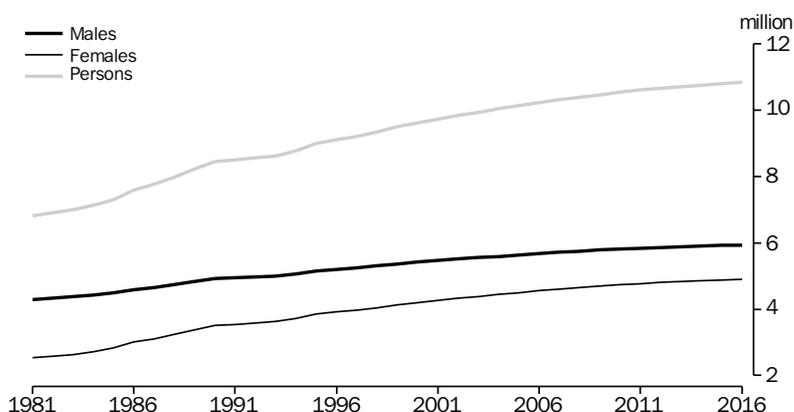
Source: Unpublished data, Labour Force Projections.

## THE PROJECTED LABOUR FORCE

Australia's civilian labour force aged 15 and over is projected to grow to 10.8 million in 2016, an increase of 1.5 million or 16% from the 1998 labour force of 9.3 million. In the first nine years of the projection period, the labour force is projected to grow by 1 million, while in the second nine years it is projected to increase by half a million.

The labour force is projected to grow, on average, by 0.8% per year over the period 1998–2016, compared with average annual growth of 1.9% over the period 1978–98. The average projected growth rate of 0.8% reflects a declining rate of growth from 1.6% in 1998–99 to 0.4% in 2015–2016. At the end of the projection period, the growth rate is expected to be very low by historical standards, and falling.

LABOUR FORCE ESTIMATES AND PROJECTIONS



## AGEING OF THE LABOUR FORCE

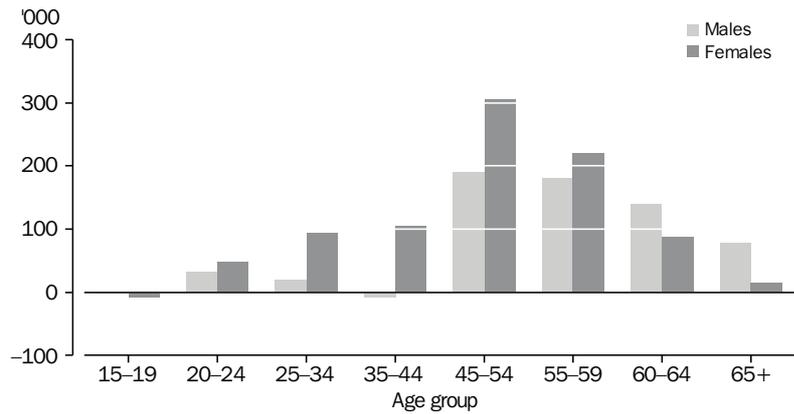
Nearly one-third of the projected growth in the labour force will be among people aged 45–54. This group will grow by nearly 500,000, primarily because 'baby boomers' born between 1951 and 1961 will move into this age group.

The 60–64 years age group will grow most rapidly, both in the population and the labour force. The labour force aged 60–64 is projected to almost double by 2016.

There are projected to be 8,400 fewer 15–19 year olds in the labour force in 2016 than in 1998, representing a fall of 1%.

In 1998, the 20–44 years age group represented 62% of the labour force. However, they will represent only 20% of the growth in the labour force between 1998 and 2016. Males in this age group represented 35% of the labour force in 1998, but will represent only 3% of the growth in the labour force (an additional 44,400 males) between 1998 and 2016.

LABOUR FORCE 1998–2016: PROJECTED GAINS



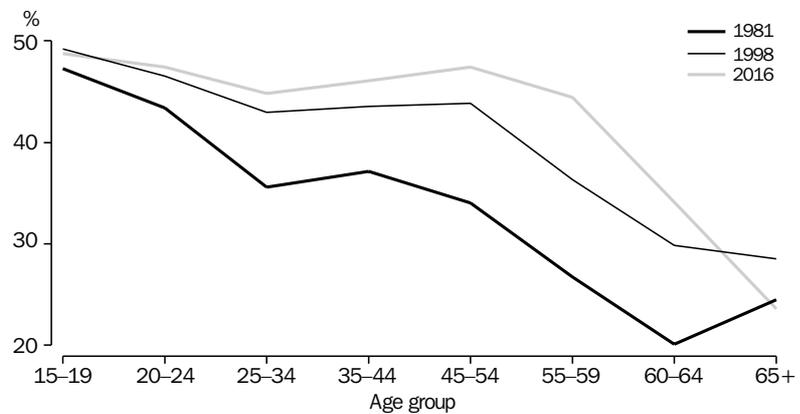
MALES AND FEMALES IN THE LABOUR FORCE

The male labour force is projected to increase by 631,700 to 5.9 million, an average annual growth rate of 0.6% between 1998 and 2016.

The female labour force is projected to increase by 867,600 to 4.9 million, an average annual growth rate of 1.1% between 1998 and 2016.

Females are projected to increase from 43% to 45% of the labour force. This proportion will increase across all age groups except 15–19 years and 65 years and over.

FEMALES AS A PROPORTION OF THE LABOUR FORCE

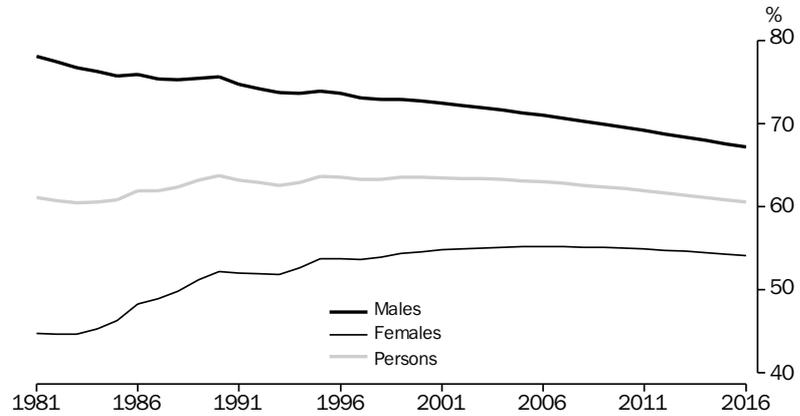


PARTICIPATION RATES

The overall labour force participation rate is projected to decline slightly to 60.6%. The participation rate was last at this level in 1984.

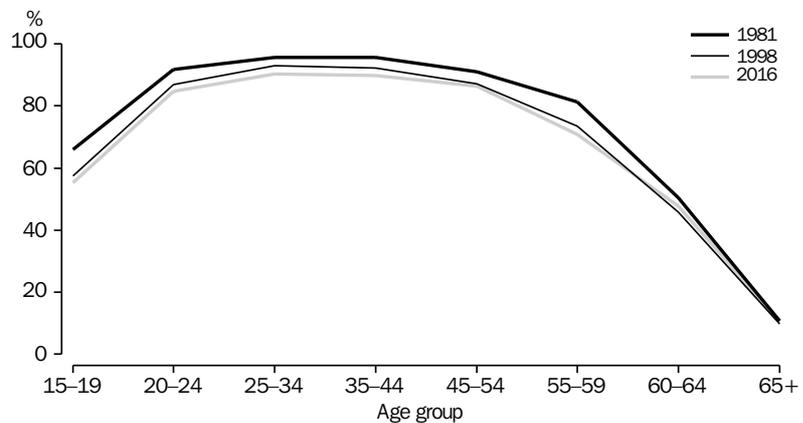
In 1990, the labour force participation rate peaked at 63.7%. This is the highest level since it has been measured, and it is not expected to reach this level again during the projection period.

PARTICIPATION RATES ESTIMATES AND PROJECTIONS



Historically, male participation rates have displayed an inverted U shape, with participation rising steeply from age 15–24, remaining relatively stable from ages 25–55 and then declining sharply. This shape remains for the projection period, although male participation rates are projected to fall for all age groups except those 60 years and over.

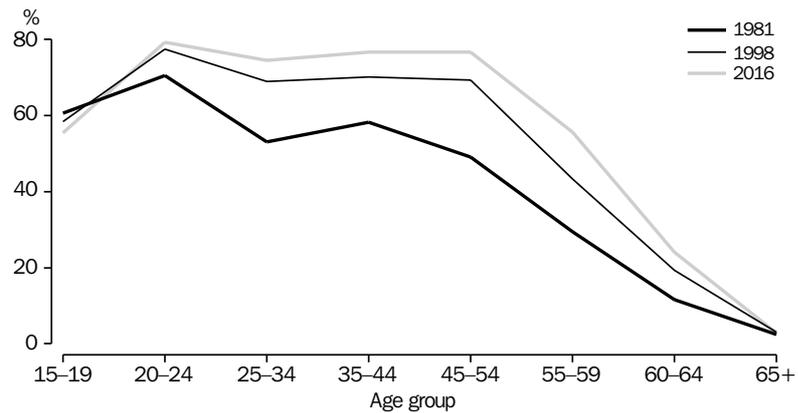
PARTICIPATION RATES—MALES



PARTICIPATION RATES  
continued

Historically, female participation rates have displayed an ‘M’ shape, arising from the lower participation rate of females in the main child-bearing years (25–34). During the 1980s and 90s, there was a trend towards mothers returning to work sooner after the birth of their child. This trend is assumed to continue, thereby flattening the ‘M’ shape of the female participation rate curve further. Female participation is projected to increase in all age groups except those aged 15–19 and 65 and over. The participation rates of females aged 55–59 are projected to increase the most—12 percentage points.

PARTICIPATION RATES—FEMALES



For males, the projected participation rate is influenced heavily by the changing age structure of the population. The projected decline in the participation rate from 73% in 1998 to 67% in 2016 reflects the substantially higher proportion of the male population aged 65 and over, together with a substantial fall in the proportion of males aged 25–44 years.

For females, there are similar changes to the age structure of the population projections but participation rates for most age groups are projected to rise. Overall, increasing female participation rates are projected to counter the ageing effect, with the female participation rate projected to increase slightly to 54%.

1 LABOUR FORCE BY AGE, MALES—1979–2016(a)

	15–19	20–24	25–34	35–44	45–54	55–59	60–64	65 and over	Total
	'000	'000	'000	'000	'000	'000	'000	'000	'000
1979	422.6	555.6	1 115.6	826.9	712.7	293.6	152.4	66.9	4 146.5
1980	428.6	572.7	1 138.0	851.8	705.2	301.9	146.2	66.8	4 211.2
1981	429.2	589.0	1 163.1	884.7	698.9	300.0	147.9	65.9	4 278.9
1982	421.8	596.1	1 178.1	932.4	698.4	298.1	146.9	60.9	4 332.8
1983	401.8	603.2	1 192.2	976.2	700.4	295.0	143.2	59.7	4 371.6
1984	398.6	600.3	1 196.1	1 014.6	709.7	298.5	147.7	61.4	4 426.9
1985	402.3	601.8	1 203.6	1 051.1	713.6	296.7	151.0	62.2	4 482.3
1986	420.9	600.1	1 229.2	1 088.8	729.6	295.9	159.6	62.0	4 586.0
1987	423.9	593.5	1 254.8	1 121.9	741.3	288.0	163.1	65.5	4 652.0
1988	427.8	596.4	1 278.7	1 160.6	758.2	278.3	174.4	70.1	4 744.5
1989	441.9	595.9	1 301.1	1 179.5	791.5	279.1	181.7	71.8	4 842.5
1990	435.3	605.9	1 311.9	1 213.1	830.4	275.5	186.0	74.3	4 932.5
1991	394.8	611.3	1 316.4	1 229.4	861.1	271.4	182.8	74.9	4 942.1
1992	377.7	625.5	1 307.2	1 233.1	896.3	274.0	178.9	79.3	4 971.8
1993	364.3	629.1	1 301.1	1 241.3	936.1	275.3	173.1	74.3	4 994.5
1994	373.3	631.0	1 294.4	1 237.0	968.8	290.2	170.8	85.5	5 051.0
1995	378.4	625.3	1 304.7	1 267.6	1 007.3	301.9	165.4	89.9	5 140.6
1996	388.2	609.6	1 314.8	1 287.4	1 036.7	305.8	163.9	90.8	5 197.2
1997	385.1	595.8	1 318.6	1 304.8	1 053.6	313.4	164.9	99.6	5 235.9
1998	385.8	593.2	1 319.5	1 321.2	1 084.2	329.1	169.0	97.4	5 299.3
1999	391.7	589.5	1 315.9	1 332.5	1 118.6	336.8	180.1	98.7	5 363.8
2000	394.2	587.8	1 316.8	1 337.2	1 139.4	351.3	186.6	101.0	5 414.2
2001	395.9	590.9	1 316.9	1 336.2	1 162.1	365.5	192.9	103.5	5 463.8
2002	395.4	596.3	1 317.9	1 333.0	1 166.6	393.0	198.9	106.3	5 507.4
2003	394.1	603.3	1 317.0	1 329.9	1 177.3	415.8	205.2	109.2	5 551.9
2004	394.0	609.0	1 313.2	1 329.2	1 192.6	429.6	214.9	112.3	5 594.8
2005	396.3	613.4	1 309.0	1 327.1	1 207.9	442.9	224.9	115.6	5 637.0
2006	397.9	616.5	1 298.2	1 329.9	1 226.0	455.7	234.7	119.1	5 678.1
2007	399.5	616.4	1 291.6	1 332.9	1 243.8	451.9	253.0	122.8	5 712.0
2008	401.1	615.0	1 291.4	1 331.6	1 256.9	454.9	268.3	126.7	5 746.0
2009	401.9	615.4	1 294.1	1 328.8	1 267.1	461.6	277.8	131.4	5 777.9
2010	400.7	619.3	1 297.4	1 329.9	1 272.9	465.5	286.9	136.4	5 809.0
2011	398.2	622.2	1 304.6	1 330.3	1 273.5	471.4	295.6	141.5	5 837.3
2012	395.6	625.2	1 310.6	1 331.6	1 272.1	479.3	293.7	148.6	5 856.8
2013	392.9	628.0	1 316.9	1 331.0	1 270.7	485.6	296.2	155.3	5 876.5
2014	390.0	629.8	1 323.7	1 327.5	1 271.5	491.7	301.0	161.6	5 896.8
2015	386.9	628.6	1 332.7	1 323.6	1 271.1	500.6	304.0	168.0	5 915.5
2016	385.0	625.3	1 339.4	1 313.4	1 275.3	509.8	308.2	174.6	5 931.1

(a) Data from 1979 to 1998 are calendar year annual averages. Data from 1999 to 2016 are projections at 30 June.

2 LABOUR FORCE BY AGE, FEMALES—1979–2016(a)

	15–19	20–24	25–34	35–44	45–54	55–59	60–64	65 and over	Total
	'000	'000	'000	'000	'000	'000	'000	'000	'000
1979	375.2	422.7	588.8	475.8	350.8	101.2	38.8	19.1	2372.6
1980	392.5	443.3	619.8	502.0	352.5	107.1	41.3	23.1	2481.7
1981	384.6	451.9	643.4	522.3	361.0	109.6	37.2	21.4	2531.5
1982	376.5	464.0	656.0	556.3	363.3	104.1	36.5	20.5	2577.0
1983	374.2	475.9	671.2	579.5	357.4	107.1	40.9	19.6	2625.8
1984	371.7	483.1	691.7	611.1	379.2	109.1	41.9	20.4	2708.1
1985	377.6	489.4	735.1	661.5	385.5	105.5	43.2	20.2	2818.0
1986	398.9	493.2	787.4	723.3	417.8	111.5	46.4	23.1	3001.6
1987	401.3	495.8	823.0	760.8	435.5	115.1	48.2	25.9	3105.6
1988	402.3	496.9	852.8	819.3	464.9	115.5	51.1	27.2	3230.0
1989	412.6	511.7	894.7	867.3	502.8	118.0	54.8	23.4	3385.4
1990	404.3	525.0	918.3	918.4	537.4	121.9	59.4	26.3	3511.1
1991	369.9	532.1	926.6	928.7	577.1	129.2	56.1	28.1	3547.9
1992	359.2	536.5	928.0	937.7	618.6	131.6	52.3	26.1	3590.2
1993	341.2	539.9	922.9	938.4	660.8	138.7	54.9	27.4	3624.2
1994	359.2	549.5	940.6	949.2	691.9	149.4	55.7	29.6	3725.1
1995	372.6	547.8	962.9	986.3	741.6	157.9	58.7	31.8	3859.6
1996	371.6	537.3	967.8	1009.4	765.9	171.3	64.7	34.3	3922.1
1997	364.8	516.5	983.9	1018.2	807.8	176.2	68.5	36.3	3972.2
1998	373.4	515.3	991.9	1018.1	846.3	187.9	71.9	38.8	4043.6
1999	371.8	516.3	1004.9	1070.5	870.3	190.5	68.8	34.4	4127.4
2000	375.1	515.0	1012.5	1081.9	901.4	203.5	72.0	35.0	4196.3
2001	376.7	519.0	1018.3	1090.0	932.6	216.2	75.5	35.7	4263.9
2002	376.9	523.9	1024.4	1095.6	950.0	237.2	79.1	36.4	4323.4
2003	376.1	531.2	1028.0	1099.7	971.5	256.6	82.8	37.1	4383.0
2004	375.9	538.3	1028.2	1106.2	994.9	271.3	88.2	37.8	4440.9
2005	377.4	544.4	1027.8	1110.4	1018.6	286.2	94.0	38.6	4497.5
2006	379.2	548.1	1021.9	1119.4	1042.4	301.9	99.8	39.5	4552.2
2007	380.6	549.8	1018.3	1127.5	1066.3	307.0	109.4	40.4	4599.2
2008	381.9	550.2	1020.5	1130.7	1085.1	316.5	118.2	41.3	4644.4
2009	382.4	551.2	1026.3	1131.2	1100.7	328.5	124.8	42.5	4687.5
2010	381.1	554.8	1032.7	1134.6	1112.1	338.6	131.5	43.7	4729.1
2011	378.4	558.6	1041.7	1136.3	1120.4	348.6	138.6	45.0	4767.6
2012	375.9	561.8	1049.7	1138.8	1126.0	360.6	140.8	46.9	4800.5
2013	373.2	565.0	1058.5	1138.8	1130.3	371.3	145.1	48.6	4830.8
2014	370.5	567.1	1067.7	1135.6	1137.0	381.4	150.4	50.3	4860.1
2015	367.8	566.5	1078.2	1131.9	1141.5	394.2	154.9	52.1	4887.0
2016	365.9	564.1	1086.6	1122.8	1150.9	407.7	159.4	53.9	4911.2

(a) Data from 1979 to 1998 are calendar year annual averages. Data from 1999 to 2016 are projections at 30 June.

3 LABOUR FORCE BY AGE, PERSONS—1979–2016(a)

	15–19	20–24	25–34	35–44	45–54	55–59	60–64	65 and over	Total
	'000	'000	'000	'000	'000	'000	'000	'000	'000
1979	797.9	978.3	1 704.4	1 302.7	1 063.5	394.9	191.2	86.1	6 519.0
1980	821.2	1 015.9	1 757.9	1 353.8	1 057.8	408.9	187.5	89.9	6 692.9
1981	813.8	1 040.9	1 806.5	1 407.0	1 060.0	409.7	185.1	87.3	6 810.3
1982	798.3	1 060.1	1 834.1	1 488.7	1 061.7	402.1	183.4	81.5	6 909.8
1983	776.0	1 079.0	1 863.4	1 555.7	1 057.8	402.1	184.1	79.3	6 997.4
1984	770.3	1 083.5	1 887.8	1 625.7	1 088.9	407.6	189.6	81.7	7 135.1
1985	779.9	1 091.2	1 938.7	1 712.6	1 099.1	402.2	194.2	82.4	7 300.3
1986	819.8	1 093.3	2 016.6	1 812.1	1 147.4	407.4	206.0	85.0	7 587.6
1987	825.2	1 089.2	2 077.7	1 882.7	1 176.8	403.1	211.3	91.5	7 757.6
1988	830.1	1 093.4	2 131.4	1 979.9	1 223.0	393.8	225.5	97.3	7 974.5
1989	854.5	1 107.6	2 195.8	2 046.8	1 294.3	397.1	236.4	95.2	8 227.8
1990	839.6	1 131.0	2 230.2	2 131.6	1 367.7	397.5	245.4	100.6	8 443.6
1991	764.7	1 143.4	2 243.0	2 158.0	1 438.2	400.6	238.9	103.0	8 490.0
1992	736.9	1 162.0	2 235.2	2 170.8	1 514.8	405.6	231.2	105.4	8 562.0
1993	705.6	1 169.0	2 223.9	2 179.7	1 596.9	414.0	227.9	101.7	8 618.7
1994	732.5	1 180.6	2 235.0	2 186.3	1 660.7	439.6	226.5	115.1	8 776.1
1995	750.9	1 173.1	2 267.6	2 253.9	1 748.9	459.8	224.1	121.8	9 000.1
1996	759.8	1 146.8	2 282.6	2 296.8	1 802.6	477.1	228.6	125.0	9 119.3
1997	749.9	1 112.3	2 302.5	2 323.0	1 861.4	489.7	233.4	136.0	9 208.1
1998	759.2	1 108.5	2 311.4	2 339.2	1 930.5	516.9	240.9	136.2	9 342.9
1999	763.4	1 105.8	2 320.8	2 403.0	1 988.9	527.3	248.9	133.1	9 491.3
2000	769.2	1 102.8	2 329.2	2 419.1	2 040.8	554.8	258.6	136.0	9 610.5
2001	772.6	1 109.9	2 335.1	2 426.2	2 094.7	581.7	268.4	139.2	9 727.6
2002	772.3	1 120.2	2 342.4	2 428.6	2 116.6	630.1	278.0	142.7	9 830.9
2003	770.2	1 134.5	2 345.0	2 429.6	2 148.8	672.4	288.0	146.3	9 935.0
2004	769.9	1 147.4	2 341.5	2 435.4	2 187.5	700.9	303.0	150.1	10 035.7
2005	773.7	1 157.8	2 336.8	2 437.4	2 226.5	729.1	318.9	154.2	10 134.4
2006	777.1	1 164.6	2 320.2	2 449.3	2 268.4	757.6	334.5	158.6	10 230.2
2007	780.1	1 166.2	2 309.9	2 460.4	2 310.0	758.9	362.4	163.2	10 311.2
2008	782.9	1 165.2	2 311.9	2 462.3	2 342.1	771.5	386.5	168.0	10 390.5
2009	784.3	1 166.6	2 320.4	2 460.0	2 367.8	790.0	402.6	173.9	10 465.5
2010	781.8	1 174.1	2 330.1	2 464.5	2 385.0	804.1	418.4	180.1	10 538.1
2011	776.6	1 180.8	2 346.3	2 466.6	2 393.9	819.9	434.2	186.5	10 604.9
2012	771.5	1 187.0	2 360.3	2 470.4	2 398.1	839.9	434.6	195.5	10 657.3
2013	766.1	1 193.0	2 375.4	2 469.8	2 401.0	856.9	441.3	203.9	10 707.4
2014	760.5	1 196.9	2 391.4	2 463.1	2 408.6	873.2	451.4	211.9	10 756.9
2015	754.7	1 195.1	2 410.9	2 455.5	2 412.6	894.8	458.9	220.1	10 802.6
2016	750.8	1 189.4	2 426.0	2 436.3	2 426.2	917.4	467.7	228.5	10 842.3

(a) Data from 1979 to 1998 are calendar year annual averages. Data from 1999 to 2016 are projections at 30 June.

4 LABOUR FORCE PARTICIPATION RATE BY AGE, MALES—1979–2016(a)

	15–19	20–24	25–34	35–44	45–54	55–59	60–64	65 and over	Total
	%	%	%	%	%	%	%	%	%
1979	64.1	90.9	96.2	95.9	91.6	82.1	54.4	11.6	78.4
1980	65.3	91.5	95.9	95.6	91.5	82.6	51.5	11.2	78.3
1981	66.0	91.6	95.5	95.5	90.9	81.2	50.5	10.7	78.0
1982	65.0	90.9	95.6	95.1	90.7	80.1	48.1	9.7	77.4
1983	61.9	91.0	95.5	95.0	90.7	78.5	44.9	9.3	76.7
1984	61.2	90.1	95.3	94.9	90.6	78.0	44.1	9.3	76.3
1985	60.8	90.3	94.6	94.7	89.9	77.1	43.8	9.1	75.8
1986	61.7	90.6	94.9	94.6	90.1	77.0	45.4	8.7	75.9
1987	60.4	90.2	94.9	94.3	89.2	75.8	45.9	8.9	75.3
1988	60.0	90.6	94.6	94.4	88.6	74.3	48.5	9.2	75.2
1989	61.9	89.9	94.6	93.8	89.1	75.2	49.8	9.1	75.4
1990	61.4	89.8	94.4	94.4	89.9	75.0	50.6	9.2	75.6
1991	57.1	88.4	94.5	94.1	89.6	73.7	49.9	8.9	74.7
1992	56.0	88.2	93.8	93.7	88.9	73.2	49.5	9.2	74.2
1993	55.1	87.5	93.5	93.6	89.0	71.7	48.7	8.4	73.7
1994	57.2	87.2	93.0	92.5	88.6	73.2	48.7	9.3	73.6
1995	58.3	88.0	93.1	92.8	89.1	74.1	46.8	9.6	73.9
1996	59.4	87.5	93.2	92.5	88.6	72.7	46.2	9.5	73.6
1997	58.2	86.9	93.0	92.2	87.3	72.3	45.7	10.2	73.1
1998	57.4	87.0	92.8	92.2	87.1	73.5	45.8	9.8	72.9
1999	57.7	87.1	92.7	92.2	87.9	72.2	47.6	9.7	73.0
2000	57.6	87.0	92.6	92.1	87.8	72.0	47.6	9.8	72.7
2001	57.4	86.8	92.4	91.9	87.7	71.9	47.6	9.9	72.5
2002	57.2	86.6	92.3	91.8	87.6	71.7	47.6	9.9	72.2
2003	57.1	86.5	92.1	91.6	87.5	71.6	47.6	10.0	71.9
2004	57.0	86.3	92.0	91.5	87.4	71.5	47.6	10.1	71.6
2005	56.8	86.2	91.9	91.3	87.3	71.4	47.6	10.1	71.3
2006	56.7	86.0	91.7	91.2	87.2	71.3	47.6	10.2	71.0
2007	56.5	85.9	91.6	91.0	87.1	71.2	47.6	10.3	70.6
2008	56.4	85.7	91.4	90.9	87.0	71.1	47.7	10.3	70.2
2009	56.3	85.6	91.3	90.7	86.9	71.1	47.7	10.4	69.9
2010	56.1	85.5	91.2	90.6	86.9	71.0	47.7	10.5	69.5
2011	56.0	85.3	91.0	90.5	86.8	70.9	47.7	10.5	69.2
2012	55.9	85.2	90.9	90.3	86.7	70.9	47.7	10.6	68.8
2013	55.8	85.1	90.8	90.2	86.7	70.8	47.7	10.7	68.3
2014	55.6	84.9	90.6	90.0	86.6	70.8	47.7	10.7	68.0
2015	55.5	84.8	90.5	89.9	86.5	70.8	47.7	10.8	67.6
2016	55.4	84.7	90.4	89.8	86.5	70.7	47.7	10.9	67.2

(a) Data from 1979 to 1998 are calendar year annual averages. Data from 1999 to 2016 are projections at 30 June.

5 LABOUR FORCE PARTICIPATION RATE BY AGE, FEMALES—1979–2016(a)

	15–19	20–24	25–34	35–44	45–54	55–59	60–64	65 and over	Total
	%	%	%	%	%	%	%	%	%
1979	58.6	69.3	51.0	57.2	47.1	27.8	12.8	2.4	43.6
1980	61.5	71.0	52.4	58.2	47.7	28.9	13.4	2.8	44.8
1981	60.5	70.5	53.1	58.2	49.0	29.5	11.6	2.5	44.7
1982	59.6	70.9	53.4	58.5	49.3	28.0	11.0	2.4	44.6
1983	59.5	71.9	53.9	58.1	48.3	28.7	11.9	2.2	44.7
1984	59.0	73.0	55.0	59.1	50.7	29.1	11.7	2.2	45.3
1985	59.1	74.2	57.5	61.4	50.9	28.2	11.9	2.1	46.3
1986	60.6	75.4	60.6	64.6	54.2	30.1	12.6	2.4	48.3
1987	59.3	76.4	62.0	65.4	55.1	31.4	13.1	2.6	48.9
1988	58.5	76.7	63.0	67.9	57.0	31.9	13.8	2.6	49.9
1989	59.9	77.9	64.7	69.8	59.4	32.7	14.8	2.2	51.2
1990	59.3	78.6	65.7	72.0	61.0	33.9	16.0	2.4	52.2
1991	55.8	77.5	65.9	71.3	62.8	35.9	15.2	2.5	52.0
1992	55.7	76.5	65.9	71.1	64.1	35.9	14.4	2.3	51.9
1993	54.1	76.2	65.6	70.4	65.5	36.9	15.3	2.3	51.8
1994	57.8	77.5	66.8	70.3	65.7	38.7	15.8	2.5	52.6
1995	60.2	78.3	68.0	71.4	67.8	39.8	16.4	2.6	53.7
1996	59.6	78.4	67.7	71.7	67.3	42.0	18.1	2.8	53.8
1997	57.8	76.8	68.5	71.1	68.5	41.9	18.8	2.9	53.7
1998	58.3	77.4	69.0	70.1	69.3	43.4	19.4	3.0	53.9
1999	57.4	78.4	70.0	73.1	69.3	42.2	18.1	2.6	54.4
2000	57.3	78.5	70.5	73.5	70.0	43.0	18.5	2.7	54.6
2001	57.2	78.6	70.9	73.8	70.7	43.8	18.8	2.7	54.8
2002	57.1	78.7	71.3	74.2	71.3	44.6	19.2	2.7	54.9
2003	56.9	78.8	71.7	74.4	71.9	45.4	19.5	2.7	55.0
2004	56.8	78.9	72.0	74.7	72.4	46.2	19.9	2.7	55.1
2005	56.7	78.9	72.3	75.0	72.9	47.0	20.2	2.7	55.2
2006	56.6	79.0	72.6	75.2	73.4	47.8	20.6	2.7	55.2
2007	56.5	79.0	72.9	75.4	73.8	48.5	20.9	2.7	55.2
2008	56.3	79.1	73.1	75.6	74.3	49.3	21.2	2.8	55.1
2009	56.2	79.1	73.4	75.7	74.6	50.1	21.6	2.8	55.1
2010	56.1	79.1	73.6	75.9	75.0	50.9	21.9	2.8	55.0
2011	56.0	79.1	73.8	76.0	75.3	51.7	22.3	2.8	54.9
2012	55.8	79.2	74.0	76.2	75.6	52.5	22.6	2.8	54.8
2013	55.7	79.2	74.1	76.3	75.9	53.3	23.0	2.8	54.6
2014	55.6	79.2	74.3	76.4	76.2	54.1	23.3	2.8	54.5
2015	55.5	79.2	74.4	76.5	76.4	54.9	23.7	2.8	54.3
2016	55.4	79.2	74.5	76.6	76.7	55.6	24.0	2.9	54.1

(a) Data from 1979 to 1998 are calendar year annual averages. Data from 1999 to 2016 are projections at 30 June.

6 LABOUR FORCE PARTICIPATION RATE BY AGE, PERSONS—1979-2016(a)

	15-19	20-24	25-34	35-44	45-54	55-59	60-64	65 and over	Total
	%	%	%	%	%	%	%	%	%
1979	61.4	80.1	73.6	76.9	69.8	54.7	32.7	6.3	60.8
1980	63.4	81.2	74.2	77.2	70.1	55.6	31.6	6.4	61.3
1981	63.3	81.1	74.4	77.1	70.4	55.3	30.1	6.0	61.1
1982	62.4	80.9	74.5	77.0	70.4	54.1	28.8	5.4	60.8
1983	60.7	81.5	74.7	76.8	69.9	53.7	27.8	5.2	60.4
1984	60.1	81.5	75.1	77.3	71.1	53.9	27.4	5.2	60.6
1985	59.9	82.3	76.0	78.3	70.8	53.0	27.4	5.1	60.8
1986	61.1	83.1	77.7	79.8	72.6	54.0	28.7	5.1	61.9
1987	59.9	83.3	78.4	80.0	72.6	54.0	29.2	5.2	62.0
1988	59.2	83.7	78.8	81.3	73.2	53.4	31.0	5.4	62.4
1989	60.9	84.0	79.6	81.9	74.6	54.3	32.2	5.2	63.2
1990	60.4	84.2	80.0	83.3	75.8	54.7	33.3	5.3	63.7
1991	56.4	83.0	80.1	82.7	76.5	55.0	32.5	5.3	63.2
1992	55.9	82.4	79.8	82.4	76.8	54.8	31.9	5.3	62.9
1993	54.6	81.9	79.5	82.0	77.5	54.5	32.0	4.9	62.6
1994	57.5	82.4	79.8	81.3	77.4	56.2	32.2	5.5	63.0
1995	59.2	83.2	80.5	82.1	78.6	57.2	31.5	5.7	63.7
1996	59.5	83.0	80.4	82.0	78.1	57.6	32.1	5.7	63.5
1997	58.0	81.9	80.7	81.6	78.0	57.4	32.2	6.1	63.2
1998	57.8	82.3	80.8	81.1	78.3	58.7	32.6	6.0	63.3
1999	57.6	82.8	81.3	82.6	78.6	57.5	32.8	5.7	63.5
2000	57.4	82.8	81.5	82.7	78.9	57.7	33.1	5.8	63.5
2001	57.3	82.8	81.6	82.8	79.2	58.0	33.3	5.8	63.5
2002	57.2	82.7	81.8	82.9	79.4	58.4	33.5	5.9	63.4
2003	57.0	82.7	81.9	83.0	79.7	58.7	33.7	5.9	63.3
2004	56.9	82.6	82.0	83.0	79.9	59.0	33.9	6.0	63.3
2005	56.8	82.6	82.1	83.1	80.1	59.3	34.0	6.0	63.1
2006	56.6	82.5	82.2	83.1	80.3	59.6	34.2	6.1	63.0
2007	56.5	82.5	82.3	83.1	80.4	59.9	34.4	6.1	62.8
2008	56.4	82.4	82.3	83.1	80.6	60.2	34.5	6.2	62.6
2009	56.2	82.4	82.4	83.2	80.8	60.5	34.7	6.2	62.4
2010	56.1	82.3	82.4	83.2	80.9	60.9	34.8	6.3	62.2
2011	56.0	82.3	82.5	83.2	81.0	61.3	35.0	6.3	61.9
2012	55.9	82.2	82.5	83.2	81.1	61.6	35.1	6.4	61.7
2013	55.7	82.2	82.5	83.2	81.3	62.0	35.2	6.4	61.4
2014	55.6	82.1	82.5	83.2	81.4	62.4	35.4	6.5	61.1
2015	55.5	82.1	82.5	83.2	81.4	62.7	35.5	6.5	60.9
2016	55.4	82.0	82.5	83.2	81.5	63.1	35.7	6.5	60.6

(a) Data from 1979 to 1998 are calendar year annual averages. Data from 1999 to 2016 are projections at 30 June.

7 LABOUR FORCE AND CIVILIAN POPULATION BY SEX—1979–2016(a)

	<i>Labour force</i>			<i>Civilian population(b)</i>		
	<i>Males</i>	<i>Females</i>	<i>Persons</i>	<i>Males</i>	<i>Females</i>	<i>Persons</i>
	'000	'000	'000	'000	'000	'000
1979	4 146.5	2 372.6	6 519.0	5 286.0	5 443.7	10 729.7
1980	4 211.2	2 481.7	6 692.9	5 375.5	5 543.6	10 919.1
1981	4 278.9	2 531.5	6 810.3	5 482.3	5 657.4	11 139.7
1982	4 332.8	2 577.0	6 909.8	5 595.7	5 772.7	11 368.4
1983	4 371.6	2 625.8	6 997.4	5 698.6	5 879.4	11 578.0
1984	4 426.9	2 708.1	7 135.1	5 805.5	5 978.3	11 783.7
1985	4 482.3	2 818.0	7 300.3	5 916.8	6 089.2	12 006.0
1986	4 586.0	3 001.6	7 587.6	6 045.3	6 215.1	12 260.4
1987	4 652.0	3 105.6	7 757.6	6 174.5	6 346.1	12 520.7
1988	4 744.5	3 230.0	7 974.5	6 306.1	6 477.7	12 783.8
1989	4 842.5	3 385.4	8 227.8	6 418.5	6 608.5	13 027.0
1990	4 932.5	3 511.1	8 443.6	6 525.1	6 720.5	13 245.6
1991	4 942.1	3 547.9	8 490.0	6 615.8	6 821.5	13 437.3
1992	4 971.8	3 590.2	8 562.0	6 699.4	6 911.6	13 611.0
1993	4 994.5	3 624.2	8 618.7	6 777.9	6 993.8	13 771.7
1994	5 051.0	3 725.1	8 776.1	6 860.2	7 078.3	13 938.5
1995	5 140.6	3 859.6	9 000.1	6 953.1	7 181.3	14 134.4
1996	5 197.2	3 922.1	9 119.3	7 056.7	7 293.8	14 350.5
1997	5 235.9	3 972.2	9 208.1	7 160.2	7 398.5	14 558.7
1998	5 299.3	4 043.6	9 342.9	7 268.7	7 502.5	14 771.2
1999	5 363.8	4 127.4	9 491.3	7 352.1	7 592.1	14 944.1
2000	5 414.2	4 196.3	9 610.5	7 444.7	7 686.7	15 131.4
2001	5 463.8	4 263.9	9 727.6	7 537.9	7 780.5	15 318.4
2002	5 507.4	4 323.4	9 830.9	7 628.7	7 872.0	15 500.8
2003	5 551.9	4 383.0	9 935.0	7 719.5	7 963.3	15 682.8
2004	5 594.8	4 440.9	10 035.7	7 811.0	8 054.7	15 865.7
2005	5 637.0	4 497.5	10 134.4	7 905.3	8 148.5	16 053.8
2006	5 678.1	4 552.2	10 230.2	7 999.0	8 241.8	16 240.7
2007	5 712.0	4 599.2	10 311.2	8 089.6	8 332.0	16 421.6
2008	5 746.0	4 644.4	10 390.5	8 179.4	8 421.7	16 601.1
2009	5 777.9	4 687.5	10 465.5	8 267.9	8 510.1	16 778.0
2010	5 809.0	4 729.1	10 538.1	8 355.0	8 597.3	16 952.3
2011	5 837.3	4 767.6	10 604.9	8 438.4	8 681.7	17 120.1
2012	5 856.8	4 800.5	10 657.3	8 518.7	8 763.1	17 281.7
2013	5 876.5	4 830.8	10 707.4	8 597.8	8 843.8	17 441.6
2014	5 896.8	4 860.1	10 756.9	8 675.4	8 923.2	17 598.6
2015	5 915.5	4 887.0	10 802.6	8 751.2	9 001.3	17 752.5
2016	5 931.1	4 911.2	10 842.3	8 825.2	9 078.0	17 903.2

(a) Data from 1979 to 1998 are calendar year annual averages. Data from 1999 to 2016 are projections at 30 June.

(b) Aged 15 years and over.

8 LABOUR FORCE AND CIVILIAN POPULATION BY SEX, PERCENTAGE ANNUAL CHANGE—1980–2016(a)

	<i>Labour force</i>			<i>Civilian population(b)</i>		
	<i>Males</i>	<i>Females</i>	<i>Persons</i>	<i>Males</i>	<i>Females</i>	<i>Persons</i>
	%	%	%	%	%	%
1980	1.6	4.6	2.7	1.7	1.8	1.8
1981	1.6	2.0	1.8	2.0	2.1	2.0
1982	1.3	1.8	1.5	2.1	2.0	2.1
1983	0.9	1.9	1.3	1.8	1.8	1.8
1984	1.3	3.1	2.0	1.9	1.7	1.8
1985	1.3	4.1	2.3	1.9	1.9	1.9
1986	2.3	6.5	3.9	2.2	2.1	2.1
1987	1.4	3.5	2.2	2.1	2.1	2.1
1988	2.0	4.0	2.8	2.1	2.1	2.1
1989	2.1	4.8	3.2	1.8	2.0	1.9
1990	1.9	3.7	2.6	1.7	1.7	1.7
1991	0.2	1.0	0.5	1.4	1.5	1.4
1992	0.6	1.2	0.8	1.3	1.3	1.3
1993	0.5	0.9	0.7	1.2	1.2	1.2
1994	1.1	2.8	1.8	1.2	1.2	1.2
1995	1.8	3.6	2.6	1.4	1.5	1.4
1996	1.1	1.6	1.3	1.5	1.6	1.5
1997	0.7	1.3	1.0	1.5	1.4	1.5
1998	1.2	1.8	1.5	1.5	1.4	1.5
1999	1.2	2.1	1.6	1.1	1.2	1.2
2000	0.9	1.7	1.3	1.3	1.2	1.3
2001	0.9	1.6	1.2	1.3	1.2	1.2
2002	0.8	1.4	1.1	1.2	1.2	1.2
2003	0.8	1.4	1.1	1.2	1.2	1.2
2004	0.8	1.3	1.0	1.2	1.1	1.2
2005	0.8	1.3	1.0	1.2	1.2	1.2
2006	0.7	1.2	0.9	1.2	1.1	1.2
2007	0.6	1.0	0.8	1.1	1.1	1.1
2008	0.6	1.0	0.8	1.1	1.1	1.1
2009	0.6	0.9	0.7	1.1	1.0	1.1
2010	0.5	0.9	0.7	1.1	1.0	1.0
2011	0.5	0.8	0.6	1.0	1.0	1.0
2012	0.3	0.7	0.5	1.0	0.9	0.9
2013	0.3	0.6	0.5	0.9	0.9	0.9
2014	0.3	0.6	0.5	0.9	0.9	0.9
2015	0.3	0.6	0.4	0.9	0.9	0.9
2016	0.3	0.5	0.4	0.8	0.9	0.8

(a) Annual percentage change is based on calendar year annual averages from 1980 to 1998 and on projections at 30 June from 1999 to 2016. The percentage annual change for 1999 should therefore be treated with caution. See the Explanatory Notes for more information.

(b) Aged 15 years and over.

## EXPLANATORY NOTES

**1** This publication contains estimates of the civilian labour force and participation rates for Australia derived from the Labour Force Survey for the period 1979 to 1998, and projections of the labour force and participation rates for Australia for the period 1999–2016.

## REFERENCE PERIODS

**2** Estimates of the labour force for the period up to 1998 are presented as annual (calendar year) averages of original estimates. Corresponding participation rates were compiled by dividing the annual average labour force estimate by the annual average of the civilian population aged 15 years and over.

**3** Projections of the civilian population are as at 30 June each year. Projected monthly participation rates were produced, with participation rates for June of each year being selected.

## AVERAGE ANNUAL GROWTH RATE

**4** The average annual growth rate,  $r$ , is calculated as a percentage using the formula

$$r = \left( \sqrt[n]{\frac{x_1}{x_0}} - 1 \right) \times 100$$

where  $x_0$  is the estimate at the start of the period,  $x_1$  is the estimate at the end of the period and  $n$  is the length of the period in years.

## COMPARING PROJECTED AND SOURCE DATA

**5** For simple comparison, data in this publication show:

- calendar year averages of original estimates up to 1998, and
- projected 30 June data from 1999 onwards.

**6** The following table shows the difference between the annual average labour force and the regression-based labour force estimates, in 1998 as a proportion of the annual average. Overall, the regression-based labour force for 1998 is 0.3% larger than the annual average.

LABOUR FORCE—DIFFERENCE, ANNUAL AVERAGE VS REGRESSION—1998

	Males	Females	Persons
	%	%	%
15–19	0.6	-1.5	-0.4
20–24	0.0	0.8	0.4
25–34	0.0	0.8	0.3
35–44	0.2	3.6	1.7
45–54	0.9	-1.2	0.0
55–59	-1.9	-4.8	-3.0
60–64	3.8	-8.4	0.2
65 and over	-1.1	-13.0	-4.5
Total	0.2	0.3	0.3

Source: Unpublished data, Labour Force Projections

## UNPUBLISHED DATA

**8** Projections of full-time/part-time participation rates have also been produced, but are not incorporated in this publication. More information on these can be obtained from Ruel Abello on Canberra 02 6252 5511 or [Ruel.Abello@abs.gov.au](mailto:Ruel.Abello@abs.gov.au).

## RELATED PUBLICATIONS

**9** A full description of the concepts and terms used in relation to the labour force, along with detailed data are available in *Labour Force, Australia* (Cat. no. 6203.0), which is issued monthly. The method used to produce population projections, along with detailed results are available in *Population Projections, 1997 to 2051* (Cat. no. 3222.0).

**10** Other ABS publications which may also be of interest include:

*Information Paper: Measuring Employment and Unemployment*  
(Cat. no. 6279.0)—latest issue 1995

*Labour Force Projections, Australia, 1995 to 2011* (Cat. no. 6260.0)  
—issued July 1994

*Labour Force Projections, Australia 1992 to 2005* (Cat. no. 6260.0)  
—issued November 1991

Current publications produced by the ABS are listed in the *Catalogue of Publications and Products, Australia* (Cat. no. 1101.0). The ABS also issues, on Tuesdays and Fridays, a *Release Advice* (Cat. no. 1105.0) which lists publications to be released in the next few days. The Catalogue and Release Advice are available from any ABS office.

## APPENDIX 1

### SENSITIVITY OF THE PROJECTIONS TO CHANGED ASSUMPTIONS

The labour force projections in this publication are not predictions or forecasts. They show the outcome of extrapolating historic trends in labour force participation rates into the future, and applying them to projections of the population (which have their own stated assumptions about fertility, mortality and migration).

In understanding these projections, it is important to bear in mind that the size and age distribution of the current population will largely determine future labour force size and age distribution. Therefore, the projected labour force is not very sensitive to assumptions about population growth or participation rates. More importantly still, past trends in population growth, labour force growth and participation rates cannot all continue at their current rates.

The current size and age structure of the population is the largest factor determining the size and age structure of the Australian population in 2016. People alive and in Australia now will form the basis of that population; they will just be 17 years older (although some will have died). The size and age distribution of the population in 2016 will form the basis of the size and age structure of the labour force. This gives a certain amount of stability to the projections and reduces the relative importance of the assumptions. Ageing of the population and slowing of population growth rates are likely to have a much greater impact on the size and nature of the labour force than changing participation rates.

Population projections are generated by applying assumed fertility and mortality rates to a base population, ageing the population one year and adding an assumed number of migrants. Projected participation rates are generated by extrapolating past trends within certain parameters. More information on these techniques is available in the Technical Notes.

The assumptions represent a reasoned assessment of past trends. Nevertheless, future population growth (or future labour market behaviour) may differ markedly from these assumptions. The projection method and assumptions have been deliberately chosen for simplicity. Users may make different assessments and may choose to apply different assumptions.

#### SENSITIVITY OF PROJECTIONS TO ASSUMPTIONS ABOUT POPULATION GROWTH

Fertility Only babies born by 2001 can be in the labour force by 2016. Therefore, regardless of what assumptions are made about the fertility rate, the impact on the labour force projections will be relatively small.

## SENSITIVITY OF PROJECTIONS TO ASSUMPTIONS ABOUT POPULATION GROWTH *continued*

Mortality	Very few people are in the labour force when they die. In 1997, people aged 65 and over accounted for 78% of deaths in Australia. As this age group has a relatively low participation rate, to have any significant impact on the size of the labour force the realised death rate would have to be very different to the assumed gradual decline.
Overseas migration	Migrants tend to be from the age groups with relatively high labour force participation. Therefore, any change in migration levels is likely to be reflected in a broadly similar change in the labour force. The population projections assumed net overseas migration of 70,000 people per year. If the actual average net overseas migration was, say, 80,000 per year then allowing for the fertility and mortality of this group, by 2016 the population would be around 210,000, or 1%, larger.

## SENSITIVITY OF PROJECTIONS TO ASSUMPTIONS ABOUT PARTICIPATION RATES

In using the projections of the labour force or of participation rates, users may wish to consider how close the projected trends are to what they believe will eventuate. The projections basically assume that long-term trends in participation rates will continue over the projection period. This assumption implies that the social and economic forces that have changed labour force participation rates over the past two decades will continue for the next two decades. Some of the forces that have influenced labour force participation have been:

- the severity, length, and frequency of the business cycle
- labour market law and regulation
- interaction between the Australian economy and international markets
- age at retirement
- school retention rates and participation in education
- perceptions about the likelihood of finding work
- family roles and responsibilities
- structural and technological changes to the economy
- wage levels
- attitudes towards leisure and family life relative to work
- housing affordability.

Users may also be interested in assessing how well the historical data fits the projection data. The Technical Notes detail the method used to project the participation rates. For each sex and age group, a regression line was produced and projected forward. These are graphed on pages 25 and 26 along with the underlying estimates from which they were produced. As can be seen, some series show a more discernible trend than others.

SENSITIVITY OF PROJECTIONS TO ASSUMPTIONS ABOUT PARTICIPATION RATES *continued*

For example, the participation rate trend for 25–34 year old males has been much more consistent than for, say, 60–64 year old males. However, this does not necessarily indicate that the 25–34 year old male projection will be a better prediction than that of 60–64 year old males.

PROJECTED LABOUR FORCE PARTICIPATION RATES

Assumptions about participation rates have an impact on the size of the projected labour force. One way of assessing this impact is to compare the labour force level derived from the projected participation rates with results using 1998 participation rates (in other words, constant 1998 participation rates to 2016).

As an example, participation rates for males aged 65 and over have been interpreted to have slowly increased since 1985. On the other hand, the rate could be interpreted as being relatively stable. Making this alternative assumption removes 17,900 people from the projected labour force in 2016, or 0.2% of the labour force. Similarly, users may believe that changes in the participation rate of females aged 35–44 in the recent past are much more likely to continue than the trend over the past 20 years.

The table below shows the impact of holding constant participation rates for each sex and age category. For example, if male participation rates were to fall as projected, but female rates stabilised, then there would be 396,800 fewer females than projected in the labour force, making the labour force 3.7% smaller than projected.

The analysis illustrates that the projections are sensitive to changes in participation rates. However, it gives no indication of possible limits of variation from the assumptions underlying the projection.

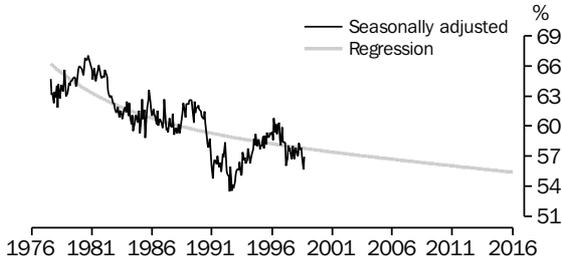
10 SENSITIVITY OF PROJECTED LABOUR FORCE TO PARTICIPATION RATE

	<i>Projected change, participation rate—1998–2016</i>			<i>Labour force—2016—impact of no change assumption</i>					
	<i>Males</i>	<i>Females</i>	<i>Persons</i>	<i>Males</i>	<i>Females</i>	<i>Persons</i>	<i>Males</i>	<i>Females</i>	<i>Persons</i>
	<i>percentage points</i>	<i>percentage points</i>	<i>percentage points</i>	<i>'000</i>	<i>'000</i>	<i>'000</i>	<i>%</i>	<i>%</i>	<i>%</i>
15–19	-2.0	-3.0	-2.5	13.7	19.6	33.4	0.1	0.2	0.3
20–24	-2.3	1.8	-0.2	16.6	-12.9	3.7	0.2	-0.1	0.0
25–34	-2.5	5.6	1.7	36.3	-81.4	45.0	0.3	-0.8	-0.4
35–44	-2.4	6.5	2.1	35.1	-94.6	-59.6	0.3	-0.9	-0.5
45–54	-0.7	7.3	3.2	9.7	-110.2	-100.5	0.1	1.0	-0.9
55–59	-2.8	12.3	4.4	20.1	-89.8	-69.6	0.2	-0.8	-0.6
60–64	1.9	4.6	3.1	-12.5	-30.6	-43.2	-0.1	-0.3	-0.4
65 and over	1.1	-0.2	0.6	-17.9	3.1	-14.8	-0.2	0.0	-0.1
Total	-5.7	0.2	-2.7	101.2	-396.8	-295.5	0.9	-3.7	-2.7

Source: Unpublished data, Labour Force Projections.

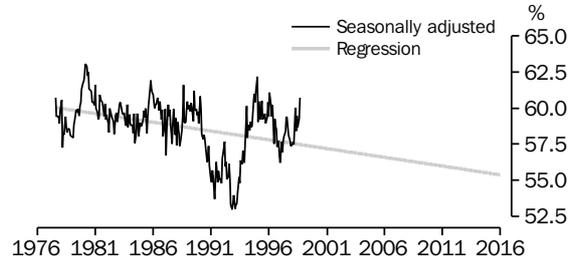
PROJECTED LABOUR FORCE PARTICIPATION RATES

MALES 15–19 YEARS



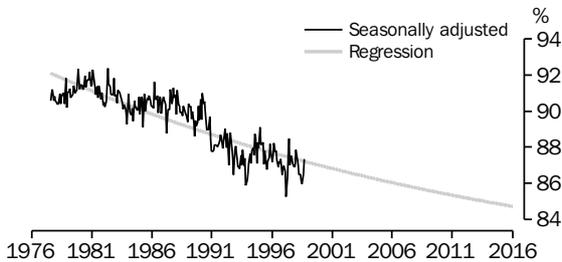
Source: Unpublished data, Labour Force Survey.

FEMALES 15–19 YEARS



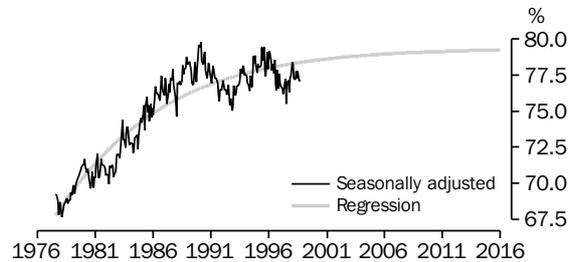
Source: Unpublished data, Labour Force Survey.

MALES 20–24 YEARS



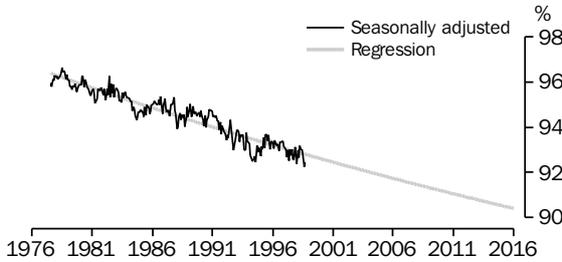
Source: Unpublished data, Labour Force Survey.

FEMALES 20–24 YEARS



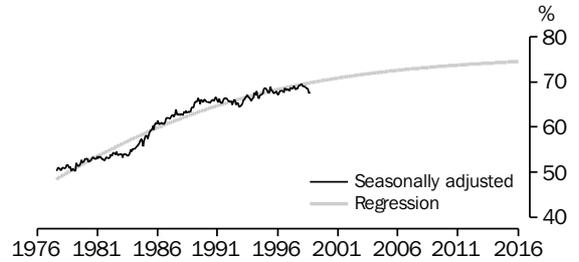
Source: Unpublished data, Labour Force Survey.

MALES 25–34 YEARS



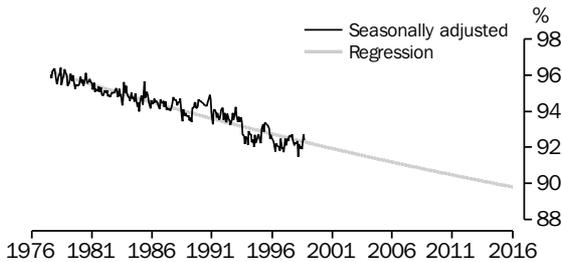
Source: Unpublished data, Labour Force Survey.

FEMALES 25–34 YEARS



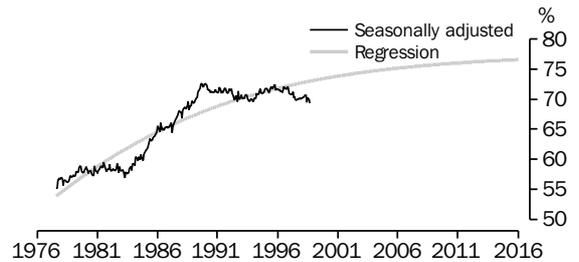
Source: Unpublished data, Labour Force Survey.

MALES 35–44 YEARS



Source: Unpublished data, Labour Force Survey.

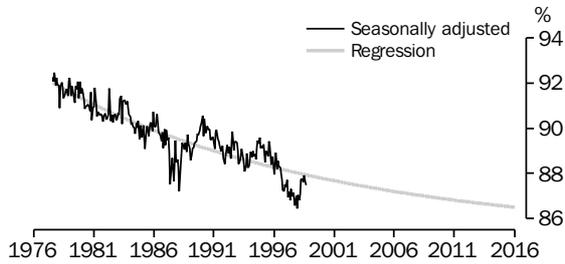
FEMALES 35–44 YEARS



Source: Unpublished data, Labour Force Survey.

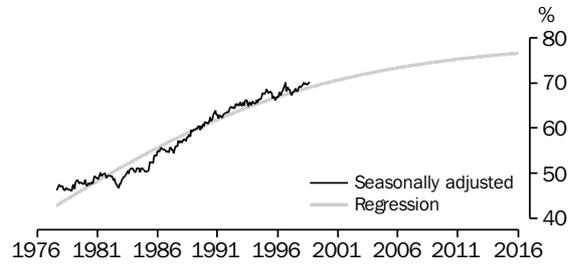
PROJECTED LABOUR FORCE PARTICIPATION RATES *continued*

MALES 45–54 YEARS



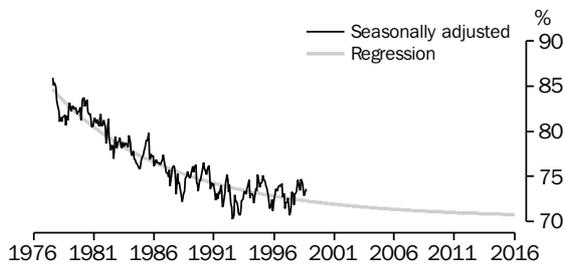
Source: Unpublished data, Labour Force Survey.

FEMALES 45–54 YEARS



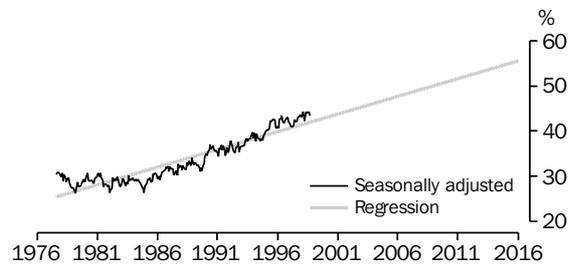
Source: Unpublished data, Labour Force Survey.

MALES 55–59 YEARS



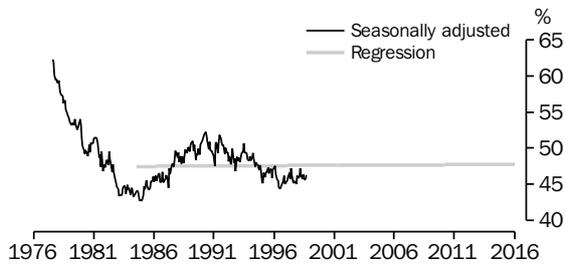
Source: Unpublished data, Labour Force Survey.

FEMALES 55–59 YEARS



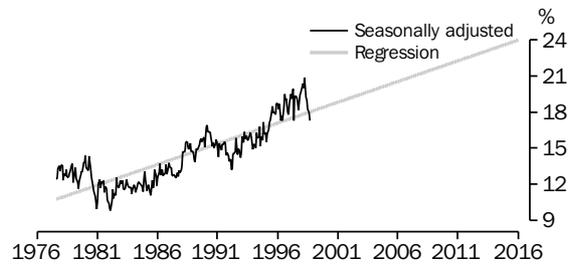
Source: Unpublished data, Labour Force Survey.

MALES 60–64 YEARS



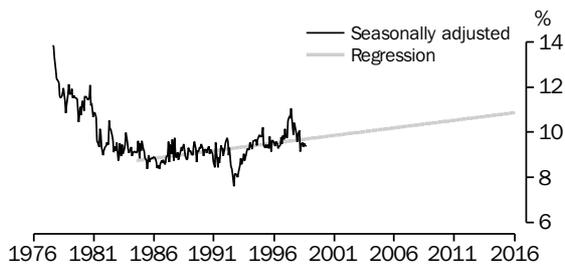
Source: Unpublished data, Labour Force Survey.

FEMALES 60–64 YEARS



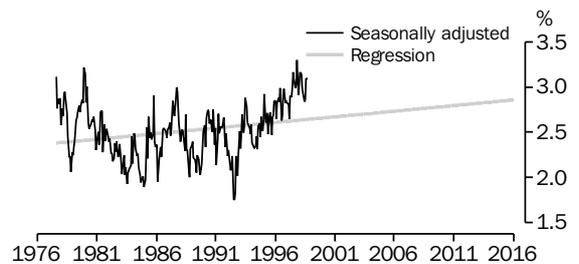
Source: Unpublished data, Labour Force Survey.

MALES 65 YEARS AND OVER



Source: Unpublished data, Labour Force Survey.

FEMALES 65 YEARS AND OVER



Source: Unpublished data, Labour Force Survey.

## APPENDIX 2

### HOW DO THE CURRENT PROJECTIONS COMPARE WITH PAST PROJECTIONS?

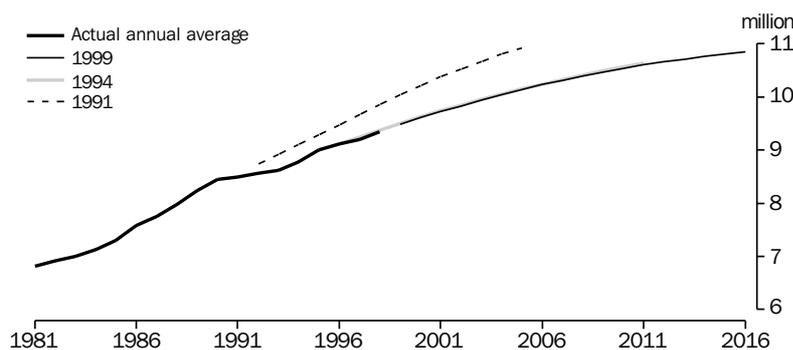
In 1991, the ABS first released labour force projections—for the period 1992–2005. These projected one set of participation rates onto two different population projections. This resulted in the labour force growing to either 10.9 million or 10.7 million by 2005.

In 1994, the ABS released labour force projections covering the period 1995–2011. These projected that the labour force would grow at a significantly slower rate than the previous projections, reaching either 10.1 or 10.3 million by 2005, and 10.6 or 10.9 million by 2011.

This edition of labour force projections has similar growth to Series A in 1994 with a difference of only 27,000 in 2011.

While there are differences in the method used to generate the three sets of projections produced to date, these differences have little impact on the results of the projections. More information is available in the Technical Notes.

LABOUR FORCE, VARIOUS PROJECTIONS(a)



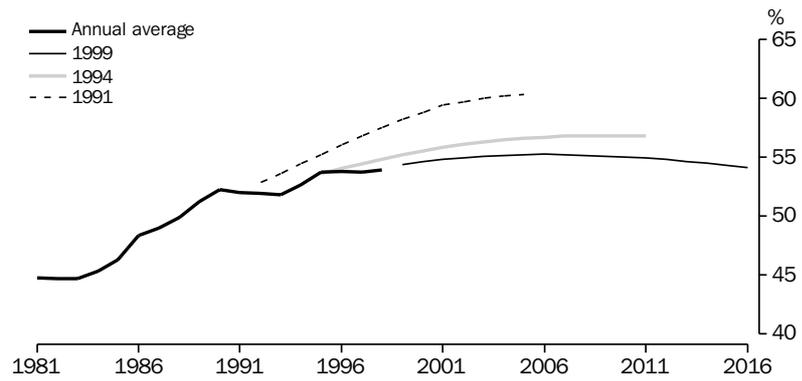
(a) Only Series A from the 1991 and 1994 publications have been shown.

Source: *Labour Force Projections, Various editions (Cat. no. 6260.0)*

One reason for the difference between these projections is the change in assumptions about net overseas migration. The 1991 projections were based on population projections published in 1989. Reflecting the high migration levels prevailing in the late 1980s, Series A in these projections assumed net overseas migration of 125,000 per year.

The other change in assumptions over the past two editions has been the decrease in the assumed female participation rate. During the 1980s, female participation rates increased rapidly. In the 1991 projections, this trend was assumed to continue. However, by the second edition, a slower growth in female participation rates during the early 1990s had occurred. The assumed rate of growth in female participation was, therefore, revised downwards. With female participation levelling off in the mid to late 1990s, growth in female participation rates have again been revised downwards from the previous issue.

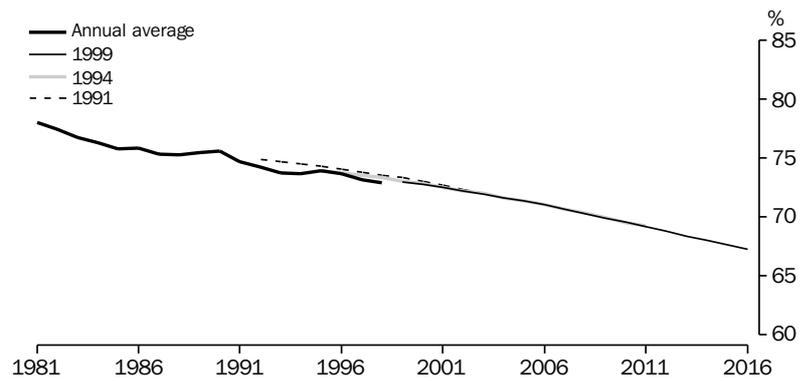
PARTICIPATION RATES, FEMALES—VARIOUS PROJECTIONS



Source: Labour Force Projections, Various editions (Cat. no. 6260.0)

Conversely, the trends in male participation rates during the 1980s has continued throughout the 1990s. As a result there have been virtually no changes to the projected male participation rate.

PARTICIPATION RATES, MALES—VARIOUS PROJECTIONS

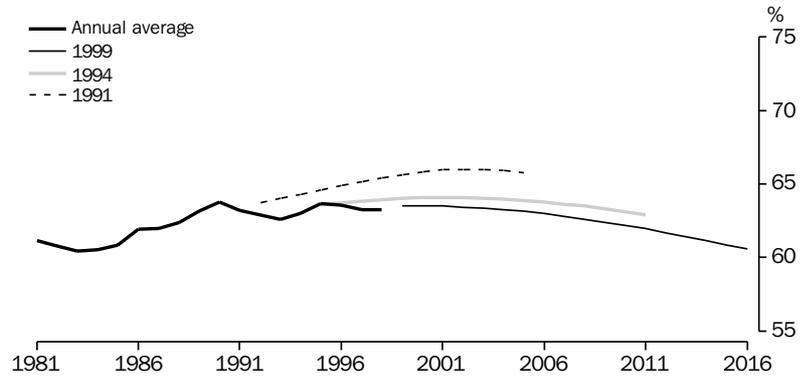


Source: Labour Force Projections, Various editions (Cat. no. 6260.0)

With female rates revised downwards, and male rates virtually unchanged, the total projected participation rate has been revised downwards.

All series have reflected ageing of the Australian population. With increasing population in the older age groups where participation rates are low, and with relatively fewer people replacing them, each series has been projected to fall by the end of the projection period. The first two editions projected the participation rate to peak in 2002. This edition projects that the participation rate will fall throughout the projection period.

PARTICIPATION RATES, PERSONS—VARIOUS PROJECTIONS



Source: *Labour Force Projections, Various editions (Cat. no. 6260.0)*

## TECHNICAL NOTES

The size of the labour force is determined by two major factors:

- the size and age-sex structure of the population;
- age-sex labour force participation rates.

Projections of the labour force are produced by projecting both these components independently, and then applying the projected labour force participation rates to the projected population.

A summary of how these two components have been projected is included below. More information on the population projections is available from *Population Projections, 1997 to 2051* (Cat. no. 3222.0) which was published in 1998. Any inquiries regarding the methodology used in constructing the participation rate projections should be directed to Ruel Abello, Analytical Services Section, ABS, Canberra, on 02 6252 5511 or Ruel.Abello@abs.gov.au. An unpublished technical paper is also available. Projections of the full-time/part-time participation rates have also been produced, but are not incorporated in this publication. More information on these can be obtained from the same person.

### PROJECTING THE POPULATION

Population projections are produced using a cohort component method. The method took the 1997 population by single year of age, then for each subsequent year:

- applied an assumed set of age specific birth rates to estimate half of the number of babies born;
- applied an assumed age-specific death rate, to age the population one year;
- added an assumed level of net overseas migration;
- applied an assumed set of age specific birth rates to estimate the other half of the number of babies born.

Projection series were then prepared, based on the following assumptions about future fertility, mortality, and migration:

- The total fertility rate (the number of babies a woman can expect to have during her lifetime given the age specific birth rates of the period) would either remain fairly stable at 1.75 babies per woman, or would fall to 1.6 babies per woman.
- The rate of change of mortality experienced in recent years would continue.
- Net overseas migration would either reflect historical levels and remain at around 70,000 annually, or rise to a net annual intake of around 90,000.

PROJECTING THE  
POPULATION *continued*

The table below summarises the population projections series based on these assumptions. In preparing projections of the labour force, only Series II population projections have been used. There is relatively little difference between the different population series by 2016.

POPULATION PROJECTION SERIES

	<i>Assumptions</i>	
	<i>Total fertility rate</i>	<i>Net overseas migration no.</i>
I	1.75 (H)	90 000 (H)
II	1.75 (H)	70 000 (L)
III	1.6 (L)	70 000 (L)

Note: L=Low Level  
H=High Level.

Source: *Population Projections, 1997 to 2051 (Cat. no. 3222.0)*.

The projected population was converted to projected civilian population, by assuming that defence force numbers would remain stable at average 1998 levels. While defence force numbers have been slowly falling over the longer term, an assumption of 55,600 defence force personnel being held constant is unlikely to result in any significant bias over the span of the projections.

The uncertainty about the future size of the labour force is as dependent upon uncertainty about participation rates as it is about population levels. As only one assumption is given for participation rates, only one has been used for population projections.

PROJECTING LABOUR FORCE  
PARTICIPATION RATES

The ABS has twice before published a set of labour force projections, each covering a period of more than ten years. The first publication, in 1991, covered the period 1992–2005 and relied almost exclusively upon simple time-trend regression techniques to project participation rates. The second publication, in 1994, projected the labour force from 1995–2011. It still made use of time-trend regressions but the precise estimation techniques were different. The participation rates for some cohorts were projected by a combination of linear and logistic time-trend regressions, while in other cohorts, constant participation rates were assumed. These techniques were discussed in detail in *Working Papers in Econometrics and Applied Statistics: No. 94/1 (Sep 1994): Australian Labour Force Projections, 1995 to 2011 (Cat. no. 1351.0)*

The modifications to the technique used in the 1995–2011 projections reflected a decision to allow the data to play a greater role in determining projection paths. The participation rates for several age groups in the 1992–2005 projections were pre-determined—largely on the basis of international comparisons. In the 1995–2011 projections, the data was allowed to determine its end-point rate and curvature, while still constraining the projections to fall within a certain range.

PROJECTING LABOUR FORCE  
PARTICIPATION RATES

*continued*

The current set of projections, covering the period 1999–2016, use methods similar to those used in the 1995–2011 projections, based on time-trend regressions. The use of time-trend regression is deemed the most cost-effective approach in long-term rates projection, where the objective is to provide a scenario which might be realised if the necessarily arbitrary assumptions about these rates eventuate. Other approaches, such as the use of univariate time series and econometric behavioural models, often only provide short-term projections or offer explanations for observed historical trends.

Monthly employment and unemployment data were seasonally adjusted for 16 age-sex groups for the period 1978–99. These were added together, and then divided by the corresponding civilian population age-sex group to produce monthly seasonally adjusted participation rates. These participation rates were used to estimate the linear and logistic trend equations.

Three basic methods were considered to project rates for the various age-sex groups:

- constant participation rates: assuming that the participation rate will remain at a constant level for future periods;
- linear trends: fitting a linear trend to the participation rates, using the ordinary least squares (OLS) regression technique, and then extrapolating the linear trend; and
- logistic trends: fitting a logistic trend to the participation rates using a non-linear least squares methodology, and then extrapolating the fitted trend. In some instances male and female rates for the same age-group were modelled simultaneously, applying a restriction which forces the two trends to approach a common long-term rate.

The plausibility of the projections was also cross-checked with trends in part-time and full-time participation rates.

Constant rates

Assuming a constant rate in future periods is the simplest technique for extrapolating participation rates. The constant rate is set to the average participation rate calculated over the last 5–10 years. This technique is most suitable for either very stable participation rates, or for cases where the data are highly irregular and no sensible trend can be readily detected.

Linear trends    Linear trend extrapolation involves fitting the regression equation

$$P_t = \alpha + \beta T + \varepsilon_t$$

where

T            is a linear time-trend;

P<sub>t</sub>           is the participation rate in time period t;

ε<sub>t</sub>           is the residual in time period t; and

α, β        are the parameters to be estimated;

by OLS methods.

The parameters from this regression are used to extrapolate into the future. Linear trends are commonly used to extrapolate participation rates which are well behaved and only gradually declining or increasing over time. Clearly, linear trends cannot be extrapolated indefinitely since participation rates are bounded. It is important, therefore, that participation rates at the end of the projection period be plausible and explicable.

Logistic trends    Logistic trend extrapolation involves fitting the non-linear regression equation

$$P_t = 1 / (K + \alpha \beta^T) + \varepsilon_t$$

where

T            is a linear time-trend;

P<sub>t</sub>           is the participation rate in time period t;

ε<sub>t</sub>           is the residual in time period t; and

K, α, β     are the parameters to be estimated.

The parameter K is the inverse of the asymptote; α is the intercept on the P axis, i.e. T = February 1978; and β is the rate at which the modelled participation rate changes from its initial value to its asymptotic value, 1 / K.

In each logistic model, β < 1. Therefore the trend converges asymptotically to the value 1 / K. The logistic regression may be fitted to either increasing or decreasing data, and is particularly suitable for data which:

- display indications of tapering growth rates; and/or
- are constrained to lie within a specified range of values (for example, 0 to 1).

Other forms of the logistic function were also tested and fitted to the data. None of these forms was found to provide better estimates in terms of goodness of fit and ease of estimation (convergence).

Logistic trends *continued*

The estimation technique may be adapted to allow simultaneous estimation of male and female participation rates within the same age group. If the two logistic trends are constrained to have a common value of  $K$ , then it can be seen that the extrapolated trends will converge to the same rate. This approach is useful in cases where, in the absence of this constraint, the projected male and female participation rates would cross within the projection period.

#### ASSESSMENT OF THE METHODOLOGIES

The time series characteristics of the participation rates tended to support the use of linear or logistic time-trend regressions.

For each age-sex group, OLS regression was used to fit a linear time-trend to the data. If the extrapolated linear trend was found to be implausible an alternative trend was derived. Depending on the characteristics of the data, either a constant assumption was employed, or a logistic time-trend was fitted. Different forms of logistic regression were assessed.

Indicators of implausible trends include:

- female participation rates exceeding male participation rates for any given age group; and
- the ratio between the participation rates of consecutive age-sex groups changing dramatically.

To better understand the trend in participation rates, it was necessary to look at corresponding part-time and full-time rates. The trends in part-time and full-time rates were used to confirm the likely movement in the overall rate.

Statistical criteria were used in the evaluation process, in particular, measures of the goodness of fit of the respective trend estimates were examined. Examination of the age profiles of labour force participation was used to check that differences between consecutive age groups were reasonable and plausible.

#### LIMITATIONS OF THE METHODOLOGY

Extrapolation of trend using time regressions does not take into account other economic or social variables which may influence participation rates in the future. The projection's long-term trend may not be similar to what is observed in the most recent periods. Therefore, changes in trends cannot be readily identified.

## ANALYSIS BY AGE GROUP

A summary table showing the estimation technique chosen for each age-sex group is shown below. Graphs of the participation rate data and projections for each age-sex group are shown in Appendix 1.

### SUMMARY OF PROJECTION METHODOLOGY

Age group	Males	Females
15–19	Logistic on ratio	Linear
20–24	Logistic, simultaneous with female	Logistic, simultaneous with male
25–34	Logistic, simultaneous with female	Logistic, simultaneous with male
35–44	Logistic, simultaneous with female	Logistic, simultaneous with male
45–54	Logistic, simultaneous with female	Logistic, simultaneous with male, constrained not to exceed female 20–24
55–59	Logistic	Linear
60–64	Linear; estimation period starts January 1985	Linear
65 and over	Linear; estimation period starts January 1985	Linear

Source: Unpublished data, Labour Force Projections.

## 15–19 YEAR OLDS

Projecting the male participation rate with a linear trend produced a scenario where female rates exceed male rates. A logistic trend regression was used to project the ratio of the male and female participation rates asymptotically approaching one.

Non-linear estimation was used to fit the equation:

$$r_t = 1 / (K + \alpha \cdot \beta^T) + \varepsilon_t$$

where

T is a linear time-trend;

$r_t$  is the ratio of the male and female participation rates in time period t;

$\varepsilon_t$  is the residual in time period t; and

$\alpha, \beta$  are the parameters to be estimated

K set to one, constraining the ratio from falling below unity.

The fitted values of the ratio were then multiplied by the linear female participation rate trend to produce a male trend projection that tapers over time to approach the female trend.

## 20–54 YEAR OLDS

The 20–54 year olds have been broken into four groups: those aged 20–24, 25–34, 35–44 and 45–54. These age groups have all behaved in relatively similar fashions over the previous two decades.

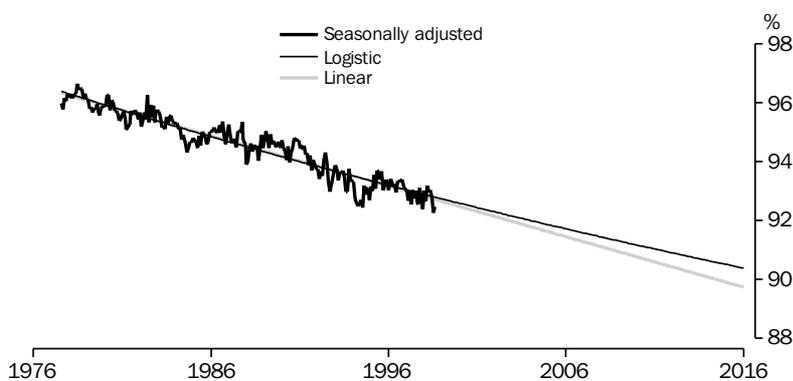
The participation rates for males in the 20–24, 25–34, 35–44 and 45–54 age-groups have all shown downward trends. Rates for females, on the other hand, have increased. In most of the female age groups, a significant period of increase occurred between 1983 and 1991–92.

Since the 1991–92 recession, female participation rates have increased at a slower rate.

Fitting a linear trend on the steeply rising female participation means female rates will exceed or nearly exceed a slowly declining male linear trend within the projection period. To avoid this intersection, logistic trends were fitted to the male and female data simultaneously. This ensures the male and female projections converge but don't cross.

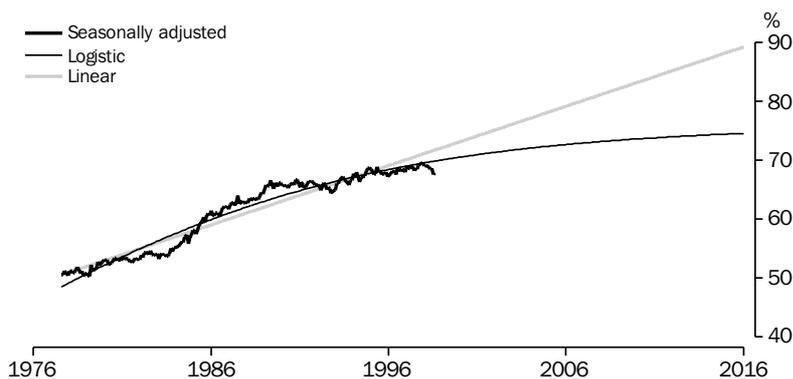
Both male and female rates approach a common asymptote. Because female growth has started to slow, this is assumed to continue. The resulting female participation rate approaches the asymptote relatively rapidly, while the male rate remains close to linear throughout the projection period.

COMPARISON OF TRENDS FOR 25–34 YEAR OLD MALES



Source: Unpublished data, Labour Force Survey.

COMPARISON OF TRENDS FOR 25–34 YEAR OLD FEMALES



Source: Unpublished data, Labour Force Survey.

55–59 YEAR OLDS

Participation rates for males were decreasing while female rates were increasing. For males, a logistic time-trend was deemed appropriate as a linear trend would produce rapidly declining rates. Also, the logistic curve fitted historical data better than the linear one. For female participation rates, a linear trend was fitted.

## 60–64 YEAR OLDS

The participation rate of males aged 60–64 years fell rapidly as World War II veterans entered this age group in the early 1980s. This was a once-off impact which has been excluded from the analysis. A linear trend was applied to data from 1985.

For females, a linear trend was also fitted but it was estimated using the full period of data. Historically, female participation in this age group has been growing at a faster pace than the male rate due, primarily, to growth in part-time employment.

## PEOPLE AGED 65 AND OVER

Previously, male and female participation for this age group appeared to be stable. They were projected using the constant rate assumptions. However, since the last projections in 1994, the rates have been increasing moderately. A linear trend was therefore used instead of the constant rate. For males, the estimation period covered only the years 1985–99 (as in the previous age group).

## COMPARISON WITH PREVIOUS PROJECTIONS

Appendix 2 showed the differences between the results of this and previous editions of this publication. These differences are caused by four factors:

- participation rate regressions are based on extra data, including the period since the last set of projections were published.
- for some age-sex groups data was from January 1985, instead of February 1978.
- for some age-sex groups the constraints, and the choice between constant assumptions, linear regressions, and logistic regressions were changed from those used in previous editions.
- the base population and the assumptions involved in the population projections were also changed from those used in previous editions.

Please refer to the previous issues for more information on these differences and to Appendix 2 for more information on the results of these differences.

## GENERATING PROJECTED LABOUR FORCE

For each age-sex group, the projected participation rates are simply the extrapolated regression results. The labour force in each age-sex group is the projected rate multiplied by the projected civilian population in each group. The total labour force (males, females, persons) is the sum of these results. Lastly, participation rates for males, females and persons are calculated from the respective labour force and population totals.

## GLOSSARY

**Age-specific fertility rates** Age-specific fertility rates are the live births registered during the calendar year, according to the age of the mother, per 1,000 of the female resident population of the same age as estimated for 30 June.

**Civilian population** The usually resident population of Australia aged 15 years and above excluding:

- members of the permanent defence forces;
- certain diplomatic personnel of overseas governments, customarily excluded from census and estimated populations;
- overseas residents in Australia; and
- members of non-Australian defence forces (and their dependents) stationed in Australia.

**Employed** Persons aged 15 and over who, during the reference week:

- worked for one hour or more for pay, profit, commission or payment in kind in a job or business, or on a farm (employees, employers and own account workers); or
- worked for one hour or more without pay in a family business or on a farm (i.e. contributing family workers); or
- were employees who had a job but were not at work and were: on paid leave; on leave without pay for less than four weeks up to the end of the reference week; stood down without pay because of bad weather or plant breakdown at their place of employment for less than four weeks up to the end of the reference week; on strike or locked out; on workers' compensation and expected to be returning to their job; or receiving wages or salary while undertaking full-time study; or
- were employers, own account workers or contributing family workers who had a job, business or farm, but were not at work.

**Labour force** For any group, persons who were employed or unemployed, as defined.

**Labour force status** A classification of the civilian population aged 15 and over into employed, unemployed or not in the labour force, as defined. The definitions conform closely to the international standard definitions outlined by the International Labour Organisation.

<b>Not in the labour force</b>	Persons who are not in the categories employed or unemployed, as defined. They include persons keeping house (unpaid), retired, voluntarily inactive, permanently unable to work, persons in institutions (hospitals, gaols, sanatoriums, etc.), trainee teachers, members of contemplative religious orders and persons whose only activity during the reference week was jury service or unpaid voluntary work for charitable organisations.
<b>Participation rate</b>	For any group, the labour force expressed as a proportion of the civilian population aged 15 and over in the same group.
<b>Seasonally adjusted series</b>	Seasonal adjustment is a means of removing the estimated effects of normal seasonal variation from the series so that the effects of other influences on the series can be more clearly recognised. Seasonal adjustment does not remove the irregular or non-seasonal influences which may be present in any particular month.
<b>Unemployed</b>	Persons aged 15 and over who were not employed during the reference week, and: <ul style="list-style-type: none"> <li>■ had actively looked for full-time or part-time work at any time in the four weeks up to the end of the reference week; and</li> <li>■ were available for work in the reference week, or would have been available except for temporary illness (i.e. lasting for less than four weeks to the end of the reference week); or</li> <li>■ were waiting to start a new job within four weeks from the end of the reference week and would have started in the reference week if the job had been available then; or</li> <li>■ were waiting to be called back to a full-time or part-time job from which they had been stood down without pay for less than four weeks up to the end of the reference week (including the whole of the reference week) for reasons other than bad weather or plant breakdown.</li> </ul>
<b>Unemployment rate</b>	For any group, the number unemployed persons, expressed as a percentage of the labour force (the employed plus unemployed) in the same group.

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