



Research note

**Queensland State and regional household and  
dwelling projections 2006-31**

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## Overview

This set of household and dwelling projections for Queensland and Statistical Divisions is a revision of the household projections published in 2006 by OESR. The current projections are based on 2006 census data and the 2008 medium series population projections, whereas the set they replace was based on 2001 census data and the 2006 series population projections. This new series of household projections was developed using the propensity method, as was the 2006 series.

Although the 2008 series population projections are significantly higher than the 2006 series, the new household projections are only slightly higher than the set they replace. There are two main reasons for this:

1. Almost 35% of the higher population (at 2026) is made up of persons aged 0-14, who make no contribution to household numbers under the propensity method;
2. The projected rate of decline in average household size in the new projections is lower than previously projected, which offsets the higher population.

## Methodology

### Households

A brief description of methodology is provided here. A more comprehensive description of the propensity method is available in the report provided for the previous set of household projections in 2006.

As mentioned above, the 2008 series of household projections was developed using the propensity method, as was the 2006 series. This involves the calculation of the propensity for each person of a given age, and sex, to belong to a particular living arrangement. The resulting propensities are then applied to the projected population in each Statistical Division by age and sex to derive a distribution of persons which was summed to give a projection of total persons by living arrangement.

For the 2008 projections, the propensity for persons in each age-sex group to reside in a particular living arrangement was projected by extrapolating the average rate of change in each age/sex/living arrangement propensity over the period 1996-2006. The rate of change was held constant for the period 2006-11; then set at half that rate of change for 2011-16, one quarter for 2016-21 and no further change for 2021-26 or 2026-31. In the absence of extended time series data and appropriate modelling, these assumptions are necessarily somewhat arbitrary and crude, but they broadly imply a shift towards a steady state based on a flattening of trends observed over the past decade.

One change compared with the 2006 series projections is that for the 2008 series every living arrangement was disaggregated by sex as well as age, while in the 2006 series disaggregation by sex was confined to lone parents and lone persons.

The propensity method does not account for variations in the number of projected children. As a result, some adjustment was needed to projected propensities for couples and lone parents, to avoid excessive volatility, at SD level, in the ratios of children to parents.

The projected numbers of persons by living arrangement were converted first to families and then to households, by household type, through the use of multipliers:

- For couples with or without children, the number of families was assumed to be exactly half of the number of parents.
- For lone parent families, the number of families was assumed to be equal to the number of lone parents.
- For other families, the number of persons in this family type was multiplied by the inverse of the average number of usual residents in this family type at the 2006 census.
- The number of families, in each family type, was multiplied by the ratio of family households to families recorded at the 2006 census, to obtain the number of family households of each type.
- The number of persons in group households was converted to the number of group households by multiplying by the inverse of the average number of usual residents in this household type at the 2006 census.
- The number of lone person households was assumed to be equal to the number of lone persons.

Note that all family and household types, other than couples with children and lone parents, by definition, contain only adults. Where the conversions described above used multipliers derived from the 2006 census, these were calculated separately for each SD and the State, and were held constant throughout the projections.

Another change implemented for the current series of projections was to maintain non-classifiable households as a discrete category. At the census, where the census collector ascertains that a dwelling is occupied on census night but is unable to make contact with the occupants, and they do not return the census form which is left at the dwelling, the household type is recorded as 'not classifiable'. The ABS imputes usual residents by age, sex and marital status for these dwellings. These dwellings and the imputed population in them accounted for about 4% of all occupied dwellings in 2006. It is not possible to identify the types of households involved in these non-contact dwellings and hence they cannot be re-allocated across other household types. The number of households in this category has doubled over the decade to 2006, with a comparable increase in propensities by age and sex. For projection purposes the propensity for persons to be recorded in a 'not classifiable' household were held constant.

Projections of households by household type for SDs were adjusted pro-rata to sum to those for total Queensland. It should be noted that for the smaller SDs, projections of household types which are few in number should be treated with caution, as the small numbers of persons recorded as living in those dwellings at the Census could have been distorted by ABS randomisation procedures.

### Dwellings

Although propensities are calculated using the living arrangements recorded at the census for usual residents, they are applied to the base population and projections based on estimated resident population (ERP). One product of this is that the total number of households at the base year as identified in the projections differs from that recorded at the Census. However, the way in which households are identified at the Census also has implications for calculating the number of vacant dwellings, and hence for projecting the total dwelling stock

There are three key points to consider when deriving dwelling projections from the household projections:

1. At the census, dwellings are categorised as occupied or vacant on census night, so where all usual residents were counted away from home their dwelling would be recorded as vacant;
2. ERP includes allowances for persons temporarily overseas, or in Australia but not counted in the census, so their dwellings may also be counted as vacant;
3. Dwellings occupied only by visitors are recorded as occupied, but living arrangements on a usual resident basis exclude those households.

These considerations mean that the number of dwellings not normally occupied by the estimated resident population may be more or less than the number of dwellings recorded as vacant at the census. It would therefore be inappropriate to simply apply the vacancy rate as observed at the Census to the ERP-based projections.

For the purposes of the projections reported here, it has been assumed that the Census count of private structural dwellings is correct, and that the difference between this count of total private dwellings, and the number of households at the base year on an ERP basis, is taken to represent the true number of vacant dwellings. The ratio of vacant dwellings (so defined) to total dwellings has been held constant to produce the projections of vacant dwellings and total dwellings presented in this report.

It is possible that this approach understates the true number of dwellings, as although under-enumeration of persons is incorporated in the calculation of ERP, there is no corresponding adjustment for any under-enumeration of dwellings.

### **Difference to previous series**

Although the 2008 series population projections are significantly higher than the 2006 series, the new household projections are only slightly higher than the set they replace.

The 2006 series projections applied the average rate of change in propensity for each age group in each living arrangement over the 1986-2001 period to project the change for 2001-06, half that rate for 2006-11, one quarter for 2011-16, and no change 2016 onwards. A consequence of this approach was that the rapid rates of change over the 1986-96 period impacted significantly on the projected change for 2001-06. The derivation of projected rates of change for the 2008 series, described previously, sets aside the rapid rates of change in the early 90s.

As evidenced by the 2006 Census results, inclusion of the (rapid) early 1990s rates of change in the 2006 projections led to an under-projection of couples with children and an over-projection of lone persons, resulting in an overestimate of the decline in average household size compared with the actual change subsequently observed for 2001-06. The following table illustrates this at the Queensland level by comparing the 2006 series projections of persons in various living arrangements, adjusted to 2006 ERP, with the actual 2006 data also adjusted to 2006 ERP and with persons in 'not classifiable' households distributed pro-rata.

	Actual	Projected	Difference
Parent in a couple family	1001600	893523	-108077
Partner in a couple only family	909600	930137	20537
Lone person household	372090	423936	51846

*'actual' is census UR data adjusted to ERP and with Not Classifiable HH redistributed pro-rata (for consistency with 2006 series projections)*

*'projected' is 2006 series projected values for 2006 adjusted to actual 2006 ERP (i.e. removing error due to population projection)*

The projected rate of decline in average household size under the 2008 series projections is slower than previously projected as shown in the following table for total Queensland.

	2008 SERIES	2006 SERIES	DIFFERENCE	
2006	2.58	2.53	0.05	2.1%
2011	2.54	2.46	0.08	3.4%
2016	2.50	2.40	0.10	4.2%
2021	2.47	2.36	0.11	4.6%
2026	2.45	2.33	0.12	5.0%
2031	2.42	n.a.	n.a.	n.a.

The combined effect of a higher population projection driving the 2008 series projections combined with a lower rate of decline in average household size results in a projection of total households in Queensland at 2026 which is only 8500 or 0.4% higher than the 2006 series projections.

The following pages provide a summary of the 2008 series household and dwelling projections for Queensland and its Statistical Divisions 2006-2031.

**Projections of households by household type and projected dwellings, average household size and average occupancy rates, 2006-31, for Queensland and Statistical Divisions**

		Not classifiable	Couple with kids	Couple no kids	Lone parent	Other	Group	Lone Person	Total Resident Households	Vacant/Visitor Only dwellings	Total Private Dwellings	ave HH size	ave OCC rate
QLD	2006	70022	471292	428002	176039	19167	64294	357105	1585919	74825	1660744	2.58	2.46
	2011	78015	500784	504494	206936	21186	68254	416934	1796603	84766	1881369	2.54	2.43
	2016	85830	533098	586489	231408	22956	73036	480922	2013739	95010	2108749	2.50	2.39
	2021	92816	565338	660901	251988	24223	76693	545487	2217446	104621	2322067	2.47	2.36
	2026	99146	598555	724290	270099	25596	80703	607585	2405974	113516	2519491	2.45	2.34
	2031	105255	628102	784413	288447	27149	85291	670469	2589124	122158	2711282	2.42	2.31
									Total Resident Households	Vacant/Visitor Only dwellings	Total Private Dwellings	ave HH size	ave OCC rate
Brisbane	2006	26392	217773	175352	78312	10254	31827	153572	693482	12254	705736	2.63	2.58
	2011	28796	229638	204140	90665	11024	33582	175696	773541	13585	787126	2.59	2.55
	2016	31489	242963	238764	100761	11888	36140	202127	864132	15186	879318	2.55	2.51
	2021	33895	256604	270330	109379	12501	37980	229954	950643	16721	967364	2.52	2.47
	2026	36074	270875	296659	117293	13156	39740	256865	1030662	18126	1048788	2.49	2.45
	2031	38147	283466	320969	125166	13890	41815	283848	1107302	19454	1126756	2.46	2.42
									Total Resident Households	Vacant/Visitor Only dwellings	Total Private Dwellings	ave HH size	ave OCC rate
Gold Coast	2006	14354	56062	56985	23570	2189	10407	46727	210294	15521	225815	2.46	2.29
	2011	16595	63598	66990	28763	2584	11208	55575	245314	17995	263309	2.45	2.28
	2016	18824	71083	78625	33287	2911	12150	65087	281967	20697	302664	2.43	2.26
	2021	20780	77860	89524	37186	3149	12929	74644	316072	23221	339293	2.40	2.24
	2026	22483	83721	99176	40346	3368	13799	83753	346646	25464	372110	2.38	2.22
	2031	24070	88574	108233	43313	3604	14717	92533	375044	27521	402566	2.36	2.20

Sunshine Coast	Year	Not classifiable	Couple with kids	Couple no kids	Lone parent	Other	Group	Lone Person	Total Resident Households	Vacant/Visitor Only dwellings	Total Private Dwellings	ave HH size	ave OCC rate
	2006	5000	32091	37431	13409	907	4218	27189	120245	13671	133916	2.45	2.20
	2011	5715	35695	43660	15953	1103	4725	31883	138734	15677	154411	2.45	2.20
	2016	6368	39239	50324	18010	1236	5112	36666	156956	17747	174703	2.43	2.19
	2021	6978	42504	56972	19779	1334	5420	41684	174670	19768	194438	2.41	2.17
	2026	7575	45892	63278	21455	1430	5805	46940	192375	21769	214144	2.40	2.15
	2031	8182	49190	69665	23298	1544	6252	52489	210619	23808	234427	2.38	2.14
West Moreton	Year	Not classifiable	Couple with kids	Couple no kids	Lone parent	Other	Group	Lone Person	Total Resident Households	Vacant/Visitor Only dwellings	Total Private Dwellings	ave HH size	ave OCC rate
	2006	862	8468	8543	2907	268	652	5721	27420	944	28364	2.65	2.56
	2011	968	8854	10444	3614	298	731	6620	31530	1079	32609	2.60	2.52
	2016	1103	9726	12420	4304	329	831	7631	36344	1245	37589	2.58	2.49
	2021	1239	10699	14312	4922	366	932	8905	41375	1419	42794	2.55	2.46
	2026	1380	11804	16125	5453	407	1027	10228	46424	1591	48015	2.53	2.44
	2031	1517	12845	17947	5994	449	1122	11652	51527	1764	53291	2.50	2.42
Wide Bay-Burnett	Year	Not classifiable	Couple with kids	Couple no kids	Lone parent	Other	Group	Lone Person	Total Resident Households	Vacant/Visitor Only dwellings	Total Private Dwellings	ave HH size	ave OCC rate
	2006	3129	28325	35644	12196	845	2834	25779	108753	7307	116060	2.48	2.32
	2011	3468	28977	42054	14975	914	3365	30406	124159	8291	132450	2.43	2.28
	2016	3746	29844	47733	16825	948	3710	34604	137410	9182	146593	2.39	2.24
	2021	4005	30943	52704	18231	974	3967	38599	149423	9994	159417	2.36	2.22
	2026	4279	32747	57356	19454	1046	4222	42691	161795	10820	172615	2.35	2.20
	2031	4571	34594	62124	20841	1134	4521	47155	174940	11687	186627	2.33	2.18
Darling Downs	Year	Not classifiable	Couple with kids	Couple no kids	Lone parent	Other	Group	Lone Person	Total Resident Households	Vacant/Visitor Only dwellings	Total Private Dwellings	ave HH size	ave OCC rate
	2006	2309	26457	25189	8950	1023	2629	21295	87851	1954	89805	2.58	2.53
	2011	2480	26785	29670	10168	1102	2647	24601	97454	2154	99608	2.53	2.47
	2016	2647	27669	33878	11110	1159	2711	27914	107087	2368	109455	2.47	2.42
	2021	2824	29000	37808	12009	1208	2791	31332	116973	2589	119562	2.44	2.38
	2026	2985	30455	41118	12736	1275	2928	34639	126135	2792	128927	2.41	2.36
	2031	3144	31814	44312	13497	1355	3089	38103	135316	2992	138308	2.39	2.34

		Not classifiable	Couple with kids	Couple no kids	Lone parent	Other	Group	Lone Person	Total Resident Households	Vacant/Visitor Only dwellings	Total Private Dwellings	ave HH size	ave OCC rate
South West	2006	271	3228	2826	960	119	284	2786	10474	1609	12083	2.52	2.19
	2011	267	2999	3079	1003	127	286	2810	10572	1614	12186	2.49	2.16
	2016	272	2940	3329	1010	135	286	3032	11004	1681	12685	2.43	2.11
	2021	280	2977	3480	1020	139	281	3213	11389	1742	13131	2.41	2.09
	2026	282	3013	3535	1040	142	277	3337	11625	1778	13402	2.40	2.08
	2031	284	2997	3572	1047	147	277	3438	11762	1797	13558	2.38	2.07
Fitzroy	2006	3037	24294	20401	7994	765	2244	16923	75657	3874	79531	2.65	2.52
	2011	3380	25731	24688	9398	819	2298	20356	86669	4410	91080	2.59	2.47
	2016	3651	26935	28286	10378	848	2351	23315	95763	4876	100640	2.54	2.42
	2021	3925	28426	31520	11255	879	2420	26223	104648	5334	109981	2.51	2.39
	2026	4219	30308	34492	12096	940	2566	29131	113752	5797	119549	2.49	2.37
	2031	4513	32077	37470	12968	1010	2725	32157	122920	6258	129178	2.47	2.35
Central West	2006	201	1370	1258	410	55	117	1369	4781	1355	6136	2.42	1.88
	2011	197	1246	1346	427	62	115	1380	4772	1344	6116	2.36	1.84
	2016	202	1225	1448	458	69	115	1465	4981	1404	6384	2.39	1.86
	2021	205	1224	1514	476	69	112	1535	5135	1448	6583	2.30	1.79
	2026	210	1254	1560	488	71	113	1606	5301	1495	6796	2.29	1.78
	2031	217	1286	1624	502	73	117	1703	5522	1556	7078	2.27	1.77
Mackay	2006	3945	19627	16510	5367	511	1857	12308	60125	3826	63951	2.66	2.50
	2011	4538	21652	20382	6325	589	2093	14801	70379	4451	74830	2.62	2.47
	2016	5159	24099	24183	7256	655	2312	17479	81142	5135	86277	2.60	2.44
	2021	5638	25999	27190	7948	697	2424	19856	89752	5685	95437	2.58	2.42
	2026	5951	27184	29232	8461	726	2501	21832	95887	6072	101959	2.55	2.40
	2031	6196	27892	31074	8894	759	2586	23720	101121	6397	107518	2.53	2.37

		Not classifiable	Couple with kids	Couple no kids	Lone parent	Other	Group	Lone Person	Total Resident Households	Vacant/Visitor Only dwellings	Total Private Dwellings	ave HH size	ave OCC rate
Northern	2006	3091	24093	20869	9104	965	3245	17719	79086	2664	81750	2.65	2.56
	2011	3477	25585	25036	10854	1120	3494	21568	91134	3051	94185	2.59	2.50
	2016	3889	27380	29845	12221	1267	3813	25871	104285	3493	107779	2.53	2.45
	2021	4210	28602	34042	13188	1339	3963	29644	114989	3855	118844	2.48	2.40
	2026	4465	29714	37137	13873	1395	4091	32881	123555	4142	127698	2.45	2.37
	2031	4709	30529	39866	14545	1448	4241	36044	131383	4400	135783	2.42	2.34
Far North	2006	6302	25995	24366	11590	1144	3582	22970	95948	8205	104153	2.58	2.38
	2011	6885	26484	29469	13382	1303	3301	28055	108879	9254	118133	2.50	2.30
	2016	7293	26832	33821	14464	1382	3150	32330	119272	10144	129416	2.44	2.25
	2021	7657	27437	37492	15283	1439	3142	36277	128727	10958	139685	2.39	2.20
	2026	8045	28498	40471	16061	1509	3298	39860	137743	11724	149467	2.36	2.18
	2031	8470	29687	43243	16986	1596	3480	43573	147034	12502	159536	2.34	2.16
North West	2006	1128	3510	2629	1270	122	397	2746	11803	1641	13444	2.81	2.47
	2011	1249	3541	3535	1408	140	408	3184	13465	1860	15326	2.75	2.42
	2016	1189	3161	3834	1325	131	357	3398	13395	1852	15247	2.66	2.34
	2021	1180	3062	4013	1312	128	334	3621	13650	1889	15538	2.61	2.29
	2026	1199	3089	4150	1343	133	336	3823	14073	1947	16020	2.58	2.27
	2031	1235	3151	4314	1395	139	348	4053	14634	2023	16657	2.56	2.25