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The proportions for the several States and Territories for each of the birthplaces shewn in the foregoing table expressed as percentages of the total population, the birthplaces of which were specified, are as follows:—

### PERCENTAGE OF COMMONWEALTH POPULATION ACCORDING TO BIRTHPLACE,

3RD APRIL, 1911.

Birthplace.	Percentage of Total Population.								
	States.						Territories.		C'with.
	New South Wales.	Victoria.	Queensland.	South Australia.	Western Aust.	Tasmania.	Northern	Federal Capital.	
	%	%	%	%	%	%	%	%	%
Australia ...	84.19	85.01	74.09	86.16	74.66	90.95	45.86	89.34	82.90
New Zealand	0.86	0.77	0.43	0.24	1.10	0.63	0.55	0.24	0.72
U. Kingdom	12.49	12.07	19.90	10.93	18.05	7.10	7.98	9.53	13.35
Other European Countries	1.21	1.18	3.35	1.97	3.37	0.60	1.49	0.30	1.67
Asia ...	0.70	0.51	1.47	0.31	2.14	0.41	43.05	0.29	0.82
Africa ...	0.12	0.11	0.09	0.09	0.15	0.08	0.27	...	0.11
America ...	0.27	0.23	0.28	0.19	0.40	0.15	0.37	0.30	0.25
Polynesia ...	0.07	0.02	0.29	0.01	0.03	0.02	0.37	...	0.08
At Sea ...	0.09	0.10	0.10	0.10	0.10	0.06	0.06	...	0.10
Total ...	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00

As regards distribution in the States according to birthplace, the population of New South Wales is very similar to that of Victoria, the proportions born in the United Kingdom and Asia being slightly higher, and that born in Australia slightly lower, in the case of New South Wales. There is also a rough similarity between the population distributions of Queensland and Western Australia. In both, the Australian-born represent a much smaller, and those born in the United Kingdom, in "Other European Countries" and in Asia, a much larger proportion than is the case with the remaining States. Polynesians were, however, more numerously represented in Queensland at the date of the Census than in any other State. Natives of New Zealand were, proportionately, most numerous in Western Australia. Tasmania had the largest proportion of Australian-born population, viz., 91 per cent., while Queensland, with 74 per cent., had the smallest. On the other hand, nearly 20 per cent. of Queensland's population consisted of natives of the United Kingdom, while only 7 per cent. of the population of Tasmania had been born there. For the Commonwealth as a whole, over 98½ per cent. of the population were from Australasian or European birthplaces.

In the case of the Northern Territory, about 46 per cent. of the population were Australian born, while 43 per cent. were of Asiatic birth.

### § 3. Post-censal Adjustment of Population Estimates for the Intercensal Period, 1901-1911.

1. **Census Results.**—On the 31st March, 1901—or, rather, at the moment of midnight between 31st March and 1st April of that year—the population of Australia was determined by means of a census, taken under the census laws of the several States, the control of the necessary administrative organisation being placed in the hands of the State Statisticians. The total population of the Commonwealth so found was as follows, viz.:—

Males, 1,977,928; Females, 1,795,873; **Total, 3,773,801.**

On the 3rd April, 1911, a similar enumeration was carried out under the control of the Commonwealth Statistician, in accordance with the Commonwealth Census and Statistics Act 1905, which itself conferred the necessary powers. The population of the Commonwealth as then ascertained was as follows:—

Males, 2,313,035; Females, 2,141,970; **Total, 4,455,005.**

In both cases the figures given are exclusive of full-blooded aboriginal natives of Australia, but are inclusive of half-caste aboriginals.

It should be noted, in connection with the census of 1911, that a slight change in defining the date of reference has been made in order to accord with the English practice. In previous Australian censuses the date of the census has been taken to be that of the day preceding the midnight which is adopted as the determining point. Thus, at the census of 1901, where the figures given relate approximately to midnight between the 31st March and the 1st April, the Australian census was stated to be that of the 31st March, while in a precisely similar case in England it was stated to be that of 1st April. At the census of 1911, taken as at midnight between the 2nd and 3rd April, the date of the census has, in accordance with the English practice, been stated to be the 3rd April, and that day was gazetted as the day of the census.

**2. Intercensal Records.**—Between the date of the censuses of 1901 and 1911 there elapsed 10 years and 2 days. During the whole of this intercensal period records were kept of the effect of the several elements contributing to variations in population—(i.) of the Commonwealth as a whole, and (ii.) of the component States and Territories of the Commonwealth. As regards the former, the only variations possible were additions by birth and by oversea arrivals and deductions by death and by oversea departure, where the term “oversea” refers to all countries outside the Commonwealth, and to those alone. As regards the latter—viz., the populations of the component States and Territories—inter-State migration also operates, and this may be either by land or by sea. In the case of any particular State, therefore, to which migration by land is possible, there were eight distinct sets of records kept, viz.:—(i.) births registered; (ii.) deaths registered; (iii.) oversea arrivals; (iv.) inter-State arrivals by sea; (v.) inter-State arrivals by land; (vi.) oversea departures; (vii.) inter-State departures by sea; (viii.) inter-State departures by land.

The records of inter-State migration by land are necessarily incomplete, as the only particulars of this nature which it is practicable to collect are those relating to migration by rail. Incidentally, it may be observed that any efficient method of obtaining the record of overland migration, other than by rail, would be found intolerably irksome. The records of this kind exist, therefore, only in the case of those States which are connected by rail—viz., New South Wales, Victoria, Queensland, and South Australia, and then only to the extent to which such migration takes place by rail.

**3. Comparison of Census Results with those Derived from Intercensal Records.**—Taking, first, the case of the Commonwealth as a whole, the number of births registered during the 10 years from 1st April, 1901, to 31st March, 1911, was as follows:—

Males, 552,983; Females, 525,218; **Total, 1,078,201.**

Against this must be set off the deaths registered, as follows:—

Males, 261,661; Females, 192,447; **Total, 454,108.**

The natural increase—viz., the excess of births over deaths—during the decennium was therefore—

Males, 291,322; Females, 332,771; **Total, 624,093.**

The oversea arrivals in the Commonwealth, as recorded during the decennium, were—

Males, 456,742; Females, 208,013; **Total, 664,755.**

During the same period the oversea departures as recorded were—

Males, 360,705; Females, 177,318; **Total, 538,023.**

Thus, by the records, the net immigration to the Commonwealth—that is, the excess of oversea arrivals over oversea departures—during the decennium was as follows :—

Males, 96,037 ; Females, 30,695 ; **Total, 126,732.**

Taking these recorded results in conjunction with the population at the census of 31st March, 1901, an estimate of the population at 31st March, 1911, is obtained as follows :—

Particulars.	Males.	Females.	Total.
Census population, 31st March, 1901 ...	1,977,928	1,795,873	3,773,801
Natural increase recorded during decennium ...	291,322	332,771	624,093
Net immigration „ „ ...	96,037	30,695	126,732
Estimated population, 31st March, 1911, based on recorded intercensal data ...	2,365,287	2,159,339	4,524,626

In order to be able to compare this result with that obtained at the census of 1911, it is necessary to make a small allowance for the differences in date, as the above estimate relates to 31st March, 1911, while the census figures relate to the midnight which marks the termination of the 2nd April. Exact records for the first two days of April are not available, but a sufficiently close approximation is obtained by taking the one-fifteenth part of the totals recorded for that month. This gives the following results :—

Particulars.	Males.	Females.	Total.
Census population on 3rd April, 1911 ...	2,313,035	2,141,970	4,455,005
Less estimated increase during 1st and 2nd April, 1911 ...	376	268	644
Estimated population on 31st March, 1911, as based on census results of 3rd April, 1911 ...	2,312,659	2,141,702	4,454,361

A comparison of this estimate for 31st March, 1911, with that for the same date based on intercensal records, indicates that the effect of using the intercensal records exactly as furnished would be the *overstatement* of the population of the Commonwealth at the 31st March, 1911, by the following numbers, viz. :—

Males, 52,628 ; Females, 17,637 ; **Total, 70,265.**

This overstatement indicates a steady accumulation of error at an average rate of about 7000 per annum, and suggests the desirability of at least a check-count or minor census more frequently than once in ten years. Statisticians throughout the world are in agreement as to the advantages of quinquennial censuses.

**4. Causes of Discrepancy.**—It is clear, from the nature of the case, that errors in excess or defect are probable in all records of population, and in all records of its fluctuations ; and, further, that errors in defect are in most cases more likely to occur than errors in excess. That is to say, omissions to record are probably more frequent than duplications of record. Owing to the provisions made for securing accuracy, it is probable that the errors in the census records, and, in Australia, in the registration of births and deaths, are not serious in their effect on the population results. There are, of course, no means of independently testing the accuracy of a census. It is so conducted that it must be accepted as of the highest practicable accuracy and final. As regards records of birth, death, and migration, it may be noted, first as regards registrations, that if in practice birth registration was seriously defective, the effect, so far as this element alone is concerned, would be to cause the enumerated results to exceed the intercensal estimate. If any such defect has actually existed it has been much more than counterbalanced by

some defect of an opposite nature, arising from other causes, and hence, in the absence of some direct evidence, the existence of such defect in any marked degree cannot be assumed. As regards the registration of deaths, the stringent provisions of the law throughout Australia in relation to certification of cause of death, and to the disposal of a dead body, renders it wholly improbable that there is any error of serious magnitude from omission to register. In the case of the census records, the fact that the taking of the census is widely advertised, that a very extensive collecting organization is instituted for the special purpose, and that every effort is made after census day to make good any omissions, renders it improbable that any appreciable defect can be attributed thereto. There remain, then, in the case of the Commonwealth as a whole, the records of oversea arrivals and departures, and there appears to be no reasonable ground for doubting that the greater part of any ascertainable discrepancy is properly chargeable thereto. In this connection an important point requires to be borne in mind—viz., that at the date of the census all persons on board of vessels in Commonwealth ports, or on voyage between Commonwealth ports, are included as part of the population of Australia, whether such persons are on board in the capacity of passengers or of crew. It is also to be borne in mind that the oversea migration recorded during the intercensal period relates practically only to passengers, and to individual members of crew actually engaged, discharged, or deserting in Australia, it being assumed that the crews of incoming and outgoing vessels substantially balance each other. It is thus clear that if, at the date of any census, there were many vessels in Australian waters, the actual population at a subsequent date might differ somewhat materially from the estimated, owing simply to the fact that the departure of certain of these vessels was not approximately counterbalanced by the arrival of others. In other words, that portion of the population of Australia, which consists of crews of oversea vessels, has always, in the compilation of Australian population statistics, been tacitly assumed, as already said, to maintain a condition of equilibrium through equality of influx and efflux. In view of the degree of uncertainty involved in this tacit assumption, it is clear that any attempt at great refinement in the matter of oversea migration statistics would be illusory and unwarranted. It is thus evident that, while the discrepancy between enumerated and estimated population arises from numerous causes, the bulk of it is due to errors of migration record. And since, as before noted, errors of omission are more probable than errors of duplication, and since, further, the resultant error is usually that of overstatement of population, it is reasonably certain that the major portion of the discrepancy is due to omission to record departures. This conclusion, which has been arrived at from general considerations, is confirmed by actual experience, as it has been found that in many cases discrepancies have arisen through late bookings or passages taken on board, thus resulting in unrecorded departures.

**5. Adjustment of Discrepancy.**—For practical purposes it has been found convenient to attribute the whole of the discrepancy to defects in the records of departure, and, in readjusting population estimates between two censuses, to ascertain the ratio of the discrepancy to the aggregate recorded departures, in order to apply this ratio to the departures recorded for successive periods. This method does not appear to be open to any serious objection. Since it is simple in application and gives results which are probably not wide of the truth at any moment during the intervening period, and in the aggregate are doubtless as accurate as figures furnished by any other possible method, it has been adopted on the present occasion for adjusting the Commonwealth population estimates for the whole of the intercensal period.

**6. Adjustment of Commonwealth Discrepancy.**—From the figures given in section 3 above it will be seen that the discrepancy, as ascertained for 31st March, 1911, represented approximately 14.59 per cent. of the aggregate male oversea departures for the decennium, and approximately 9.95 per cent. of the aggregate female oversea departures. Applying these percentages to the recorded oversea departures for the successive periods the requisite corrections are obtained by means of which an adjusted estimate of the

population of the Commonwealth is obtained for successive quarters throughout the intercensal decennium. A comparison of the results so obtained with the estimates published from time to time by the Commonwealth Bureau of Census and Statistics is important, as shewing to what magnitude the errors in question can accumulate, and is as follows:—

**POPULATION OF THE COMMONWEALTH, ESTIMATED AND ADJUSTED, 1901 to 1910.**

31st Dec.	Commonwealth Intercensal Estimate.			Adjustment on basis of Census Results.			Excess of Intercensal Estimate over Post-censal Adjustment.		
	Males.	Females.	Total.	Males.	Females.	Total.	Males.	Females.	Total.
1901	2,006,784	1,819,502	3,826,286	2,004,836	1,820,077	3,824,913	1,948	— 575	1,373
1902	2,037,710	1,845,369	3,883,079	2,028,008	1,847,310	3,875,318	9,702	— 1,941	7,761
1903	2,059,444	1,867,525	3,926,969	2,045,144	1,871,448	3,916,592	14,300	— 3,923	10,377
1904	2,092,818	1,891,572	3,984,390	2,072,783	1,901,367	3,974,150	20,035	— 9,795	10,240
1905	2,133,978	1,918,452	4,052,430	2,100,118	1,932,859	4,032,977	33,560	— 14,407	19,453
1906	2,173,545	1,945,936	4,119,481	2,126,730	1,964,755	4,091,485	46,815	— 18,819	27,996
1907	2,212,480	1,984,557	4,197,037	2,160,213	2,001,509	4,161,722	52,267	— 16,952	35,315
1908	2,252,027	2,023,279	4,275,306	2,193,981	2,038,297	4,232,278	58,046	— 15,018	43,028
1909	2,305,637	2,068,501	4,374,138	2,242,215	2,081,745	4,323,960	63,422	— 13,244	50,178
1910	2,365,549	2,117,347	4,482,896	2,296,808	2,128,775	4,425,083	69,241	— 11,428	57,813

NOTE.—The minus (—) sign denotes excess of post-censal adjustment over intercensal estimate.

Incidentally, it may be here noticed, that the methods adopted up to 1906 inclusive, shew a persistent and increasing relative loss of females from the Commonwealth (indicated by the minus sign). The significance of so extraordinary a result is referred to later.

**6. Intercensal Estimates of State Population.**—Having ascertained the adjusted results for the Commonwealth as a whole, the next problem was that of adjusting the populations of the several States in such a manner as to furnish results which, in the aggregate, would coincide for any date with that already determined for the whole Commonwealth. The data available for this purpose, in addition to the birth and death records and the returns of oversea arrivals and departures, comprised returns of inter-State migration by sea and by rail. Up to the end of 1906 these inter-State records had been compiled on the basis of returns and computations of the several State statistical authorities; but from the beginning of 1907 onwards they have been based on returns specially collected on behalf of the Commonwealth Bureau of Census and Statistics. In the earlier period, as each State was acting on its own account, without any definite system of co-ordinating the results for the Commonwealth as a whole, the question of ensuring that the State aggregates should coincide with the results of the whole Commonwealth was not in any way considered. As a matter of fact, a Commonwealth total obtained by adding together the State totals was usually considerably in error. It has been found that by this process the Commonwealth population, or its distribution according to sex, was varied materially from no other cause than a transfer from one State to another. After a careful consideration of this aspect of the question, the Commonwealth Statistician, who under the laws of the Commonwealth is solely responsible for the estimates of population, decided that such an anomalous position of affairs could not be allowed to continue, and consequently a system was introduced under which, for any period, all inter-State arrivals were duly accounted for as departures from other States—viz., the States from which they were reported to have come. This principle was applied to inter-State migration both by sea and by rail. In the case of migration by rail there were, up to the end of 1907, in operation no less than three distinct methods of recording such migration—

- (a) by single ticket records (Victoria and South Australia);
- (b) by return ticket records (New South Wales);
- (c) by actual count at border stations (Queensland).

In the case of ticket records, as no information was available concerning the sexes of the persons travelling on these tickets, an assumption was made that the proportion of the two sexes in the migration to or from any State by rail might be regarded as the same proportion ascertained to exist in the corresponding migration by sea. This naturally led to anomalous results. For example, a train-load of passengers leaving Victoria would, as departures from that State, be distributed as regards sex in proportion to the Victorian departures by sea, but the same train-load, on arriving in New South Wales, would be distributed as regards sex, in the proportion of New South Wales arrivals by sea. By such means the sex distribution of the population of the Commonwealth would be altered merely by a transfer of population from one part of the Commonwealth to another. Such extraordinary inconsistencies were wholly ignored by the State statisticians, since they were concerned only with the results as deduced for their own States; but they could *not* be ignored by anyone dealing with the population of the entire Commonwealth—a fact which reveals very clearly the advantage of a central authority dealing with the question. A consideration of all the facts led to the conclusion that, for the compilation of statistics of inter-State migration by sea, only records of arrivals should be used, these being also preferable, as already pointed out, on other grounds. The analysis of such arrivals according to States of departure give the requisite statistics of departures, and ensure that the population of the Commonwealth shall not be increased or diminished by the mere fact of transfer from one State to another. In the case of inter-State migration by rail, the system of counting at border stations is preferable to the ticket system, for the following reasons :—

- (i.) Statistics of sex can be obtained direct.
- (ii.) migration by rail will be recorded, regardless of whether the traveller has or has not a ticket, or is adult or infant.
- (iii.) It furnishes a direct count, instead of compelling the statistician to rely upon questionable inferences.

Under the ticket system, not only is sex not registered, but through-passengers, passengers on season tickets and passes, and infants go unrecorded. Moreover, the actual ticket records are not identical in the several States, and consequently in this case also fictitious gains or losses to the Commonwealth result from the mere fact of inter-State transfers. In short, the system is one which does not arithmetically balance, and must consequently be rejected as inherently unsatisfactory. On the other hand, under the system now adopted by the Commonwealth, every inter-State credit of population to any State is accompanied by a corresponding debit to some other State, thus maintaining consistency of total population, which consistency, as already explained, did not exist in the method superseded.

**7. Post-censal Adjustments of State Populations.**—One of the first steps to be taken in the post-censal adjustment of the State populations for the decennium 1901-1911 was that of remedying the defect due to the want of identity between aggregate inter-State arrivals and departures for the successive quarters of the earlier portion of the decennium—that is, to the end of 1906. The figures for 1907 were so adjusted when the Commonwealth system of migration was introduced in 1908, and figures for succeeding years were so determined as to require no such adjustment. For the purpose of this adjustment to the end of 1906, the inter-State departures by sea and by rail were dealt with separately. In each case the recorded inter-State departures for any quarter for each State were multiplied by such a factor as would make the aggregate inter-State departures for the quarter identical with the aggregate inter-State arrivals. As regards oversea migration to and from the several States, the arrivals were allowed to stand as recorded, while the departures for each State were corrected by means of the factor

determined for the Commonwealth as a whole. This was necessary, inasmuch as there was no direct warrant for preferring the records of any particular State as being more accurate in this respect than the records of any other State. After these adjustments had been effected, there still remained a correction for the defective record of inter-State migration, other than the want of coincidence between the aggregates of arrivals and departures. The extent of this residual error in the case of each sex in each State was determined by computing, from the adjusted figures derived in accordance with the foregoing scheme, the estimated population of each sex as at 31st March, 1911, and comparing this with the corresponding figure deduced from the records of the census of 3rd April, 1911. As the result of this comparison it was found that the residual errors, remaining for adjustment, were as follows:—

State.	Males.	Females.	Persons.
New South Wales ...	— 4,399	— 1,736	— 6,135
Victoria ...	+ 5,677	— 495	+ 5,182
Queensland ...	— 10,089	— 155	— 10,194
South Australia ...	+ 13,933	+ 2,179	+ 16,112
Western Australia ...	— 549	+ 598	+ 49
Tasmania ...	— 4,623	— 391	— 5,014
Commonwealth ...	—	—	—

It was necessary that these errors should be so adjusted that at any point of time during the decennium the aggregate of the several adjustments should be zero. The application of the correction as a percentage, on, say, recorded departures, would in practice involve awkward complications. A careful consideration of this matter led to the conclusion that a uniform distribution of the error in each case over the 40 quarters comprised in the decennium would probably accord as closely with the actual (but unknown) facts as any that could be devised, and would, in addition, be simple in application as well as satisfactory from the standpoint of Commonwealth total. The corrections so applied to the figures for the several quarters were approximately as follows:—

State.	Males.	Females.	Persons.
New South Wales ...	+ 110	+ 43	+ 153
Victoria ...	— 142	+ 12	— 130
Queensland ...	+ 251	+ 4	+ 255
South Australia ...	— 348	— 54	— 402
Western Australia ...	+ 14	— 15	— 1
Tasmania ...	+ 115	+ 10	+ 125
Commonwealth ...	—	—	—

On the basis of these principles the populations of the several States as at the end of each quarter from 31st March, 1901, to 31st March, 1911, have been determined, and from these the mean populations for the several intercensal years have been computed. These re-computed means have been employed in the adjustment of all intercensal rates based upon population.