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DELAYED REGISTRATION OF BIRTHS

AMONG

CANADIAN REGISTERED INDIANS

1964-1968

by

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MAY 8 1977

MINISTÈRE DES AFFAIRES INDiennes
ET DU NORD CANADIEN
BIBLIOTHÈQUE

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Official Register of Indians in Canada

The official register of Canadian Indians has for many years presented the following rather anomalous picture;

Table 1 Register of Canadian Indians
by Age Group

Population as at Dec 31st

Age Group	1963	1964	1965	1966	1967	1968
Under 1 year	7531	7527	7482	7189	7041	7017
1 year	7957	8127	8199	8382	8188	8080

Data supplied by Indian Affairs Branch.

Rearranging the above data, on the assumption that the population on Dec 31st in one year equals the population at dawn on Jan 1st of the following year, may perhaps demonstrate the anomaly more clearly.

Table 2 Apparent "Growth" in Indian Population
in the Second Year of Life

Population aged "1 year" as registered	1964	1965	1966	1967	1968
Jan 1st	7531	7527	7482	7189	7041
Dec 31st	8127	8199	8382	8188	8080
"Increase"	596	672	900	999	1039

At the end of each year more children aged "1 year" existed than had survived out of the births in the previous year to begin the year. Such a change could only have occurred through some form of "immigration". It seems highly improbable that such large and increasing numbers of children immigrated into the population each year.

The official record of vital events casts little light on the problem.

Table 3

Record of Vital Events
1964-1968

First Year of Life

	1964	1965	1966	1967	1968
Births registered	8250	8973	8942	8956	9032
Deaths under 12 months	398	316	456	458	415
Pop. under 1 yr. Dec 31st	7527	7482	7189	7041	7017
Second Year of Life					
	1964	1965	1966	1967	1968
Pop. under 1 yr Jan 1st	7531	7527	7482	7189	7041
Deaths at 12 to 23 mths	221	209	56	62	66
Pop. aged 1 yr. Dec 31st	8127	8199	8382	8188	8080

Data supplied by Indian Affairs Branch.

The figures bear no apparent relationship to each other.

The sequence of events appears incredible.

Births appear to be increasing annually.

Infant mortality appears to have sharply increased.

Mortality in the second year of life appears to have dropped dramatically.

The record appears to be completely inconsistent and incredible.

All the above observations are erroneous superficial impressions. Incredible as it may appear, the above record is consistent and correct when properly understood.

Registration of Indian Births

In 1965 it came to notice that many of the births registered annually as "new births" included a considerable number of births that had actually occurred in earlier years, in some cases over ten years previously. Of the 8,973 births registered in 1965, 1175 or 86.91% had occurred in previous years. At the same time the following clue as to what was happening was noted.

Actually born in 1965	7,798
Infant deaths recorded	316
Pop. under 1 year, Dec 31st	7,482

The population still under twelve months old at the end of the year comprised, in fact, the survivors of those born within that year whose births had been registered.

Table 4 Factors Determining Year End Population
Under 1 year
1964-1968

	1964	1965	1966	1967	1968
Registered as born in year	7925	7798	7488	7300	7288
Of these, died in the year	398	316	299	259	271
Surviving, Dec. 31st	7527	7482	7189	7041	7017
Reg. pop. under 1 year (See previous tables)	7527	7482	7189	7041	7017

Data supplied by Indian Affairs Branch.

The apparently absurdly small population registered each Dec. 31st as still under 1 year of age was "correct" and determined by the number of births registered as having occurred within the year and the number of deaths occurring among that cohort of infants.

Clearly, however, not all births occurring in the year had been registered. Far from increasing, the number born annually appears to have been dropping quite rapidly.

Analysis of the available data revealed the following;

Table 5a

Registration of Indian Births
By Age at Date of Registration
1965-1968

Age when registered	Actual Numbers			
	Year of Registration of Birth			
	1965	1966	1967	1968
Under 1 year	7798	7488	7300	7288
1 year	892	1135	1208	1240
0-1	8690	8623	8508	8528
2 years	94	106	148	170
3 "	41	46	72	78
4 "	33	37	73	59
5 "	31	35	43	45
6 "	21	24	30	27
7 "	20	26	15	43
8 "	11	12	16	25
9 "	7	9	8	12
10 "	4	1	10	14
over 10 "	21	23	33	31
All ages	8973	8942	8956	9032

Data supplied by Indian Affairs Branch.

The number of births actually registered each year suggest a fairly steady if not rising birth rate.

The number of births actually recorded as born in each year suggest a rapidly falling birth rate.

However, as the number born and registered in each year drops, the number registered as born in the preceding year increases. An increasing number of births occurring in each year appear not to be registered until the following year.

Table 5b

Registration of Indian Births
by Age at Date of Registration
1965-1968

Age when registered	Percentages			
	Year of Registration of Births			
	1965	1966	1967	1968
Under 1 year	86.91	83.74	81.51	80.69
1 year	9.94	12.69	13.49	13.73
0-1	96.85	96.43	95.00	94.42
2 years	1.05	1.19	1.65	1.88
3 "	0.46	0.51	0.80	0.86
4 "	0.37	0.41	0.82	0.65
5 "	0.35	0.39	0.48	0.50
6 "	0.23	0.27	0.33	0.30
7 "	0.22	0.29	0.17	0.48
8 "	0.12	0.13	0.18	0.28
9 "	0.08	0.10	0.09	0.13
10 "	0.04	0.01	0.11	0.16
over 10 "	0.23	0.26	0.37	0.34
All ages	100.00	100.00	100.00	100.00

Calculated from Table 8a.

More and more of the births registered in each successive year had been born in earlier years. Not only had the numbers increased as shown in Table 5a, but also the percentages.

In 1965, 87% of the births registered had been born in 1965. In 1968, only 81% of the births registered had actually been born in 1968. Whatever the reasons, the trend appears quite definite.

Actual Number of Births in Each Year

Rearranging the still meagre data by actual year of birth, rather than year of registration of birth, results in the following;

Table 6a

Known Births in Each Year
1964-1968

Numbers

Age when registered	Year of Birth				
	1964	1965	1966	1967	1968
Under 1 Year	7925	7798	7488	7300	7288
1 year	892	1135	1208	1240	
0-1	8817	8933	8696	8540	
2 years	106	148	170		
3 "	72	78			
4 "	59				
All ages	9054	9159	8866		

Table 6b

Percentages

Age when registered	Year of birth				
	1964	1965	1966	1967	1968
Under 1 year	87.53	85.14	84.46	85.48	100.00
1 year	9.85	12.39	13.62	14.52	
0-1	97.38	97.53	98.08	100.00	
2 years	1.17	1.62	1.92		
3 "	0.80	0.85			
4 "	0.65				
All ages	100.00	100.00	100.00		

In spite of the incomplete data, it would seem that close to 98% of all births in any given year do get registered by the end of the year following birth.

On the basis of the pattern that seems to be developing in Table 6b, it can fairly safely be assumed that, for all practical purposes, the number of births registered by the end of the year following birth gives a close approximation to the actual births that occurred in any given year. The births registered later at more advanced ages are relatively few and can be regarded as "immigrants" rather than "new births".

On the above assumption, the "actual" number of births in the years under study may be computed as follows.

Table 7 "Actual" Indian Births
1964-1968

Year of birth	Number registered in			Percent registered in	
	Y.o.b	Y.o.b + 1	Total	Y.o.b	Y.o.b + 1
1964	7925	892	8817	89.88	10.12
1965	7798	1135	8933	87.29	12.71
1966	7488	1208	8696	86.11	13.89
1967	7300	1240	8540	85.48	14.52
1968	7288	*1256	8544	85.30	14.70
All Years	37799	5731	43530	86.83	13.17

*Estimated on probability of present trend continuing.
Other data supplied by Indian Affairs Branch.

It is significant that, even when restricted to the births registered in the year of birth and the year following birth, the percentage of late registrations has been steadily increasing. The percentage of births registered in the year of birth has declined from 90% in 1964 to less than 86% in 1967 and probably will not much exceed 85% in 1968 when all data for 1968 have been compiled. This remains subject to confirmation.

Mortality in the First and Second Years of Life

Before going further it would be well to examine the obvious anomaly shown in Table 3 in the recording of deaths in the first and second years of life under and above 12 months of age. Clearly some change in compiling the data is involved.

The Indian population is classified as to "age" by a computer programmed to use "Year of Birth" to determine age. The so-called "Age" classification should better be termed "By Year of Birth". This has considerable bearing on the problems posed by the data as labelled. Using the year of birth to determine age results in restricting the population at the year end "under 1 year of age" to the survivors out of the children registered as born in that year. This figure differs markedly from the number of births registered for the first time each year.

Table 8 Births Registered and Actually Occurring
1964-1968

	1964	1965	1966	1967	1968
Births registered	8250	8973	8942	8956	9032
Born in the year	7925	7798	7488	7300	7288
Born in previous years	325	1175	1454	1656	1744

Data supplied by Indian Affairs Branch.

Using the year of birth to determine age at death also resulted in classifying as "Deaths under 12 months" only deaths of children born in the current year. Many infants born in the previous year, however, die in the current year while still under 12 months of age. Because they had been born in the previous year, such children were automatically classified as "1 year old" and their deaths categorised as "Deaths at age 1 year". A child born on Christmas Day 1964 dying on January 1st 1965 thus became a death at "1 year of age" though, in fact, he was just one week old.

In 1965 it was realised that the apparent infant mortality rate calculated on the figures got by using the year of birth to determine age was much too low to be consistent with fact. It was much below the national rate, in fact, in some areas below the lowest infant mortality rates recorded in the world. Clearly some error was involved and investigation showed it lay in programming the computer by year of birth. Consequently the computer was reprogrammed to determine age at death by date of birth and date of death. This resulted in a dramatic change in the allocation of deaths in the first two years of life between deaths under and over 12 months of age. Projecting the apparent trend back to 1964, the revised situation now appeared as shown in Table 9.

Table 9 Mortality in First & Second Years of Life
1964-1968

Year	Number of Deaths			Per cent of total under 12 months
	Under 12 months	over 12 months	Total	
1964	563	56	619	90.95
1965	470	55	525	89.52
1966	456	56	512	89.06
1967	458	62	520	88.08
1968	415	66	481	86.28
Totals	2362	295	2657	88.90

A further complication, discovered later, was that in 1965 some infant deaths had by mischance been classified as deaths of persons of "unknown age", apparently because their precise date of birth had not been properly recorded.

Because the computer had been programmed to decide age by year of birth, it is also highly probable that not all deaths under two years of age were recorded in 1964. Some would probably be classified as "over 2 years".

The increase in the deaths under 12 months over those previously registered could only have been deaths of children born in the previous year but still under 12 months old at death. Such deaths could not, of course, affect the residue of survivors out of those born in the current year. Thus the year end population registered as "under 1 year" remained unaltered. They would however reduce the number becoming 1 year old in the current year, in effect acting in a demographic sense as if they had been "1 year old" at death. If they had not died, the population aged 1 year old at the end of the year would have been that many more.

The extent to which this annual overlapping of deaths under twelve months occurs each year may be of some interest.

Table 10

Analysis of Infant Mortality
1964-1968

Year	Total Infant Mortality	Died in Year of Birth	Died in Year after Birth	Percent of deaths born in previous year
1964	563	398	165	29.31
1965	470	316	154	32.77
1966	456	299	157	34.43
1967	458	259	199	43.45
1968	415	271	144	34.70
	2362	1543	819	34.67

On average, some 35% of deaths under 12 months of age occurring each year were deaths of children born in the preceding year. There appears to have been a tendency for this percentage to increase.

In the light of the preceding analysis, the following Table of Vital Events can be constructed.

Table 11

Actual Sequence of Vital Events
1964-1968

First Year of Life

	1964	1965	1966	1967	1968
Born and registered	7925	7798	7488	7300	7288
Of these died	398	316	299	259	271
Surviving Dec. 31st	7527	7482	7189	7041	7017

Second Year of Life

	1964	1965	1966	1967	1968
Pop. under 1 yr. Jan 1st	7531	7527	7482	7189	7041
Added during year	* 817	892	1135	1208	1240
Actually living Jan 1st	* 8348	8419	8617	8397	8281
Died, 1 year old	56	55	56	62	66
Effective "1 yr" deaths	165	154	157	199	144
Surviving, Dec 31st	* 8127	8210	8404	8136	8071
As registered	8127	8199	8382	8188	8080
Discrepancy	-	-11	-22	+52	+9

* Estimated

Considering the possibilities of error, the agreement between the calculated populations "1 year old" at the year end and the 1 year old populations as registered is remarkably close. Many factors could explain the small discrepancies.

The apparent "growth" in the population in the second year of life was not due to "immigration" but to late registration of births, which also explained the seeming deficiency in the population registered as under 1 year old at the year end. The seemingly "incredible" Table 3 stands, in the light of Table 11, as essentially correct.

Late Registration and Population Data

Clearly if the number of births actually occurring in a year were under registered during that year, the population at the end of that year was under registered by the number of missing births.

Table 12 Correction of Population Data
 1963-1968

Year	Population as registered	Add missing births registered	Actual population Dec 31st	Increase per 1000 population	Mid-year estimate
1963	204796	817	205613	3.99	-
1964	211389	892	212281	4.22	208947
1965	218098	1135	219233	5.20	215757
1966	224164	1208	225372	5.39	222303
1967	230902	1240	232142	5.37	228757
1968	237490	*1256	238746	5.29	235444

Data supplied by Indian Affairs Branch.

* Estimated on probability of apparent trend continuing.

Late registration of births has resulted in under registration of the population by 0.4 to 0.5% each year. The trend has been to increase the degree of under registration each year. In the above table 1968 figures are tentative only and subject to correction when 1969 data are filed.

Table 12a

Correction of Population Data
by provinces
1964

Province or Territory	Population as registered Dec 31st	Add missing births registered next year	Actual population Dec 31st	Increase per 1000 population
P.E.I.	736	1	377	2.66
N.S.	3997	12	4006	3.00
N.B.	3717	5	3722	1.35
Que	23709	67	23776	2.83
Ont	48465	228	48693	4.70
Eastern	80261	313	80574	3.90
Man	28833	174	29007	6.03
Sask	28914	170	29084	5.88
Alta	23642	66	23708	2.79
Prairie	81389	410	81799	5.04
B.C.	42141	153	42294	3.63
Yuk	2215	3	2218	1.35
West Coast	44356	156	44512	3.52
N.W.T.	5383	13	5396	2.42
Canada	211389	892	212281	4.22

Original data supplied by Indian Affairs Branch.

Table 12b

Correction of Population Data
by provinces
1965

Province or Territory	Population as registered Dec 31st	Add missing births registered next year	Actual population Dec 31st	Increase per 1000 population
P.E.I.	393	3	396	7.63
N.S.	4099	16	4115	3.90
N.B.	3824	4	3828	1.05
Que	24446	85	24531	3.48
Ont	49556	290	49846	5.85
Eastern	82318	398	82716	4.83
Man	29996	222	30218	7.40
Sask	30086	217	30303	7.21
Alta	24587	83	24670	3.38
Prairie	84669	522	85191	6.17
B.C.	43250	197	43447	4.55
Yuk	2292	1	2293	0.44
West Coast	45542	198	45740	4.35
N.W.T.	5569	17	5586	3.05
Canada	218098	1135	219233	5.20

Data supplied by Indian Affairs Branch.

Table 12c

Correction of Population Data
by provinces
1966

Province or Territory	Population as registered	Add missing births registered next year	Actual population Dec 31st	Increase per 1000 population
P.E.I.	399	3	402	7.52
N.S.	4183	18	4201	4.30
N.B.	3912	18	3930	4.60
Que	23126	76	23202	3.29
Ont	52475	314	52789	5.98
Eastern	84095	429	84524	5.10
Man	30994	270	31264	8.71
Sask	31360	196	31556	6.25
Alta	25434	89	25523	3.50
Prairie	87788	555	88343	6.32
B.C.	44205	195	44400	4.41
Yuk	2337	11	2348	4.71
West Coast	46542	206	46748	4.43
N.W.T.	5739	18	5757	3.14
Canada	224164	1208	225372	5.39

Data supplied by Indian Affairs Branch.

Table 12d

Correction of Population Data
by provinces
1967

Province or Territory	Population as Dec 31st	Add missing births registered next year	Actual population Dec 31st	Increase per 1000 population
P.E.I.	409	1	410	2.44
N.S.	4287	19	4306	4.43
N.B.	4039	11	4050	2.72
Que	25650	125	25775	4.87
Ont	51731	306	52037	5.92
Eastern	86116	462	86578	5.36
Man	32227	237	32464	7.35
Sask	32579	221	32800	6.78
Alta	26440	107	26547	4.05
Prairie	91246	565	91811	6.19
B.C.	45152	166	45318	3.68
Yuk	2477	12	2489	4.84
West Coast	47629	178	47807	3.74
N.W.T.	5911	35	5946	5.92
Canada	230902	1240	232142	5.37

Data supplied by Indian Affairs Branch.

Table 13

Trend in Degree of Under Registration
of Year End Populations
1964-1967
by provinces

Province or Territory	Percentage Under Registration			
	1964	1965	1966	1967
P.E.I.	0.3	0.8	0.8	0.2
N.S.	0.3	0.4	0.4	0.4
N.B.	0.1	0.1	0.5	0.3
Que	0.3	0.3	0.3	0.5
Ont	0.5	0.6	0.6	0.6
Eastern	0.4	0.5	0.5	0.5
Man	0.6	0.7	0.9	0.7
Sask	0.6	0.7	0.6	0.7
Alta	0.3	0.3	0.4	0.4
Prairie	0.5	0.6	0.6	0.6
B.C.	0.4	0.5	0.4	0.4
Yuk	0.1	0.1	0.5	0.5
West Coast	0.4	0.4	0.4	0.4
N.W.T.	0.2	0.3	0.3	0.6
Canada	0.4	0.5	0.5	0.5

Rounding the increases shown in Tables 12(a) (b) (c) (d) tends to obscure the slight trend towards increasing the degree of annual under registration. The population has been consistently under registered.

Because of the relatively larger number of births involved, prairie Indians show the greatest degree of under registration.

Table 14

Estimation of Mid Year Populations
1965-1967
by provinces

Province or Territory	1965			1966			1967		
	Population			Population			Population		
	1st Jan	Dec 31st	Mid-Year	1st Jan	Dec 31st	Mid-Year	1st Jan	Dec 31st	Mid Year
P.E.I.	377	396	387	396	402	399	402	410	406
N.S.	4006	4115	4060	4115	4201	4158	4201	4306	4254
N.B.	3722	3828	3775	3828	3930	3879	3930	4050	3990
Que	23776	24531	24154	24531	23202	23867	23202	25775	24488
Ont	48693	49846	49269	49846	52789	51317	52789	52037	52413
Eastern	80574	82716	81645	82716	84524	83620	84524	86578	85551
Man	29007	30218	29613	30218	31264	30741	31264	32464	31864
Sask	29084	30303	29693	30303	31556	30930	31556	32800	32178
Alta	23708	24670	24189	24670	25523	25096	25523	26547	26035
Prairie	81799	85191	83495	85191	88343	86767	88343	91811	90077
B.C.	42294	43447	42870	43447	44400	43923	44400	45318	44859
Yuk	2218	2293	2256	2293	2348	2321	2348	2489	2419
West Coast	44512	45740	45126	45740	46748	46244	46748	47807	47278
N.W.T.	5396	5586	5491	5586	5757	5672	5757	5946	5851
Canada	212281	219233	215757	219233	225372	222303	225372	232142	228757

Populations estimated in Tables 12 (a) (b) (c) & (d). 1968 can not yet be estimated.

Trend in Late Registration of Births by Provinces etc.

The tendency for the percentage of those born in previous years to increase in each annual registration of births seems fairly consistent in most Indian populations of any appreciable size. The smaller populations tend to show a more erratic picture but a general upward trend can be detected almost everywhere.

Among Indians in the eastern provinces as a whole, in 1965 only 19% of the births registered had been born in previous years but by 1968 as many as 29% of the births registered that year had actually been born in earlier years. Contrast this picture with that seen among prairie and West Coast Indians. Among prairie Indians the percentage of delayed registrations rose from 11.4% to 15.1%. Among West Coast Indians, it rose from 9% to 15% then dropped in 1968 to 14%. The lowest percentage of late registrations appears in Alberta where the increase ranged from 7.5% in 1965 to 10.6% in 1967. The slight drop in 1968 has but doubtful statistical significance.

The situation in Ontario and Quebec merits special note. In both provinces the increase in delayed registrations has been both large and rapid. By 1968, almost one quarter of all births registered in Quebec had really been born in earlier years while in Ontario the proportion reached one third of the total registration.

Considering that registration of birth carries the financial benefit of the family allowance, it becomes difficult to understand this increasing tendency apparently to postpone registration. Why should Ontario and Quebec Indians show such a greater prevalence of delay and such a more rapid growth of the habit by comparison with other Indians? If 90% of the births registered each year in Alberta were born in that year, why should only 67% of the births registered in Ontario in 1968 have been born in 1968? No satisfying answers have thus far been adduced.

Table 15

Trend in Late Registration of Births
by Births Registered Annually
by provinces
1965-1968

Province or Territory	Total Registration of Births				Number actually born in Previous Years				Per Cent of Registration born in previous years			
	1965	1966	1967	1968	1965	1966	1967	1968	1965	1966	1967	1968
P.E.I.	19	12	14	18	5	3	4	1	26.3	25.0	28.6	5.6
N.S.	129	128	148	145	31	24	38	37	24.0	18.7	25.7	25.5
N.B.	147	122	154	136	24	17	35	16	16.3	13.9	22.7	11.8
Que	845	778	741	841	138	144	131	205	16.3	18.5	17.7	24.4
Ont	1662	1736	1683	1736	328	423	519	570	19.7	24.4	30.8	32.8
Eastern	2802	2776	2740	2876	526	611	727	829	18.8	22.0	26.5	28.8
Man	1461	1447	1533	1483	215	251	294	282	14.7	17.3	19.2	19.0
Sask	1496	1647	1560	1658	169	235	224	250	11.3	14.3	14.4	15.1
Alta	1167	1176	1199	1182	88	95	127	121	7.5	8.1	10.6	10.2
Prairie	4124	4270	4292	4323	472	581	645	653	11.4	13.6	15.0	15.1
B.C.	1706	1621	1589	1517	155	239	249	205	9.1	14.7	15.7	13.5
Yuk	108	65	130	78	3	4	15	14	2.8	6.2	11.5	17.9
West Coast	1814	1686	1719	1595	158	243	264	219	8.7	14.4	15.4	13.7
N.W.T.	233	210	205	238	19	19	20	43	8.2	9.0	9.8	18.1
Canada	8973	8942	8956	9032	1175	1454	1656	1744	13.1	16.3	18.5	19.3

Data supplied by Indian Affairs Branch.

Table 15 examines the data on actual births in each year by provincial Indian populations for 1965-1967, omitting 1968 as the facts for that year are not yet known.

Table 15 can be contrasted with Table 16, keeping in mind that Table 15 deals with the data as registered and Table 16 with the data arranged to show the actual number of births in the years under study, assuming all were registered by the end of the following year. Despite this assumption, in almost every province where the Indian population is large enough to give a reasonably reliable percentage except in British Columbia a steady downward trend in the percent of births registered in the year of birth can be seen. In British Columbia the situation appears to be more static, with around 88 to 89% of births in the year being registered in that year.

Ontario Indians show the lowest percentage registration of births in the year of birth but Quebec Indians are rapidly developing the same delaying of registration habits for no very obvious reason. Even Indians in the Northwest Territories appear to be adopting the habit but, in their case, communications are not always easy and there may be more excuse for delay in registration than in better organised areas. Mere chance could account for many of those annual reductions in the percent of births registered in the year of birth but the consistency of the pattern is striking and the matter must be kept under review.

Table 16

Trend in Late Registration of Births
by Actual Number of Births Each Year
by provinces
1965-1967

Province or Territory	1965			1966			1967			Percentage of births registered in Y.o.b in		
	Births registered in			Births registered in			Births registered in			1965	1966	1967
	Y.o.b	Y.o.b + 1	Total	Y.o.b	Y.o.b + 1	Total	Y.o.b	Y.o.b + 1	Total			
P.E.I.	14	3	17	9	3	12	10	1	11	82.4	75.0	90.9
N.S.	98	16	114	104	18	122	110	19	129	86.0	85.3	85.3
N.B.	123	4	127	105	18	123	119	11	130	96.9	85.4	91.5
Que	707	85	792	634	76	710	610	125	735	89.3	89.3	83.0
Ont	1334	290	1624	1313	314	1627	1164	306	1470	82.1	80.7	79.2
Eastern	2276	398	2674	2165	429	2594	2013	462	2475	85.1	83.5	81.3
Man	1246	222	1468	1196	270	1466	1239	237	1476	84.9	81.6	83.9
Sask	1327	217	1544	1412	196	1608	1336	221	1557	86.0	87.8	85.8
Alta	1079	83	1162	1081	89	1170	1072	107	1179	92.9	92.4	90.9
Prairie	3652	522	4174	3689	555	4244	3647	565	4212	87.5	86.9	86.6
B.C.	1551	197	1748	1382	195	1577	1340	166	1506	88.7	87.6	89.0
Yuk	105	1	106	61	11	72	115	12	127	99.1	84.7	90.6
West Coast	1656	198	1854	1443	206	1649	1455	178	1633	89.3	87.5	89.1
N.W.T.	214	17	231	191	18	209	185	35	220	92.6	91.4	84.1
Canada	7798	1135	8933	7488	1208	8696	7300	1240	8540	87.3	86.1	85.5

Original data supplied by Indian Affairs Branch.

Table 17

Trend in Degree of Error in Registering Births
by provinces
1965-1967

Province Or Territory	Births as registered			Actually Born			Error in register per cent number born		
	1965	1966	1967	1965	1966	1967	1965	1966	1967
P.E.I.	19	12	14	17	12	11	+11.8	-	+27.3
N.S.	129	128	148	114	122	129	+13.2	+ 4.9	+14.7
N.B.	147	122	154	127	123	130	+15.7	- 0.8	+18.4
Que	845	778	741	792	710	735	+ 6.7	+ 9.6	+ 0.8
Ont	1662	1736	1683	1624	1627	1470	+ 2.3	+ 6.7	+14.5
Eastern	2802	2776	2740	2674	2594	2475	+ 4.8	+ 7.0	+10.7
Man	1461	1447	1533	1468	1466	1476	- 0.5	- 1.3	+ 3.9
Sask	1496	1647	1560	1544	1608	1557	- 3.1	+ 2.4	+ 0.2
Alta	1167	1176	1199	1162	1170	1179	+ 0.4	+ 0.5	+ 1.7
Prairie	4124	4270	4292	4174	4244	4212	- 1.2	+ 0.6	+ 1.9
B.C.	1706	1621	1589	1748	1577	1506	- 2.4	+ 2.8	+ 5.5
Yuk	108	65	130	106	72	127	+ 1.9	- 9.7	+ 2.4
West Coast	1814	1686	1719	1854	1649	1633	- 2.2	+ 2.2	+ 5.3
N.W.T.	233	210	205	231	209	220	+ 0.9	+ 0.5	- 6.8
Canada	8973	8942	8956	8933	8696	8540	+ 0.4	+ 2.8	+ 4.9

Note that the degree of error tended to increase in each successive year, particularly among Indians in the eastern provinces.

Late Registration and Infant Mortality

Clearly the late registration of births confuses calculation of infant mortality rates. The preceding analysis, however, now makes it possible to calculate infant mortality rates

- a) as conventionally calculated
- b) for actual deaths among children born in any given year

Table 18a

Infant Mortality Rates
as normally calculated
1964-1968

Year	Actually Born in the year	Deaths under 12 months	Infant Mortality Rate per 1000 live births
1964	8817	563	63.85
1965	8933	470	52.61
1966	8696	456	52.44
1967	8540	458	53.63
1968	*8544	415	48.57

* Estimated on probability of apparent trend continuing.

A trend towards dropping slowed in 1966 and reversed in 1967.

Table 18b

Infant Mortality Rates
by Mortality in Cohort Actually Born in the Year

Year	Births in the Year	Deaths under 12 months			Infant mortality rate per 1000 live births
		In Year of Birth	In calendar year <u>following</u>	Total mortality in cohort	
1964	8817	398	154	552	62.61
1965	8933	316	157	473	52.95
1966	8696	299	199	498	57.27
1967	8540	259	144	403	47.19

The "lapse" occurred in the 1966 cohort. The trend, however, seems to be downward and apparently more rapidly than Table 18a indicates.

Both tables suggest some epidemic, probably of an upper respiratory system nature, early in 1967 resulted in an increase in infant mortality.

On the basis of the births registered and deaths under 12 months of age the infant mortality rates were much more erratic.

Table 18c

Infant Mortality Rates
as originally estimated

Year	Births registered	Deaths under 12 months	Infant Mortality rate per 1000 live births
1964	8250	563	68.24
1965	8973	470	52.38
1966	8942	456	51.00
1967	8956	458	51.14
1968	9032	415	45.95

On the basis of those born and registered in the year, the results are even more erratic and misleading

Table 18d

Infant Mortality Rates
on Mortality among Children Registered and Born in the Year

Year	Born in year	Died in year	Infant mortality rate per 1000 live births
1964	7925	398	50.22
1965	7798	316	40.52
1966	7488	299	39.93
1967	7300	259	35.48
1968	7288	271	37.18

Instead of the distinct drop in 1968 shown in the other tables, the infant mortality rate thus calculated appears as a sharp rise.

Table 18b probably gives the clearest indication of the trend. Tables 18a, c. and d. can be compared to indicate the effect of correcting the number of births to those actually born in the year. Table 18a gives the standard rate for comparison with other populations.

Table 19

Comparison of Infant Mortality

Year	Infant Mortality Rate		Per Cent Change
	Originally calculated on Births registered	Corrected to actual births in the year	
1964	68.24	63.85	- 6.43%
1965	52.38	52.61	+ 0.44%
1966	51.00	52.44	+ 2.82%
1967	51.14	53.63	+ 4.87%
1968	45.95	48.57	+ 5.70%

Except in 1964, when surprisingly few (relatively) births were registered, the effect of the correction was to increase the infant mortality rate and by more each year. Late registration of births has resulted in a decided under estimation of the actual infant mortality rate.

Table 20a

Infant Mortality Rates
by provinces
1965

Province or Territory	Births		Deaths under 12 months	Infant Mortality Rate		Per cent change of correction
	as registered	actual		by registration	actual	
P.E.I.	19	17	1	52.63	58.82	+11.8
N.S.	129	114	4	31.01	35.09	+13.2
N.B.	147	127	5	34.01	39.37	+15.7
Que	845	792	38	44.97	47.98	+ 6.7
Ont	1662	1624	55	33.09	33.87	+ 2.4
Eastern	2802	2674	103	36.76	38.52	+ 4.8
Man	1461	1468	89	60.92	60.63	- 0.5
Sask	1496	1544	92	61.50	59.59	- 3.1
Alta	1167	1162	58	49.70	49.91	+ 0.4
Prairie	4124	4174	239	57.95	57.26	- 1.2
B.C.	1706	1748	109	63.89	62.36	- 2.4
Yuk	108	106	7	64.81	66.04	+ 1.9
West Coast	1814	1854	116	63.95	62.57	- 2.2
N.W.T.	233	231	12	51.50	51.95	+ 0.9
Canada	8973	8933	470	52.38	52.61	+ 0.4

Original data supplied by Indian Affairs Branch.

Note that the number of births registered among Indians in the eastern provinces exceeded the number actually born in the year by, on average, 5% but that among prairie Indians and in British Columbia fewer births were registered in the year than were actually born. A large percentage of the births registered in the East had been born in previous years.

Table 20b

Infant Mortality Rate
by provinces
1966

Province or Territory	Births		Deaths under 12 months	Infant Mortality Rate		Per cent change of correction
	as registered	Actual		by registration	Actual	
P.E.I.	12	12	1	83.33	83.33	-
N.S.	128	122	4	31.25	32.79	+ 4.9
N.B.	122	123	3	24.59	24.39	- 0.8
Que	778	710	30	38.56	42.25	+ 9.6
Ont	1736	1627	56	32.26	34.42	+ 6.7
Eastern	2776	2594	94	33.86	36.24	+ 7.0
Man	1447	1466	89	61.51	60.71	- 1.3
Sask	1647	1608	95	57.68	59.08	+ 2.4
Alta	1176	1170	62	52.72	52.99	+ 0.5
Prairie	4270	4244	246	57.61	57.96	+ 0.6
B.C.	1621	1577	99	61.07	62.78	+ 2.8
Yuk	65	72	9	138.46	125.00	- 9.7
West Coast	1686	1649	108	64.06	65.49	+ 2.2
N.W.T.	210	209	8	38.10	38.28	+ 0.5
Canada	8942	8696	456	51.00	52.44	+ 2.8

Original data supplied by Indian Affairs Branch.

Table 20c.

Infant Mortality Rates
by Provinces
1967

Province or Territory	Births		Deaths under 12 months	Infant Mortality Rate		Per cent change of correction
	as registered	Actual		by registration	Actual	
P.E.I.	14	11	1	71.43	90.90	+27.3
N.S.	148	129	11	74.32	85.27	+14.7
N.B.	154	130	2	12.99	15.38	+18.4
Que	741	735	22	29.68	29.93	+ 0.8
Ont	1683	1470	54	32.09	36.73	+14.5
Eastern	2740	2475	90	32.85	36.36	+10.7
Man	1533	1476	79	51.53	53.52	+ 3.9
Sask	1560	1557	105	67.31	67.44	+ 0.2
Alta	1199	1179	57	47.54	48.35	+ 1.7
Prairie	4292	4212	241	56.15	57.22	+ 1.9
B.C.	1589	1506	113	71.11	75.03	+ 5.5
Yuk	130	127	4	30.77	31.50	+ 2.4
West Coast	1719	1633	117	68.06	71.65	+ 5.3
N.W.T.	205	220	10	48.78	45.45	- 6.8
Canada	8956	8540	458	51.14	53.63	+ 4.9

Original data supplied by Indian Affairs Branch.

With the exception of the Northwest Territories, all infant mortality rates would have been under estimated if the actual registration of births had been used. Among Eastern Indians the under estimation would have been very significant but, even among Prairie Indians, an error of 2% would have occurred.

Table 21

Trend in Corrected Infant Mortality Rates
by provinces

Province or Territory	Infant Mortality Rates per 1000 live Births		
	1965	1966	1967
P.E.I.	52.82	83.33	90.90
N.S.	35.09	32.79	85.27
N.B.	39.37	24.39	15.38
Que	47.98	42.25	29.93
Ont	33.87	34.42	36.73
Eastern	38.52	36.24	36.36
Man	60.63	60.71	53.52
Sask	59.59	59.08	67.44
Alta	49.91	52.99	48.35
Prairie	57.26	57.96	57.22
B.C.	62.36	62.78	75.03
Yuk	66.04	125.00	31.50
West Coast	62.57	65.49	71.65
N.W.T.	51.95	38.28	45.45
Canada	52.61	52.44	53.63

Indian infant mortality in Ontario and British Columbia has been trending upward. Elsewhere the trend has been slightly downward or static. The rise in the total rate in 1967 results from the rises in British Columbia, Ontario and Saskatchewan. Although P.E.I. shows a seemingly steady and startling increase, only 1 death per annum was involved, the rate resulting from falling births. Nova Scotia experienced a tragic year but even there only eleven deaths were involved. Saskatchewan had a bad year but the situation in Ontario and British Columbia holds the most significance and looks ominous.

Late Registration of Births and Birth Rates

On the basis of the actual registration of births and population the birth rates would be as follows.

Table 22

Birth Rates
By Annual Registration
of Births & Population
1964-1968

Year	Mid-year population	Births registered	Birth Rate per 1000 population
1964	208093	8250	39.65
1965	214744	8973	41.78
1966	221131	8942	40.44
1967	227533	8956	39.36
1968	234196	9032	38.57

However, when corrected to actual populations and births in each year, a different picture emerges.

Table 23

Birth Rates
by Actual Births and Population
1964-1968

Year	Mid-year population (Table 12)	Actual births in the year (Table 7)	Birth Rate per 1000 population
1964	208947	8817	42.20
1965	215757	8933	41.40
1966	222303	8696	39.12
1967	228757	8540	37.33
1968	*235444	*8544	36.29

* Estimated

Except in 1964, when the births in the year very obviously were under registered, the birth rates have been sharply reduced by correcting the data. Late registration of births results in over estimation of birth rates and increasingly so.

Table 24a.

Birth Rate
by Provinces
1965

Province or Territory	Mid-year pop.		Births		Birth Rates		change by correction
	as registered	Actual	as registered	actual	by regstrn	Actual	
P.E.I.	385	387	19	17	49.4	43.9	-11.1
N.S.	4046	4060	129	114	31.9	28.1	-11.9
N.B.	3771	3775	147	127	39.0	33.6	-13.8
Que	24077	24154	845	792	35.1	32.8	- 6.6
Ont	49010	49269	1662	1624	33.9	33.0	- 2.7
Eastern	81289	81645	2802	2674	34.5	32.8	- 4.9
Man	29415	29613	1461	1468	49.7	49.6	- 0.2
Sask	29500	29693	1496	1544	50.7	52.0	+ 2.6
Alta	24115	24189	1167	1162	48.4	48.0	- 0.8
Prairie	83030	83495	4124	4174	49.7	50.0	+ 0.6
B.C.	42695	42870	1706	1784	40.0	40.8	+ 2.0
Yuk	2254	2256	108	106	47.9	47.0	- 1.9
West Coast	44949	45126	1814	1854	40.4	41.1	+ 1.7
N.W.T.	5476	5491	233	231	42.5	42.1	- 0.9
Canada	214744	215757	8973	8933	41.8	41.4	- 1.0

Data supplied by Indian Affairs Branch.

See Table 14

Table 24b

Birth Rate
by Provinces
1966

Province or Territory	Mid-year pop		Births		Birth Rates		Per cent change by correction
	as registered	* Actual	as registered	Actual	by regstrn	Actual	
P.E.I.	396	399	12	12	30.3	30.1	- 0.7
N.S.	4141	4158	128	122	30.9	29.3	- 5.2
N.B.	3868	3879	122	123	31.5	31.7	+ 0.6
Que	23786	23867	778	710	32.7	29.7	- 9.2
Ont	51015	51317	1736	1627	34.0	31.7	- 6.8
Eastern	83206	83620	2776	2594	33.4	31.0	- 7.2
Man	30495	30741	1447	1466	47.5	47.7	+ 0.4
Sask	30723	30930	1647	1608	53.6	52.0	- 3.0
Alta	25011	25096	1176	1170	47.0	46.6	- 0.9
Prairie	86229	86767	4270	4244	49.5	48.9	- 1.2
B.C.	43728	43923	1621	1577	37.1	35.9	- 3.2
Yuk	2314	2321	65	72	28.1	31.0	+10.3
West Coast	46042	46244	1686	1649	36.6	35.7	- 2.5
N.W.T.	5654	5672	210	209	37.1	36.8	- 0.8
Canada	221131	222303	8942	8696	40.4	39.1	- 3.2

Data supplied by Indian Affairs Branch

* See Table 14

Table 24c.

Birth Rate
by Provinces
1967

Province or Territory	Mid-year pop.		Births		Birth Rate		Per Cent change by correction
	as registered	*Actual	as registered	Actual	by regstrn	Actual	
P.E.I.	404	406	14	11	34.7	27.1	-21.9
N.S.	4235	4254	148	129	34.9	30.3	-13.2
N.B.	3975	3990	154	130	38.7	32.6	-15.8
Que	24388	24488	741	735	30.0	30.0	- 1.3
Ont	52103	52413	1683	1470	32.3	28.0	-13.3
Eastern	85105	85551	2740	2475	32.2	28.9	-10.2
Man	31611	31864	1533	1476	48.5	46.3	- 4.5
Sask	31970	32178	1560	1557	48.8	48.4	- 0.8
Alta	25937	26035	1199	1179	46.2	45.3	- 1.9
Prairie	89518	90077	4292	4212	47.9	46.8	- 2.3
B.C.	44678	44859	1589	1506	35.6	33.6	- 5.6
Yuk	2407	2419	130	127	54.0	52.5	- 2.8
West Coast	47085	47278	1719	1633	36.5	34.5	- 5.5
N.W.T.	5825	5851	205	220	35.2	37.6	+ 6.8
Canada	227533	228757	8956	8540	39.4	37.3	- 5.3

Data supplied by Indian Affairs Branch

* See Table 14

Table 25

Trend in Degree of Reduction
in Birth Rates
by provinces
1965-1967

Province or Territory	Percentage Reduction of Rate on Correction		
	1965	1966	1967
P.E.I.	11	1	22
N.S.	12	5	13
N.B.	14	-	16
Que	7	9	1
Ont	3	7	13
Eastern	5	7	10
Man	0.2	-	5
Sask	-	3	1
Alta	0.8	1	2
Prairie	-	1	2
B.C.	-	3	6
Yuk	2	-	3
West Coast	-	3	6
N.W.T.	1	1	-
Canada	1	3	5

Percentage reductions rounded to whole figures from Tables 24a, b. c.
(Increases omitted).

Using the actual registration of births each year results in increasing over estimation of the birth rate.

Rates for Eastern Indians are most affected. Among them late registration of births is most common. In Ontario, where late registration is most serious, a birth rate based on actual registration would be over 13% too high. Among prairie Indians the degree of error is still only about 2%.

Table 26

Trend in Corrected Birth Rates
by provinces
1965-1967

Province or Territory	Birth Rates per 1000 population		
	1965	1966	1967
P.E.I.	43.9	30.1	27.1
N.S.	28.1	29.3	30.3
N.B.	33.6	31.7	32.6
Que	32.8	29.7	30.0
Ont	33.0	31.7	28.0
Eastern	32.8	31.0	28.9
Man	49.6	47.7	46.3
Sask	52.0	52.0	48.4
Alta	48.0	46.6	45.3
Prairie	50.0	48.9	46.8
B.C.	40.8	35.9	33.6
Yuk	47.0	31.0	52.5
West Coast	41.1	35.7	34.5
N.W.T.	42.1	36.8	37.6
Canada	41.4	39.1	37.3

Rates taken from Tables 24a., b. & c.

The birth rate for most groups of Indians has trended downward. In Nova Scotia the trend has been upward and the two northern territories had an increase in 1967 but these are all relatively small populations.

Note the much higher birth rates of prairie Indians compared with other Indians.

Late Registration of Births and Natural Increase

Natural increase is the excess of births over deaths in a year. If this should be estimated on the actual registration in any given year, the following results

Table 27 Natural Increase of Indian Population
by Annual Registration
of Births & Population

Year	Mid-Year population	Births registered	Deaths registered	Natural Increase	Increase per cent population
1964	208093	8250	1930	6320	3.0
1965	214744	8973	1881	7092	3.3
1966	221131	8942	1933	7009	3.2
1967	227533	8956	1915	7041	3.1
1968	234196	9032	2024	7008	3.0

Data supplied by Indian Affairs Branch.

If, however, the figures are corrected to the actual births in the year, the picture changes as shown below.

Table 28 Natural Increase of Indian Population
by Actual Births

Year	Mid-Year population	Actual births	Deaths registered	Natural Increase	Increase per cent population
1964	208947	8817	1930	6887	3.3
1965	215757	8933	1881	7052	3.3
1966	222303	8696	1933	6763	3.0
1967	228757	8540	1915	6625	2.9
1968	*235444	*8544	2024	6520	2.8

*Estimated on probability of apparent trend continuing.

The decline has been somewhat more rapid than Table 27 shows.

Table 29a

Natural Increase
by provinces
1965

Province or Territory	Population		Births		Deaths registered	Natural Increase		Increase per cent		Per cent change of correction
	As registered	Actual	as registered	Actual		by regstn	Actual	by regstn	Actual	
P.E.I.	385	387	19	17	8	11	9	2.9	2.3	-20.7
N.S.	4046	4060	129	114	24	105	90	2.6	2.2	-15.4
N.B.	3771	3775	147	127	34	113	93	3.0	2.5	-16.7
Que	24077	24154	845	792	163	682	629	2.8	2.6	- 7.1
Ont	49010	49269	1662	1624	408	1254	1216	2.6	2.5	- 3.8
Eastern	81289	81645	2802	2674	637	2165	2037	2.7	2.5	- 7.4
Man	29415	29613	1461	1468	245	1216	1223	4.1	4.1	-
Sask	29500	29693	1496	1544	273	1223	1271	4.1	4.3	+ 4.9
Alta	24115	24189	1167	1162	165	1002	997	4.2	4.1	-
Prairie	83030	83495	4124	4174	683	3441	3491	4.1	4.2	+ 2.4
B.C.	42695	42870	1706	1748	496	1210	1252	2.8	2.9	+ 3.6
Yuk	2254	2256	108	106	22	86	84	3.8	3.7	- 2.6
West Coast	44949	45126	1814	1854	518	1296	1336	2.9	3.0	+ 3.4
N.W.T.	5476	5491	233	231	43	190	188	3.5	3.4	- 2.8
Canada	214744	215757	8973	8933	1881	7092	7052	3.3	3.3	-

Original data supplied by Indian Affairs Branch.

Table 29b

Natural Increase
by provinces
1966

Province or Territory	Population		Births		Deaths registered	Natural Increase		Increase per cent		Percent change of correction
	As registered	Actual	As registered	Actual		by regstrn	Actual	by regstrn	Actual	
P.E.I.	396	399	12	12	3	9	9	2.3	2.3	-
Q.S.	4141	4158	128	122	28	100	94	2.4	2.3	- 4.2
Q.B.	3868	3879	122	123	28	94	95	2.4	2.4	-
Que.	23786	23867	778	710	155	623	555	2.6	2.3	-11.5
Ont	51015	51317	1736	1627	458	1278	1169	2.5	2.3	- 8.0
Eastern	83206	83620	2776	2594	672	2104	1922	2.5	2.3	- 8.0
Man	30495	30741	1447	1466	262	1185	1204	3.9	3.9	-
Sask	30723	30930	1647	1608	276	1371	1332	4.5	4.3	- 4.4
Alta	25011	25096	1176	1170	196	980	974	3.9	3.9	-
Prairie	86229	86767	4270	4244	734	3536	3510	4.1	4.0	- 2.4
B.C.	43728	43923	1621	1577	471	1150	1106	2.6	2.5	- 3.8
Yuk	2314	2321	65	72	25	40	47	1.7	2.0	+17.6
West Coast	46042	46244	1686	1649	496	1190	1153	2.6	2.5	- 3.8
N.W.T.	5654	5672	210	209	31	179	178	3.2	3.1	- 3.1
Canada	221131	222303	8942	8696	1933	7009	6763	3.2	3.0	- 6.3

Original data supplied by Indian Affairs Branch.

Table 29c

Natural Increase
by provinces
1967

Province or Territory	Population		Births		Deaths registered	Natural Increase		Increase per cent		Percent change of correction
	As registered	Actual	As registered	Actual		by regstrn	Actual	by regstrn	Actual	
P.E.I.	404	406	14	11	5	9	6	2.2	1.5	-31.8
N.S.	4235	4254	148	129	41	107	88	2.5	2.1	-16.0
N.B.	3975	3990	154	130	25	129	105	3.2	2.6	-18.7
Que	24388	24488	741	735	158	583	577	2.4	2.4	-
Ont	52103	52413	1683	1470	416	1267	1054	2.4	2.0	-16.7
Eastern	85105	85551	2740	2475	645	2095	1830	2.5	2.1	-16.0
Man	31611	31864	1533	1476	266	1267	1210	4.0	3.8	- 5.0
Sask	31970	32178	1560	1557	286	1274	1271	4.0	3.9	- 2.5
Alta	25937	26035	1199	1179	192	1007	987	3.9	3.8	- 2.6
Prairie	89518	90077	4292	4212	744	3548	3468	4.0	3.9	- 2.5
B.C.	44678	44859	1589	1506	478	1111	1028	2.5	2.3	- 8.0
Yuk	2407	2419	130	127	14	116	113	4.8	4.7	- 2.1
West Coast	47085	47278	1719	1633	492	1227	1141	2.6	2.4	- 7.7
N.W.T.	5828	5851	205	220	34	171	186	2.9	3.2	+10.3
Canada	227533	228757	8956	8540	1915	7041	6625	3.1	2.9	- 6.5

Original data supplied by Indian Affairs Branch.

Table 30

Trend in Degree of Reduction
in Rate of Natural Increase
1965-1967

Province or Territory	Percentage Reduction of Rate on Correction		
	1965	1966	1967
P.E.I.	21	-	32
N.S.	15	4	16
N.B.	17	-	19
Que8	7	12	-
Ont	4	8	17
Eastern	7	8	16
Man	-	-	5
Sask	-	4	3
Alta	-	-	3
Prairie	-	2	3
B.C.	-	4	8
Yuk	3	-	2
West Coast	-	4	8
N.W.T.	3	3	-
Canada	-	6	7

Reduction taken from tables 29a, b & c rounded to the whole figure.
Increases omitted.

Use of the actual registration of births each year results in an increasing over estimation of the rate of natural increase, particularly among Indians in the eastern provinces. Late registration of births has only just begun to affect prairie Indians but, among Eastern Indians, delay in registering births has already introduced an error of 16% in computing the rate of natural increase.

Table 31

Trend in Corrected Rates
of Natural Increase
by provinces
1965-1967

Province or Territory	Rate of Natural Increase percent of population		
	1965	1966	1967
P.E.I.	2.3	2.3	1.5
N.S.	2.2	2.3	2.1
N.B.	2.5	2.4	2.6
Que	2.6	2.3	2.4
Ont	2.5	2.3	2.0
Eastern	2.5	2.3	2.1
Man	4.1	3.9	3.8
Sask	4.3	4.3	3.9
Alta	4.1	3.9	3.8
Prairie	4.2	4.0	3.9
B.C.	2.9	2.5	2.3
Yuk	3.7	2.0	4.7
West Coast	3.0	2.5	2.4
N.W.T.	3.4	3.1	3.2
Canada	3.3	3.0	2.9

Rates taken from Tables 29a, b & c.

The general trend is downward.

Note the significant difference between the rate of natural increase among prairie Indians and other Indians.

Late Registration of Births and Vital Index

Based on the number of births registered each year the rate at which the dying were being replaced by new live births would appear to have been as follows.

Table 32 Vital Index
by Annual Registration of Births
1964-1968

Year	Births registered	Deaths registered	Vital Index
1964	8250	1930	4.275
1965	8973	1881	4.770
1966	8942	1933	4.626
1967	8956	1915	4.678
1968	9032	2024	4.462

Data supplied by Indian Affairs Branch.

Corrected to the numbers actually born in these years the picture changes as follows.

Table 33 Vital Index
by Actual Births
1964-1968

Year	Actually Born	Deaths registered	Vital Index
1964	8817	1930	4.568
1965	8933	1881	4.749
1966	8696	1933	4.499
1967	8540	1915	4.460
1968	*8544	2024	4.221

*Estimated on probability of apparent trend continuing.

The rate of replacement has been steadily declining.

Table 34a

Vital Index
by provinces
1965

Province or Territory	Births		Deaths registered	Vital Index		Percent change of correction
	as registered	Actual		by rgstrn	Actual	
P.E.I.	19	17	8	2.375	2.125	-10.5
N.S.	129	114	24	5.375	4.750	-11.6
N.B.	147	127	34	4.324	3.735	-13.6
Que	845	792	163	5.184	4.859	- 6.3
Ont	1662	1624	408	4.074	3.980	- 2.3
Eastern	2802	2674	637	4.399	4.198	- 4.5
Man	1461	1468	245	5.963	5.992	+ 0.5
Sask	1496	1544	273	5.480	5.656	+ 3.2
Alta	1167	1162	165	7.073	7.042	- 0.4
Prairie	4124	4174	683	6.038	6.111	+ 1.2
B.C.	1706	1748	496	3.440	3.524	+ 2.4
Yuk	108	106	22	4.909	4.818	- 1.8
West Coast	1814	1854	518	3.502	3.579	+ 2.2
N.W.T.	233	231	43	5.419	5.372	- 0.8
Canada	8973	8933	1881	4.770	4.749	- 0.4

Original data supplied by Indian Affairs Branch.

Table 34b.

Vital Index
by provinces
1966

Province or Territory	Births		Deaths registered	Vital Index		Percent change of correction
	as registered	Actual		by rgstrn	Actual	
P.E.I.	12	12	3	4.000	4.000	-
N.S.	128	122	28	4.571	4.357	- 4.6
N.B.	122	123	28	4.357	4.393	+ 0.8
Que	778	710	155	5.019	4.581	- 8.7
Ont	1736	1627	458	3.790	3.552	- 6.2
Eastern	2776	2594	672	4.131	3.860	- 6.5
Man	1447	1466	262	5.523	5.595	+ 1.3
Sask	1647	1608	276	5.967	5.826	- 2.3
Alta	1176	1170	196	6.000	5.969	- 0.5
Prairie	4270	4244	734	5.817	5.782	- 0.6
B.C.	1621	1577	471	3.442	3.348	- 2.7
Yuk	65	72	25	2.600	2.880	+10.8
West Coast	1686	1649	496	3.399	3.325	- 2.1
N.W.T.	210	209	31	6.774	6.742	- 0.5
Canada	8942	8696	1933	4.626	4.499	- 2.7

Original data supplied by Indian Affairs Branch.

Table 34c

Vital Index
by provinces
1967

Province or Territory	Births		Deaths registered	Vital Index		Percent change of correction
	as registered	Actual		by rgstrn	Actual	
P.E.I.	14	11	5	2.800	2.200	-21.4
N.S.	148	129	41	3.610	3.146	-12.8
N.B.	154	130	25	6.160	5.200	-15.5
Que	741	735	158	4.690	4.652	- 0.8
Ont	1683	1470	416	4.046	3.534	-12.6
Eastern	2740	2475	645	4.248	3.837	- 9.6
Man	1533	1476	266	5.763	5.549	- 3.7
Sask	1560	1557	286	5.455	5.444	- 0.2
Alta	1199	1179	192	6.245	6.141	- 1.6
Prairie	4292	4212	744	5.769	5.661	- 1.8
B.C.	1589	1506	478	3.324	3.151	- 5.2
Yuk	130	127	14	9.286	9.071	- 2.3
West Coast	1719	1633	492	3.494	3.319	- 5.0
N.W.T.	205	220	34	6.029	6.471	+ 7.3
Canada	8596	8540	1915	4.678	4.460	- 4.7

Original data supplied by Indian Affairs Branch.

Table 35 Trend in Corrected Vital Indices
by provinces
1965-1967

Province or Territory	Vital Index		
	1965	1966	1967
P.E.I.	2.125	4.000	2.200
N.S.	4.750	4.357	3.146
N.B.	3.735	4.393	5.200
Que	4.859	4.581	4.652
Ont	3.980	3.552	3.534
Eastern	4.198	3.860	3.837
Man	5.992	5.595	5.549
Sask	5.656	5.826	5.444
Alta	7.042	5.969	6.141
Prairie	6.111	5.782	5.661
B.C.	3.524	3.348	3.151
Yuk	4.818	2.880	9.071
West Coast	3.579	3.325	3.319
N.W.T.	5.372	6.742	6.471
Canada	4.749	4.499	4.460

Indices taken from Tables 34a, b & c.

The rate of replacement of the dead by new live births has tended to decrease.

Using the number of births actually registered each year would have resulted in an increasing over-estimation of the vital index.

Table 36

Crude Death Rates
by provinces
1965-1967

(Based on mid-year estimates of population as registered
and as corrected for late registration of births)

Province or Territory	1965		1966		1967	
	Rate on rgstrn	Corrected Rate	Rate on rgstrn	Corrected Rate	Rate on rgstrn	Corrected Rate
P.E.I.	20.8	20.7	7.6	7.5	12.4	12.3
N.S.	5.9	5.9	6.8	6.7	9.7	9.6
N.B.	9.0	9.0	7.2	7.2	6.3	6.3
Que	6.8	6.7	6.5	6.5	6.5	6.5
Ont	8.3	8.3	9.0	8.9	8.0	7.9
Eastern	7.8	7.8	8.1	8.0	7.6	7.5
Man	8.3	8.3	8.6	8.5	8.4	8.4
Sask	9.3	9.2	9.0	8.9	8.9	8.9
Alta	6.8	6.8	7.8	7.8	7.4	7.4
Prairie	8.2	8.2	8.5	8.5	8.3	8.3
B.C.	11.6	11.6	10.8	10.7	10.7	10.7
Yuk	9.8	9.8	10.8	10.8	5.8	5.8
West Coast	11.5	11.5	10.8	10.7	10.4	10.4
N.W.T.	7.9	7.8	5.5	5.5	5.8	5.8
Canada	8.8	8.7	8.7	8.4	8.4	8.7

Mortality rates, except infant mortality, are not significantly affected.

Summary

In 1965 it came to notice that the number of births registered each year included a considerable number of births in previous years, in some cases more than ten years previously.

Subsequently it has been observed that the percentage of these births in previous years registered annually as "new births" has been steadily increasing, particularly among Indians in the eastern provinces.

The best practical estimate of the actual number of births in any given year appears to be obtained by adding to the number registered as "under 1 year old" at the time of registration the number registered as "1 year old" in the following year. In other words, most births in any one year do appear to get registered by the end of the year following the year of birth.

When this adjustment is made, the anomaly shown in the register, whereby apparently more children always end the year aged 1 year old than start it under the age of 1 year despite marked mortality among them, can be almost completely explained as has been demonstrated.

The population registered as "under 1 year" each Dec. 31st has been determined by the number of children born during the year whose births were registered during the year but excludes those born whose births were not immediately registered. These births, added the following year, inflate the survivors aged 1 year at the year end. The population under 1 year of age actually living at each year end has thus consistently been under registered and increasingly so.

Because the population under 1 year of age has been under registered, the total population has also been under registered by the same number of births that actually occurred but were not registered during the year.

A further complication has been that, by using the year of birth to determine age, from one third to one fifth of deaths under twelve months of age each year have been classified as "1 year old". These were children born the year before who died in the current year while still not yet twelve months of age.

Under registration of births due to delayed registration and under reporting of infant deaths has resulted in distortion of the infant mortality rates. Corrected rates are shown. The original rates were, in general, under estimated.

Delayed registration of births (and, consequently, under registration of the population) resulted in distortion of birth rates. Corrected rates are shown. Birth rates, in general, tended to be over estimated but there were instances of under estimation. The error arises from assuming that the births actually registered represented the number actually born in the year which, increasingly, is not the case.

Confused registration of births resulted in over estimation of the rate of natural increase and of the vital index. Corrected rates are shown.

The degree of difference made in the population (about 0.5%) was not significant enough to make any real change in the crude mortality rates. A slight over estimation of mortality among eastern Indians can be corrected but the error is minor.

Confused registration of births tended to obscure trends in the rates or, at least, the rate of change.

The degree of error in all respects has been steadily increasing year by year and affects most of all Indians in the eastern provinces.

The number of births registered each year has increasingly exceeded the number actually born, an increasing percentage having been born in previous years.

Only some 85% of actual births in a year appear to get registered in that year.

The confusion has masked a true under registration of births, under registration of the population and produced over estimation of birth rates, natural increase and vital indices while infant mortality was quite seriously under estimated.