

## 4. Discussion of Changes 1991 – 1996 – 2001

### 4.1 Dependencies

Appendix D shows all of the dependencies estimated for the 63 local areas of this report for each of the census years 1991, 1996 and 2001. Not all sectors were calculated in each year, so these results have been aggregated to a common sectoral basis. Readers are cautioned in viewing these tables that some of the shifts from Other Non-employment Income (ONEI) to Transfer Payments (TRAN) in the interval from 1991 to 1996 may be at least partly the result of the way that the data relating to non-employment income was interpreted for these two years. For the major purposes of this study the more relevant statistic is probably the total non-employment income dependency, i.e. TRAN + ONEI and this statistic has remained fairly stable for most communities over the study period.

A natural question to ask is just how the dependencies have changed across all communities in the province over the period studied. One way to answer this is just to compute the mean dependency across all 63 local areas for each period. The results of this calculation are shown in Table 4.1.

**Table 4.1 – Mean Income Dependencies for all 63 Local Areas**

Year	FOR	MIN	F&T	AGF	TOU	PUB	OTH	TRAN	ONEI
2001	18	4	1	3	7	25	12	18	12
1996	21	4	2	3	7	24	12	16	10
1991	18	6	1	3	5	19	15	13	20

Perhaps not too surprisingly, averaged across the whole province, these figures show considerable stability. Community dependence on Forestry appears to have grown from 1991 to 1996 but then fell back again to 1991 levels in 2001. Mining and mineral processing dropped by 33% from 1991 to 1996 and has remained steady thereafter. Fishing and trapping increased in 1996 but then fell back to its 1991 level in 2001. Dependence on Agriculture and food processing has remained very steady over the entire decade. B. C. community's dependence on Tourism grew about 40% from 1991 to 1996, but has remained stable thereafter. Dependence on public sector activities has grown over the decade, from 19% in 1991 to 25% in 2001.

Each reader of this report will have their own particular places of interest and will want to interpret the changes in those places in their own way and according to their own knowledge of the local situation. Table 4.2 shows where the largest changes have taken place in the province.

**Table 4.2 Selected Areas and Sectors where the Largest Dependency Changes have taken place**

Area	Sector	2001	1996	1991
Stewart	Mining & Min Proc	4	11	43
Stewart	Public Sector	41	35	22
Squamish	Tourism	29	26	14
Port Hardy	Min & Min Proc	1	5	13
Port Hardy	Forestry	59	51	37
Hazleton	Forestry	29	37	39
Stewart	Forestry	9	25	18
Fort St. John	Min & Min Proc	32	26	23
Prince Rupert	Fishing & Trap.	11	15	18
Queen Charlottes	Public Sector	30	32	36
Matsqui-Abbotsford	Agric & Food	11	10	7
McBride-Valemount	Agric. & Food	2	4	6
Stewart	Tourism	5	7	8
Stewart	Fishing & Trap.	3	3	1

When interpreting Table 4.2, or any of these changes in dependencies for that matter, it is important to remember that the dependency is the share of income that a particular sector provides for a community. However, it does not follow automatically that just because the dependency has increased (or decreased) the absolute amount of income provided by that sector has increased (or decreased); only that its share of income *relative to other sectors* has increased (or decreased). Since the dependencies have to add up to 100% in each year it should not be too surprising that the same communities often occur more than once in Table 4.2 - where one sector has increased (or decreased) significantly others must also change to maintain the 100% total, even if, in absolute terms, they have not changed at all.

By the same reasoning, the dependency figures alone, and changes in them, do not say anything about the changing economic health of the community. To use the pie analogy, the dependencies tell us the relative size of the pie pieces provided by each basic sector, but these figures alone say nothing about whether the pie has gotten bigger or smaller - whether the community has gotten more prosperous in 2001 than it was in 1991 or vice versa.

Nevertheless, some of the changes in Table 4.2 are striking and worthy of comment. They put numbers to what knowledgeable people knew already. The drop in mining dependence in the Port Hardy area coincides with the closure of the mine there. The increase in Tourism dependence in the Squamish area is no doubt due to the development of Whistler as a world-class tourist destination. The Stewart area has seen more economic changes than any other area in the province over the last decade, with significant declines in Mining and Forestry and to a lesser extent in Tourism.

There have been some changes in the dominant basic sector for some local areas between 1996 and 2001. These can be seen in Map 4.1.

## 4.2 Diversity and Forest Vulnerability

### 4.2.1 Diversity Indices

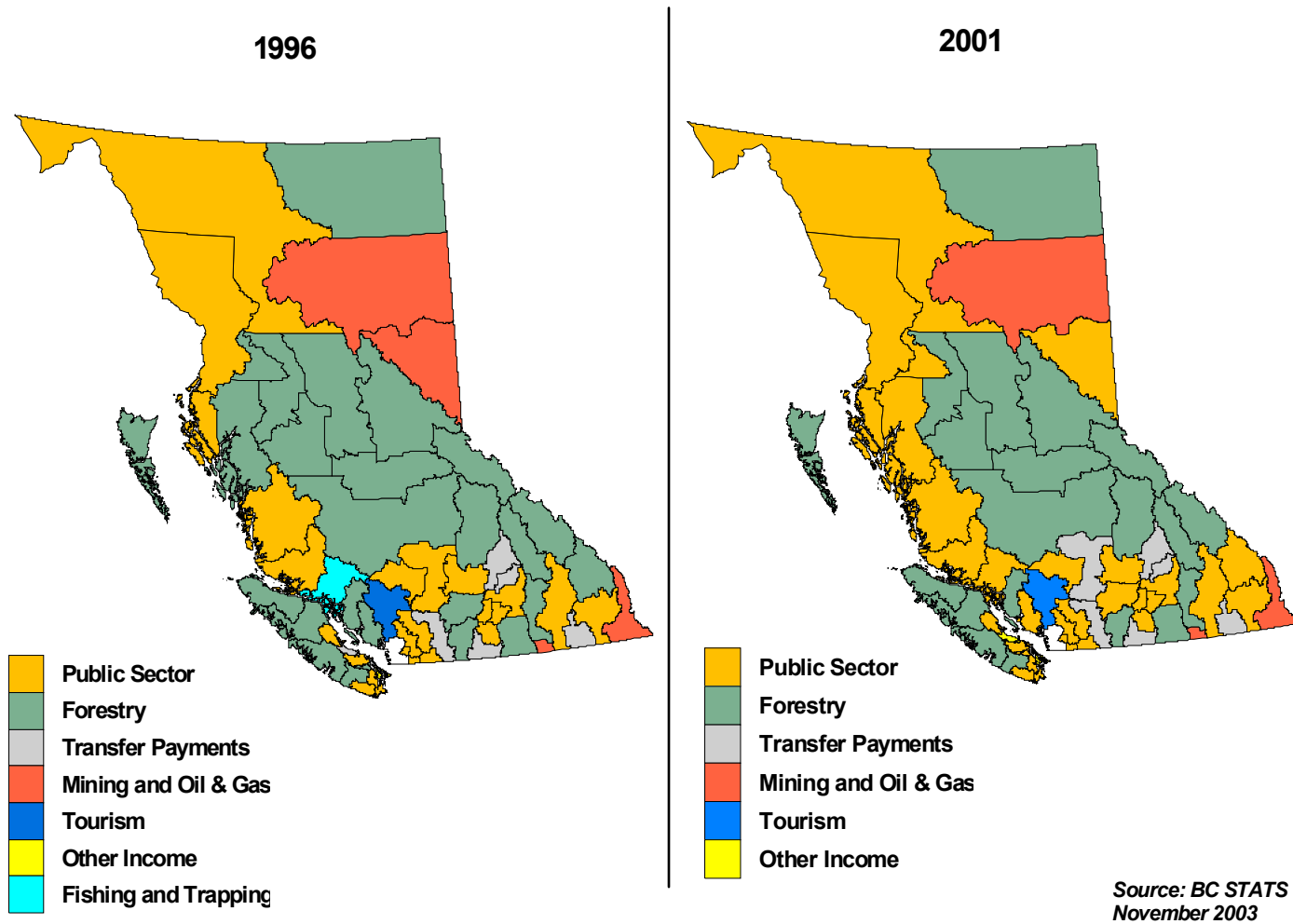
Table 4.3 displays for each local area the diversity indices for each of the three years being compared. The mean values for diversity in the three years are: 67 in 2001, 67 in 1996, and 72 in 1991. The difference between 1991 and the other two years may mean that communities in British Columbia have become less diverse over the decade, but it may also reflect methodological differences between the 1991 calculations and those for the later years.

In any event, it is noteworthy that the diversity of some communities has decreased far more than the average decline. These include Port Hardy (down by 14), Central Coast (15), Princeton (14), Oliver-Osoyoos (11), Merritt (12), Prince Rupert (10), Stewart (11), Smithers-Houston (10), and Vanderhoof (11).

A few communities have actually increased in diversity despite the general decline. These include Pitt Meadows-Maple Ridge (up by 4), Golden (4) and, best of all, Fernie that went from 52 in 1991 to 57 in 1996 to 61 in 2001.

A final caveat here is that while, in general, diversity is probably good it is no guarantee of prosperity. A one-industry town that loses its industry probably has increasing diversity as it struggles to avoid becoming a ghost town.

### Map 4.1 Dominant Income Sources



Source: BC STATS  
November 2003

**Table 4.3**  
**Diversity Indices - 2001 - 1996 - 1991**

<b>VANCOUVER ISLAND/COAST</b>	<b>2001</b>	<b>1996</b>	<b>1991</b>	<b>KOOTENAY</b>	<b>2001</b>	<b>1996</b>	<b>1991</b>
1 Gulf Islands	66	66	71	40 Fernie	61	57	52
2 Victoria	58	59	65	41 Cranbrook-Kimberley	74	73	76
3 Sooke-Port Renfrew	60	61	66	42 Invermere	74	73	76
4 Duncan	69	70	75	43 Castlegar-Arrow Lakes	69	67	74
5 Lake Cowichan	63	64	67	44 Nelson	69	68	75
6 Ladysmith	69	71	71	45 Creston	68	70	77
7 Nanaimo	69	72	75	46 Grand Forks-Greenwood	69	70	75
8 Parksville-Qualicum	67	71	75	47 Trail-Rosland	66	67	69
9 Alberni	65	63	71	<b>CARIBOO</b>			
10 Courtenay-Comox	68	70	74	48 Williams Lake	67	68	72
11 Campbell River	70	66	71	49 Quesnel	57	56	63
12 Bute Inlet	75	76	81	50 Prince George	64	65	68
13 Powell River	67	65	67	51 McBride-Valemount	68	61	68
14 Alert Bay	65	67	73	<b>NORTH COAST</b>			
15 Port Hardy	52	52	66	52 Queen Charlotte Island	62	59	61
16 Central Coast	60	60	75	53 Prince Rupert	66	69	76
<b>MAINLAND/SOUTHWEST</b>				54 Kitimat-Terrace	70	71	75
17 Hope-Fraser Canyon	71	71	77	55 Hazelton	59	56	60
18 Chilliwack	70	68	73	56 Stewart	59	62	70
19 Kent-Harrison	71	70	79	<b>NECHAKO</b>			
20 Matsqui-Abbotsford	73	74	74	57 Smithers-Houston	63	64	73
21 Pitt Meadows-Maple Ridge	70	71	66	58 Burns Lake	60	58	65
22 Mission	72	73	73	59 Vanderhoof	56	56	67
23 Sunshine Coast	72	72	76	60 Stikine	58	48	54
24 Squamish	69	71	72	<b>NORTHEAST</b>			
25 Lillooet	67	64	73	61 Dawson Creek	74	72	74
<b>THOMPSON-OKANAGAN</b>				62 Fort St. John	70	75	74
26 Princeton	65	72	79	63 Ft. Nelson	68	56	69
27 Oliver-Osoyoos	66	68	77				
28 Penticton	68	69	75				
29 Ashcroft	76	77	81				
30 Merritt	68	70	80				
31 Kamloops	72	74	75				
32 North Thompson	61	64	66				
33 Peachland	73	77	73				
34 Kelowna	73	73	73				
35 Vernon	72	74	77				
36 Spallumcheen	75	75	79				
37 Salmon Arm	73	73	77				
38 Golden	72	72	68				
39 Revelstoke	73	74	71				

#### 4.2.2 Forest Vulnerability over the decade

Table 4.4 displays forest vulnerability indices (FVI) for each local area for each of the three years, 2001, 1996 and 1991. As discussed in Section 2.3 the FVI is a normalized index – the most vulnerable place by this measure is set to 100 and the least vulnerable to zero and the other areas fall into place between these two extremes. In 2001 the most vulnerable was Port Hardy and the least vulnerable was Victoria. It was decided that comparisons between years would be more meaningful if these same “goal posts” were maintained, even for the other years. Thus, the figures given in Table 4.4 differ slightly from those given in Table 3.4.4 of the 1999 report though their relative position is the same. There were no FVI published in the 1995 report (reporting on 1991).

The mean FVI over the 63 areas is 25 in 2001, 29 in 1996, and 21 in 1991. Thus, the communities in B. C., on average were least vulnerable to forest sector downturns in 1991. The vulnerability increased significantly in 1996, and in 2001 the vulnerability lessened but not back to the 1991 level.

Individual areas showed a lot more variation. However, quite a few followed the same general pattern as the province, with an increase in vulnerability from 1991 to 1996 and then a decrease in 2001 but not back to the 1991 level. These areas include Ladysmith, Alberni, Port Hardy, Merritt, Quesnel, Prince George, the Queen Charlottes, Smithers-Houston, Burns Lake, and Vanderhoof.

Six local areas show a steady increase in forest sector vulnerability over the period studied. These places are Princeton, Ashcroft, North Thompson, Grand Forks-Greenwood, Williams Lake, and Prince Rupert. Four local areas had some increase in vulnerability in the period 1991 to 1996, but in 2001 were less vulnerable than they had been in 1991. These places are Powell River, Hazelton, Stewart, and the Stikine region. Finally, two areas in the province had significant declines in forest sector vulnerability during each 5-year period. These places are Sooke-Port Renfrew and Golden.

**Table 4.4**  
**Forest Vulnerability Indices - 2001 -1996 - 1991**

	2001	1996	1991		2001	1996	1991
1Gulf Islands	0	0	2	36Spallumcheen	12	13	12
2Victoria	0	1	1	37Salmon Arm	11	12	13
3Sooke-Port Renfrew	3	9	10	38Golden	28	31	44
4Duncan	22	25	19	39Revelstoke	23	24	18
5Lake Cowichan	48	50	48	40Fernie	12	13	13
6Ladysmith	25	29	18	41Cranbrook-Kimberley	14	18	12
7Nanaimo	13	14	10	42Invermere	18	23	20
8Parksville-Qualicum	9	9	8	43Castlegar-Arrow Lakes	31	41	26
9Alberni	45	57	37	44Nelson	15	16	10
10Courtenay-Comox	13	14	11	45Creston	12	13	9
11Campbell River	36	50	40	46Grand Forks-Greenwood	32	30	23
12Bute Inlet	4	10	6	47Trail-Rossland	3	6	2
13Powell River	36	49	48	48Williams Lake	42	42	31
14Alert Bay	10	24	11	49Quesnel	78	85	61
15Port Hardy	100	104	53	50Prince George	47	48	40
16Central Coast EDA	21	43	21	51McBride-Valemount	40	64	44
17Hope-Fraser Canyon	16	19	13	52Queen Charlotte Island	52	60	42
18Chilliwack EDA	6	6	5	53Prince Rupert	31	28	16
19Kent-Harrison EDA	6	12	6	54Kitimat-Terrace	23	29	21
20Matsqui-Abbotsford	7	5	4	55Hazelton	51	68	66
21Pitt Meadows-Maple	8	7	7	56Stewart	14	41	22
22Mission	13	13	16	57Smithers-Houston	53	56	29
23Sunshine Coast	22	23	19	58Burns Lake	61	73	48
24Squamish	14	16	16	59Vanderhoof	81	86	48
25Lillooet	28	43	27	60Stikine	1	11	8
26Princeton	40	27	16	61Dawson Creek	17	15	13
27Oliver-Osoyoos	7	6	2	62Fort St. John	8	10	7
28Penticton	6	5	3	63Ft. Nelson	41	85	37
29Ashcroft	17	14	9				
30Merritt	32	33	15				
31Kamloops	11	11	9				
32North Thompson	65	55	53				
33Peachland	4	5	4				
34Kelowna	4	3	3				
35Vernon	10	14	8				

### 4.3 Employment Impact Ratios

The employment impact ratios for a particular industry in a particular place can be expected to change somewhat as the area grows (or declines) in population and also as a result of technological changes or restructuring in the industry. For example, if services that were formerly done "in-house" are contracted out, then the apparent ratios will increase even if total employment does not change.

However, at the same time, there is a certain amount of trepidation associated with examining changes in the ratios at different time periods, as we are about to do. The reason for this is that in order to recommend use of the ratios as employment multipliers they have to be reasonably stable over time and in the face of other changes. How can we use the ratios to predict the effects of changes in direct basic employment if those ratios themselves change in unpredictable ways as a result of the same kind of changes? The answer to this may be that we need a more complex model.

The average employment impact ratios for each of the 3 years studied are displayed in Table 4.5 for selected industries.

**Table 4.5 Average Employment Impact Ratios for 2001, 1996 and 1991**

Sector	Indirect			Indirect + Induced (No Safety Net)		
	2001	1996	1991	2001	1996	1991
Logging	1.17	1.22	1.27	1.42	1.48	1.61
Pulp & Paper	1.67	1.48	1.38	2.09	1.86	1.82
Wood Mfg.	1.28	1.21	1.17	1.58	1.47	1.47
Mining	1.30	1.37	1.17	1.62	1.66	1.54
Agriculture	1.14	1.12	1.06	1.28	1.24	1.23
Tourism	1.07	1.06	1.01	1.19	1.16	1.13
Public Sector	1.13	1.07	1.01	1.36	1.27	1.25
Construction	1.25	1.23	1.20	1.49	1.43	1.47

With only logging as a notable exception, almost all of the ratios have trended upward over the study period. Part of this may be due to greater modeling efforts to capture indirect and nonbasic activities attributable to the major basic sectors.<sup>12</sup> To the extent that the changes are real, the

<sup>12</sup> See, for example, the discussion in Appendix A.8.



easiest interpretation is that these industries have reduced their own labour force (per unit of output) but at the cost of a greater reliance on the purchase of off-site services.

In the case of logging, the inclusion of transportation of raw fiber as part of direct in the 1996 and 2001 analyses (so-called “truck logging” in the interior, and barging on the coast) is certainly part of the reason for the change since 1991, but it does not explain the continuation of the downward trend in the ratios between 1996 and 2001. It may be that the logging industry, in its efforts to reduce costs, has found ways to reduce expenditures on outside services that exceed any reductions in its own workforce.