Cowichan Region
State of the Environment Report
Update 2014

Built Environment

CVRD

Contents

The 2014 State of Environment Update Report has been prepared by the Cowichan Valley Environment Commission's State of Environmental Reporting Subcommittee, chaired by Scott Akenhead.

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Many thanks to Kate Miller and Keith Lawrence of the CVRD for their support and advice, as well as the many others who provided contributions to this Update.

Figures and Tables

Introduction

The term "built environment" encompasses the way that people live on the land. It can be defined as "the human-made space in which people live, work and recreate on a day-to-day basis".[1] In this report it includes many aspects such as population growth (how much and where it occurs), the types of housing we choose and how we move around.

Influences on the Built Environment

Growth and development in the region is managed by municipal governments within their jurisdiction (City of Duncan, District of North Cowichan, Town of Lake Cowichan, and Town of Ladysmith). In the electoral areas, planning is the responsibility of the CVRD. Decisions made by local governments—such as where to allow new subdivisions or infill development, what density of development to permit, and where to provide services such as piped water, sewers and roads—will influence the location and form of building that occurs. New development is also influenced by market conditions, the world economy in general, and demand for new housing and commercial space.

Where people live, and thus their proximity to work, schools, shopping, and leisure activities, will also affect their choice of transportation. Walking and cycling are not options if distances are too far; transit is only an option if bus service is convenient and sufficiently frequent to meet needs. Communities that are built using a low-density, sprawled form will typically have a much higher percentage of transportation by personal vehicle; communities with a mix of residential and commercial buildings within close proximity are more likely to have people who choose to walk or cycle to meet their daily needs. BC Transit standards suggest a gross density of 10 persons/km^2 over a minimum area of 10 hectares as the minimum required to support local transit service with a 1–2 hour frequency. Greater use of vehicles increases carbon emissions and the region's contribution to global climate change, as well as requiring greater expenditures to build and maintain road infrastructure.

> "Smart growth" is a concept that encourages compact, higher density community development, leaving rural areas for agriculture and forestry as well as ecosystem protection. A smart growth community mixes residential and commercial uses, making it easy for people to walk or bicycle to jobs and services. Higher density neighbourhoods are typically better served by public transit, schools, libraries, and other services..
>
> For more information on smart growth, see Smart Growth BC: www.smartgrowth.bc.ca

The form of built environment also affects resource lands and natural habitats. Compact developments have a smaller per-home footprint, resulting in less loss of wildlife habitat, lands with agricultural potential and forested areas.

CVRD Strategic Goals

The Cowichan Valley Regional District (CVRD) Strategic Plan identifies six strategic actions to achieve compact, mixed-use communities under its goal of Sustainable Land Use:

1. Establish urban containment boundaries in all OCPs.
2. Coordinate water and sewer and other infrastructure to promote compact, mixed-use communities.
3. Grow densities in designated compact areas, promote walkable communities and ensure new neighborhoods and communities are serviceable by public transit.
4. Develop plans for "complete" communities serviced with parks, open space, commercial & social services and opportunities for local employment.
5. Expedite development applications that are consistent with OCP policies.

1 From Wikipedia definition: Roof, K. and N. Oleru. 2008. "Public Health: Seattle and King County's Push for the Built Environment." J Environ Health 71: 24–27.

6. Promote a diverse range of housing choices throughout the Region, including affordable housing options.

Measuring the Built Environment

To tell the story of the region's built environment, it would be ideal to be able to report on how land uses have changed over time (and are expected to change in the near future), how and where growth is occurring, whether people are within walking distance of shops and services (including public transit stops), and how they move around the region (for work and other purposes).

Indicators included in this report are:

- Population growth and density
- Building starts
- Housing types
- Walkability of communities
- Proximity to transit
- Transportation modes: journey to work

Population Growth and Density

Data Sources and Reliability

Statistics Canada tracks population data in its five-year census, both for the region as a whole and by census subdivision. The census information is generally accurate and reliable, but incomplete for this report's purposes for the following reasons.

- For large electoral areas, an increase in population will show as increased density, but this does not indicate whether the additional population is being accommodated in higher density nodes or in a sprawled growth pattern.
- Census subdivision boundaries may change over time, making multi-year comparisons less reliable.

Population density figures for the region as a whole are derived from a simple calculation of population size divided by area of land. Thus as the region's population increases, so does the population density. However, this information does not tell us whether the additional population is moving to high density areas, or if it is being accommodated in sprawled developments. Figures by census subdivision are somewhat more informative.

Findings

Overall, the population of the CVRD has grown to 80,332 (2011 Census), up 4.4% since 2006 (Table 1 and Figure 1).

This is a slightly higher growth rate than the Capital Regional District during the same period (4.3%) but lower than the Regional District of Nanaimo growth rate (5.7%). The overall population density of the CVRD is now 23 people/km^2.

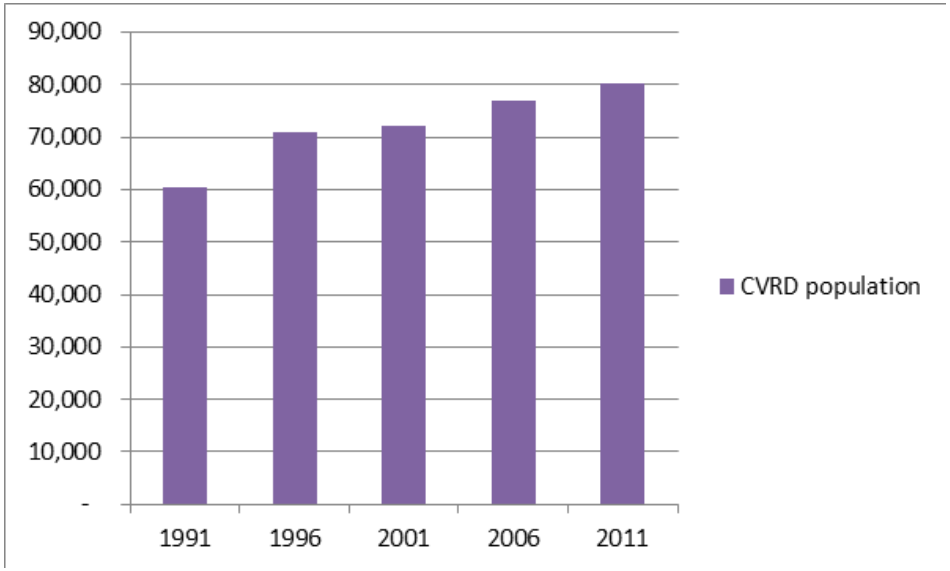
Over the past five years, most of the growth has taken place south of Duncan in the Malahat / Mill Bay area (Census Subdivision A), Shawnigan Lake / Cobble Hill (Census Subdivision C) and Koksilah (Census Subdivision D) areas, although the Ladysmith (Ladysmith and Census Subdivision H) and the District of North Cowichan have also grown by more than 4%. Other areas have seen a decline, including the municipalities of Duncan and Lake Cowichan, and the Youbou area (Census Subdivision I) (Table 2 and Figure 2).

Table 1: CVRD Population Growth 1991–2011

	1991	1996	2001	2006	2011
CVRD population	60,560	70,978	71,998	76,929	80,332

Source: Statistics Canada 2001, 2006, 2011 Census Information

Figure 1: CVRD Population Growth 1991–2011



Source: Statistics Canada 1996, 2001, 2006, 2011 Census Information

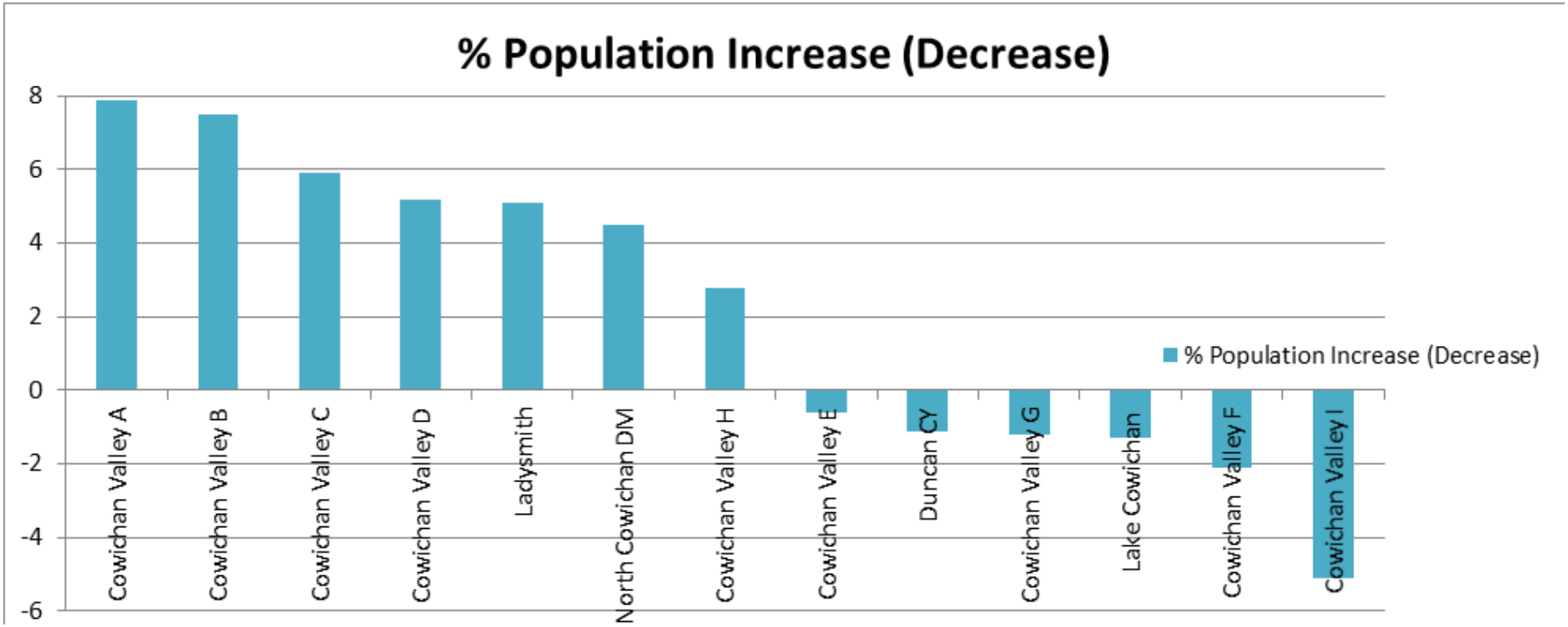
While the CVRD has higher density nodes in communities such as Duncan, Ladysmith, Lake Cowichan, Chemainus, and Mill Bay, most of its population is quite dispersed. To achieve environmental goals, new growth and development should focus on nodal, higher density developments that gradually shift the balance away from sprawl. Current development pressures are particularly intense around Cowichan Lake, Shawnigan Lake and just to the north in the Regional District of Nanaimo.

Table 2: Population Growth 2006–2011 by Census Subdivision

	Population Increase (Decrease) %	Population 2006	Population 2011
Cowichan Valley A	7.9	4,073	4,393
Cowichan Valley B	7.5	7,562	8,127
Cowichan Valley C	5.9	4,530	4,795
Cowichan Valley D	5.2	2,823	2,971
Ladysmith	5.1	7,538	7,921
North Cowichan DM	4.5	27,557	28,807
Cowichan Valley H	2.8	2,269	2,332
Cowichan Valley E	-0.6	3,878	3,854
Duncan CY	-1.1	4,986	4,932
Cowichan Valley G	-1.2	2,249	2,221
Lake Cowichan	-1.3	3,012	2,974
Cowichan Valley F	-2.1	1,685	1,649
Cowichan Valley I	-5.1	1,171	1,111
Cowichan IR	30.1	1,797	2,337
Cowichan Lake IR	120	15	33
Malahat IR	13.3	90	102
Chemainus IR	-0.1	684	683
Penelekut Island	23.5	361	446
CVRD all	4.4	76,929	80,332

Source: Statistics Canada Census Profiles (2011)

Figure 2: Population Growth 2006–2011 by Census Subdivision (excluding Indian Reserve lands)



Source: Statistics Canada Census Profiles (2011)

Building Starts

Data Sources and Reliability

Information on building starts provides a measure of growth and development in the region.

The CVRD and municipalities track both the number of building permits issued each year, and the number of actual housing starts. These data are reliable and repeatable.

Building permits data include permits for new buildings, renovations, signage, other works that require a building permit, and permits that are pulled but never acted upon. It does not provide a good measure of new development because it is very inclusive.

This report uses residential building starts. These data are collected by all the jurisdictions. Where applicable, they are broken down into single family dwellings (SFD) and units in multiple family dwellings (MFD). To give a sense of diversity of activity within the electoral areas, this report includes building data by electoral area for 2013.

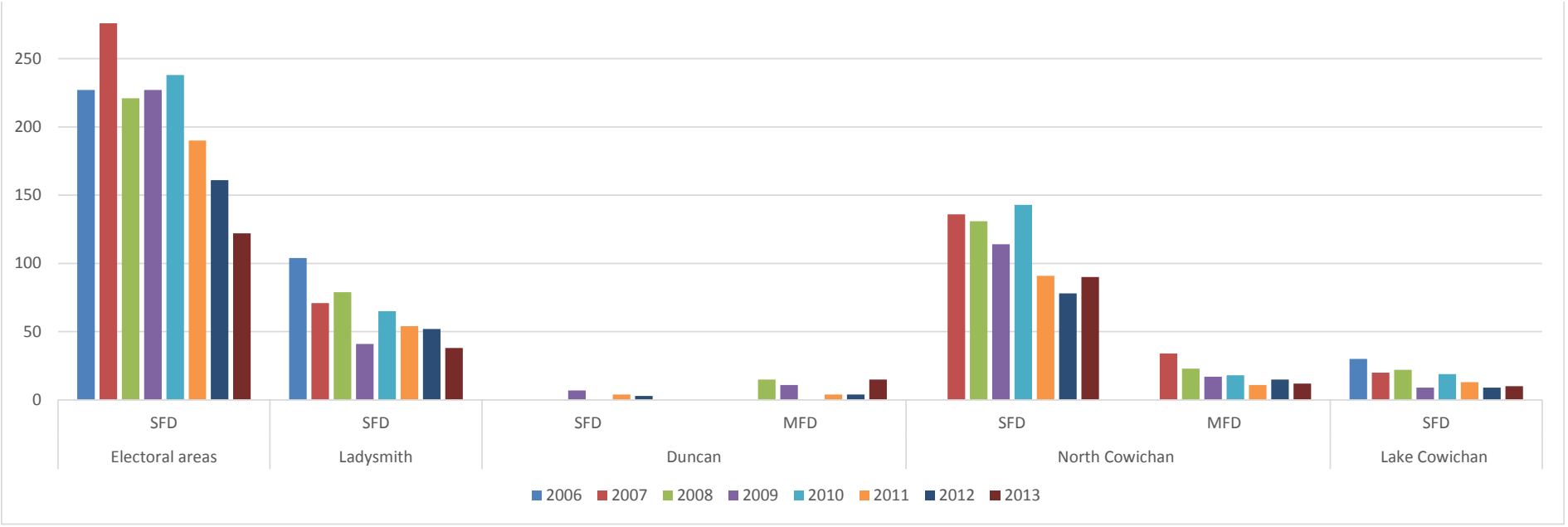
Table 3: Building starts in the Cowichan Region, 2006–2013

		2006	2007	2008	2009	2010	2011	2012	2013
Electoral areas	SFD	227	276	221	227	238	190	161	122
Ladysmith	SFD	104	71	79	41	65	54	52	38
Duncan	SFD	nd	nd	0	7	0	4	3	0
	MFD	nd	nd	15	11	0	4	4	15
North Cowichan	SFD	nd	136	131	114	143	91	78	90
	MFD	nd	34	23	17	18	11	15	12
Lake Cowichan	SFD	30	20	22	9	19	13	9	10
Total				**491**	**426**	**483**	**367**	**322**	**287**

Source: CVRD and municipalities of Duncan, Ladysmith, North Cowichan and Lake Cowichan

nd - no data available

Figure 3: Building starts in the Cowichan Region, 2006–2013



Source: CVRD and municipalities of Duncan, Ladysmith, North Cowichan and Lake Cowichan

Findings

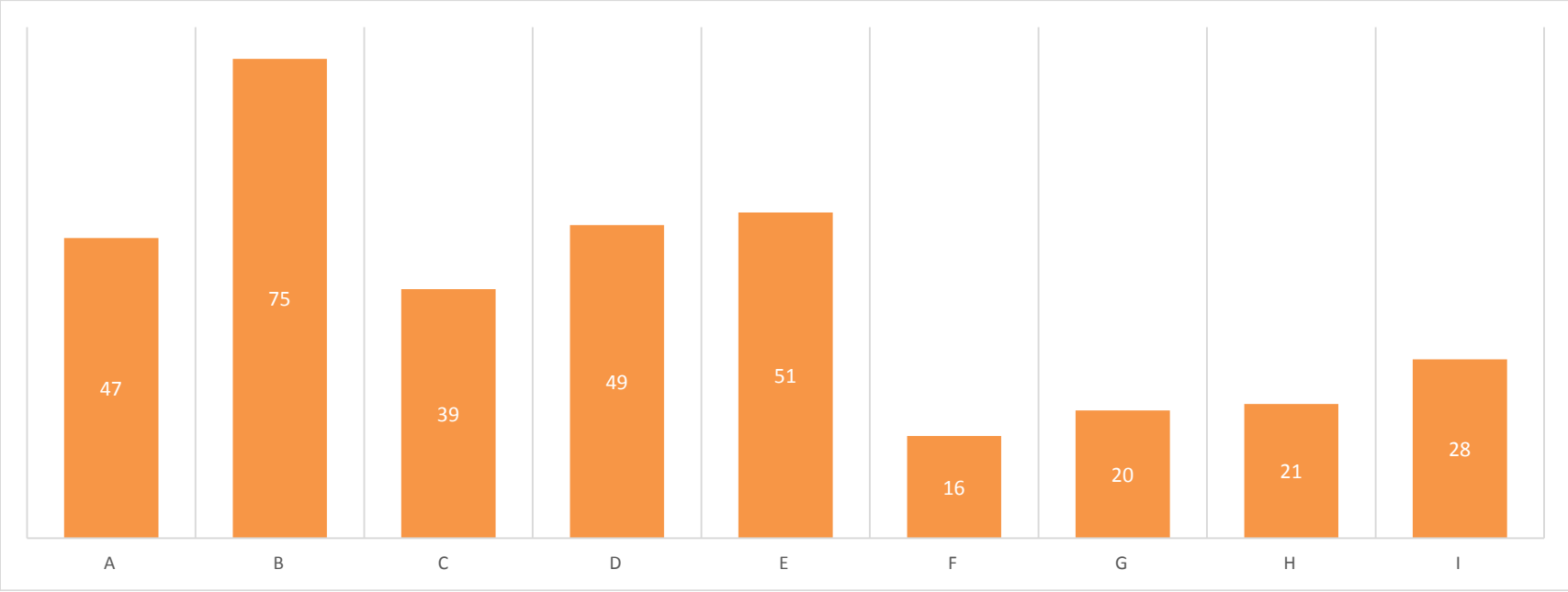
Data from the electoral areas and municipalities shows that building activity has generally declined in recent years, in response to the world economic situation and greater difficulty obtaining financing for new developments (Table 3 and Figure 3). Much of the new development is occurring in the electoral areas.

Table 4 and Figure 4 shows the building permits issued in 2013. The most building activity is taking place in Ladysmith and Electoral Area B (Shawnigan Lake).

Table 4: Building permits issued, by electoral area, 2013

Electoral Area	2013
A	47
B	75
C	39
D	49
E	51
F	16
G	20
H	21
I	28
Total	**346**

Figure 4: Building permits issued, by electoral area and municipality, 2013



Source: CVRD

Housing Types

Data Sources and Reliability

Statistics Canada tracks housing data in its five-year census, both for the region as a whole and by census subdivision. The census information is generally accurate and reliable, but incomplete for this report's purposes for the following reasons.

- As of the 2011 census, participation in the long form is no longer mandatory. This may reduce the accuracy of some of the census findings that rely on self-reporting.
- Census subdivision boundaries may change over time, making multi-year comparisons less reliable.

More compact housing forms such as row housing and apartments support densification, which combined with mixed-use areas and transit, make it more likely that residents can walk, cycle or take transit to work and for other trips such as shopping. Compact housing also uses fewer resources per unit to build, requires less infrastructure per unit (e.g., roads and sewers) to build and maintain, and takes less land per unit than single family dwellings.

Findings

Single family housing remains the predominant form of housing type in the Cowichan Valley Regional District, representing just over ¾ of the housing stock. This percentage has remained consistent since 1996 (Table 5 and Figure 5).

Apartments are the second largest housing type, and have remained consistently about 11–13% of the market. "Other" housing types (including mobile homes) have slightly declined in favour of semi-detached units, which currently represent about 9% of the housing stock (Figure 6).

The housing stock in the electoral areas is almost entirely single detached (over 90%).[2] The four municipalities have a greater range of higher density apartment dwellings (ranging from 7% in Ladysmith to 43% in Duncan). The 2014 CVRD Housing Indicators Report[3] provides additional details on housing types.

2 2014 CVRD Housing Indicators Report.
3 http://www.cvrd.bc.ca/DocumentCenter/View/63345

Table 5: CVRD Housing Stock, 1996–2011

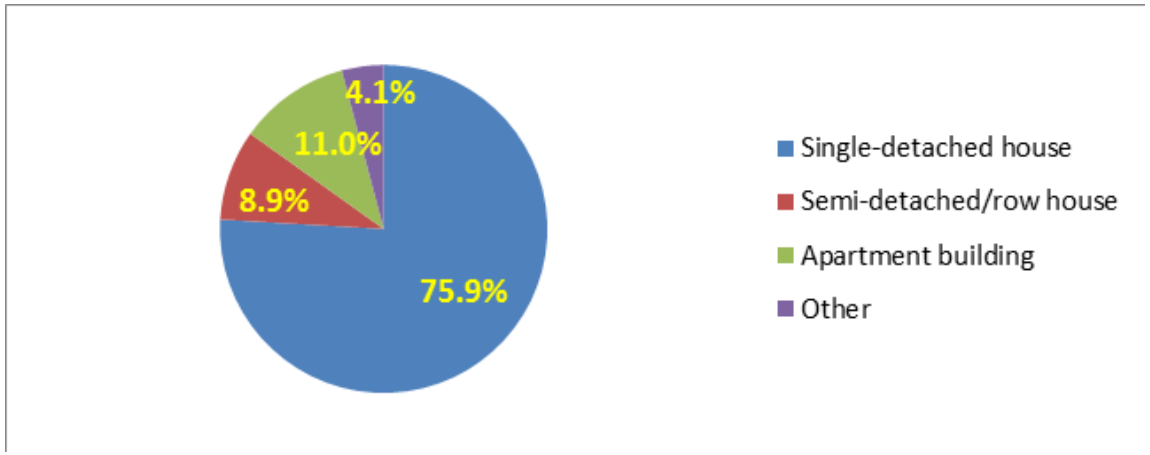
	# Units				
	1996	2001	2006	2011	% 2011
Single-detached house	20,760	21,940	23,199	25,175	76
Semi-detached house	905	900	1,188	1,265	4
Row house	930	1,240	1,376	1,700	5
Apartment building < 5 storeys	2,640	2,830	3,283	2,975	9
Apartment building 5+ storeys	10	15	-	5	0
Apartment, duplex	580	480	844	670	2
Movable dwelling/other	1,375	1,440	1,344	1,370	4

Source: Statistics Canada 1996, 2001, 2006, 2011 Census Information

Figure 5: CVRD Housing Stock, 1996–2011

Source: Statistics Canada 1996, 2001, 2006, 2011 Census Information

Figure 6: CVRD Housing Stock 2011 (Proportion)



Walkability

Data Sources and Reliability

Information on walkability of communities is taken from the walkscore.com website. Walk Score measures the walkability of any address by analyzing walking routes to nearby amenities. Points are awarded based on the distance to amenities in each category. Amenities within a five minute walk (0.4 km) are given maximum points. A decay function is used to give points to more distant amenities, with no points given after a 30 minute walk.

Walk Score also measures pedestrian friendliness by analyzing population density and road metrics such as block length and intersection density. Data sources include Google, Education.com, Open Street Map, the U.S. Census, Localeze, and places added by the Walk Score user community. Walk Score also provides scores on transit accessibility for some locations, but this is not available for the Cowichan Valley. Using this methodology, Walk Score creates the following ratings:[4]

90–100	Walker's Paradise: Daily errands do not require a car.
70–89	Very Walkable: Most errands can be accomplished on foot.
50–69	Somewhat Walkable: Some amenities within walking distance.
25–49	Car-Dependent: A few amenities within walking distance.
0–24	Car-Dependent: Almost all errands require a car.

While it provides a useful 'snapshot' of the walkability of a place, the 'information out' is only as good as the 'information in'. This is evident in the way that the scores for all locations have improved significantly since the 2010 report—clearly a function of more information in Google and other sources rather than a very significant improvement in proximity of services. Nonetheless it provides a reasonable way to compare walkability between different Cowichan communities.

4 www.walkscore.com

Findings

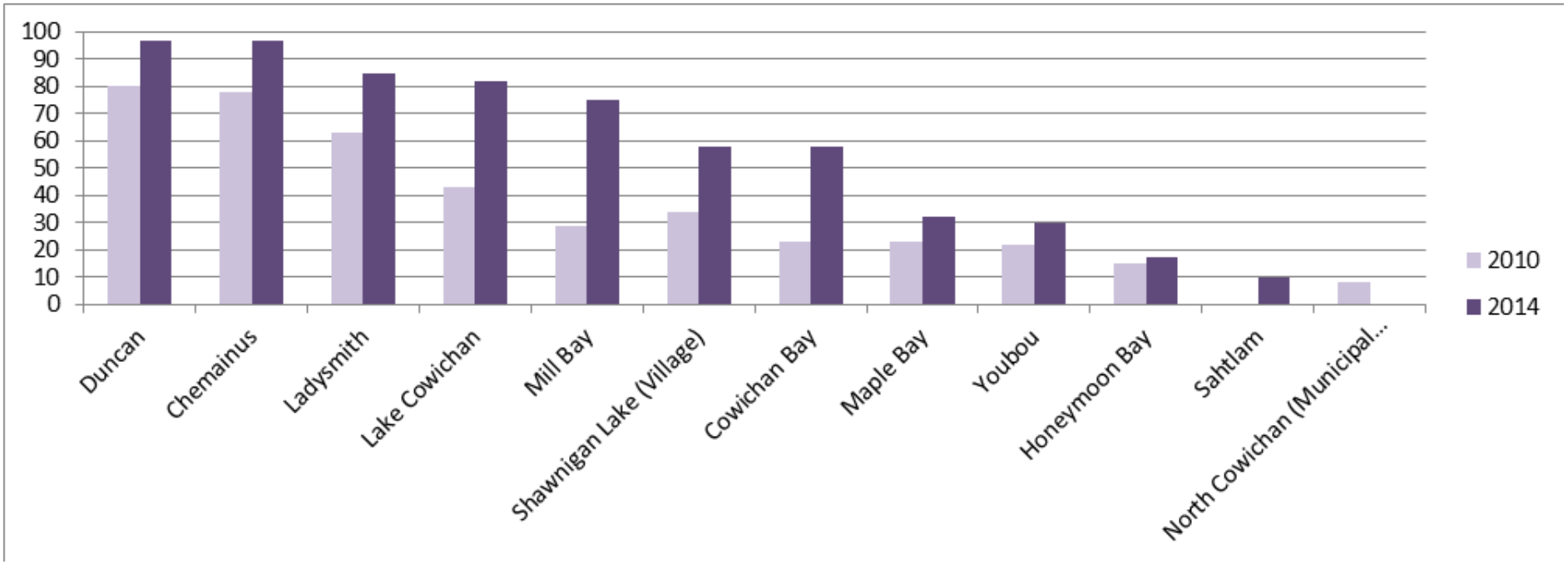
Larger communities in the CVRD (Duncan, Chemainus, Ladysmith, Lake Cowichan, and Mill Bay) are deemed to be highly walkable ("walkers paradise" or "very walkable"), while Shawnigan Lake village and Cowichan Bay are 'somewhat walkable' (Table 6). Outside of these areas, residents are dependent on cars for their daily errands. Figure 7 shows that all locations improved their score on walkability, although this is likely the result of improved information on which this is judged. The relative rating of walkability for these locations is mostly unchanged since the 2010 State of Environment report.

Table 6: Walkability of CVRD Neighbourhoods

	2010	2014	Walk Score Rating
Duncan (municipal hall)	80	97	Walker's Paradise
Chemainus (town centre)	78	97	Walker's Paradise
Ladysmith (municipal hall)	63	85	Very Walkable
Lake Cowichan (municipal hall)	43	82	Very Walkable
Mill Bay (Thrifty's)	29	75	Very Walkable
Shawnigan Lake (Village)	34	58	Somewhat Walkable
Cowichan Bay (centre)	23	58	Somewhat Walkable
Maple Bay	23	32	Car-Dependent
Youbou (community hall)	22	30	Car-Dependent
Honeymoon Bay (community hall)	15	17	Car-Dependent
Sahtlam	0	10	Car-Dependent
North Cowichan (municipal hall)	8	0	Car-Dependent

Source: Walkscore.com

Figure 7: Walkability of Cowichan Valley Communities



Source: Walkscore.com

Transportation Modes

Data Sources and Reliability

Statistics Canada tracks journey to work data in its five-year census, both for the region as a whole and by census subdivision. The census information is generally accurate and reliable, but incomplete for this report's purposes for the following reasons.

- As of the 2011 census, participation in the long form is no longer mandatory. This may reduce the accuracy of some of the census findings that rely on self-reporting.
- Census subdivision boundaries may change over time, making multi-year comparisons less reliable.

Note that the census subdivisions do not have the same boundaries as the regional district electoral areas, although the names are similar.

Findings

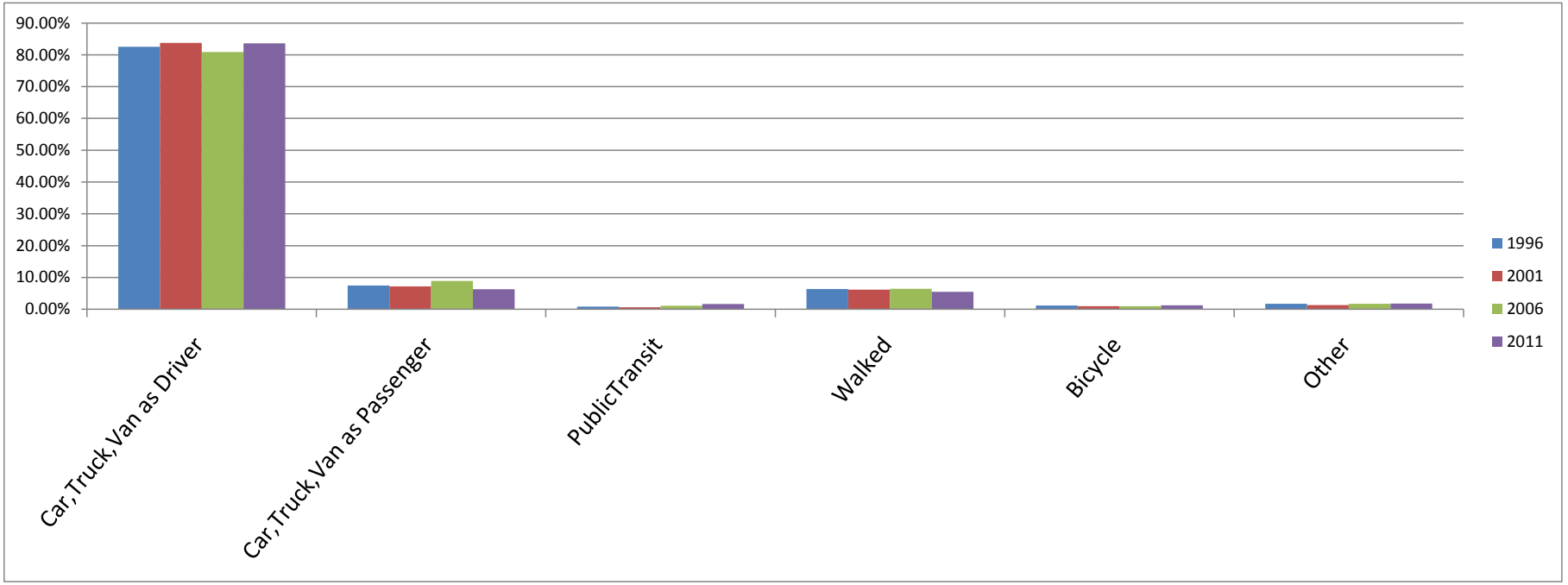
Overall, the number of commuters has risen from 26,835 in 1996 to 32,220 in 2011, likely reflecting the growing population of the region. Single occupant vehicle use remains the dominant mode of transportation for commuters (Table 7 and Figure 8) with more than 80% of people travelling as the driver of a car, truck or van, and another 6–7% travelling as vehicle passengers. From 1996 to 2006, the figures showed general improvement in terms of a lowering percentage of vehicle use and more people ride-sharing (although overall vehicle trips still increased). The 2011 results indicate that a higher percentage of people are now driving in single occupant vehicles; figures from 2016 will perhaps show whether this is a trend or just an aberration.

Table 7: Journey to Work Modal Split, 1996 – 2011 (Cowichan Valley Regional District)

	1996	%	2001	%	2006	%	2011	%
Car, Truck, Van as Driver	22,145	82.52%	23,165	83.75%	25,685	80.88%	26,930	83.58%
Car, Truck, Van as Passenger	2,005	7.47%	1,990	7.19%	2,825	8.90%	2025	6.28%
Public Transit	215	0.80%	170	0.61%	340	1.07%	530	1.64%
Walked	1,705	6.35%	1,705	6.16%	2,050	6.46%	1,770	5.49%
Bicycle	310	1.16%	265	0.96%	300	0.94%	390	1.21%
Other	455	1.70%	365	1.32%	555	1.75%	575	1.78%
Total	**26,835**	**100%**	**27,660**	**100%**	**31,755**	**100%**	**32,220**	**100%**

Source: Statistics Canada Census 2011, Community Energy and Emissions Inventory for CVRD (2010)

Figure 8: Journey to Work Modal Split, 1996 – 2011 (Cowichan Valley Regional District)



Source: Statistics Canada Census 2011, Community Energy and Emissions Inventory for CVRD (2010)

Table 8: Journey to Work Mode Share (by Census Subdivision), 2011

	Vehicle driver	Vehicle passenger	Transit	Walk	Bicycle	Other	Total
Cowichan Valley A	1,575	115	35	85	-	25	1,840
Cowichan Valley B	3,360	345	65	70	35	35	3,920
Cowichan Valley C	1,460	135	45	40	15	45	1,740
Cowichan Valley D	1,100	75	25	55	-	-	1,280
Cowichan Valley G	795	30	-	-	-	40	875
Cowichan Valley H	755	35	-	50	-	15	855
Cowichan Valley I	290	40	-	-	-	-	360
North Cowichan DM (2006)	6,310	520	50	585	95	175	7,730
Duncan CY (2006)	3,540	285	45	335	75	10	4,285
CVRD (all)	26,930	2,025	530	1,770	390	575	32,225

Source: Statistics Canada 2011 National Household Survey Profiles. Note that data for North Cowichan and Duncan are from 2006 (no 2011 data available). No data are available for Cowichan Valley E and F census subdivisions.

Use of transit has doubled from 1996 to 2011 (from 0.8% to 1.6%), although bus ridership remains a very small part of the commuter traffic. Active transportation (walking and cycling) has declined, from a combined rate of 7.51% in 1996 to 6.7% in 2011, although cycling use seems to be gradually increasing (Table 7 and Figure 8).

The information by census subdivision shows that single occupant vehicles are the dominant mode for commuting across the region. Ride sharing is most common in North Cowichan, Duncan and Cowichan Valley B (Shawnigan Lake), while walking is most common in the municipalities of North Cowichan and Duncan (Table 8 and Figures 9 and 10).

Figure 9: Journey to Work, CVRD 2011 (% Mode Share)

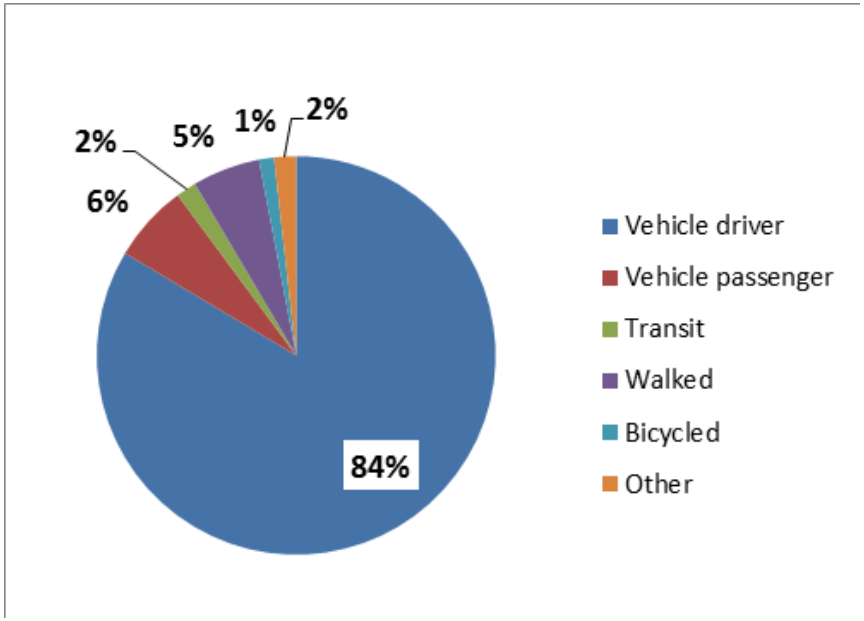
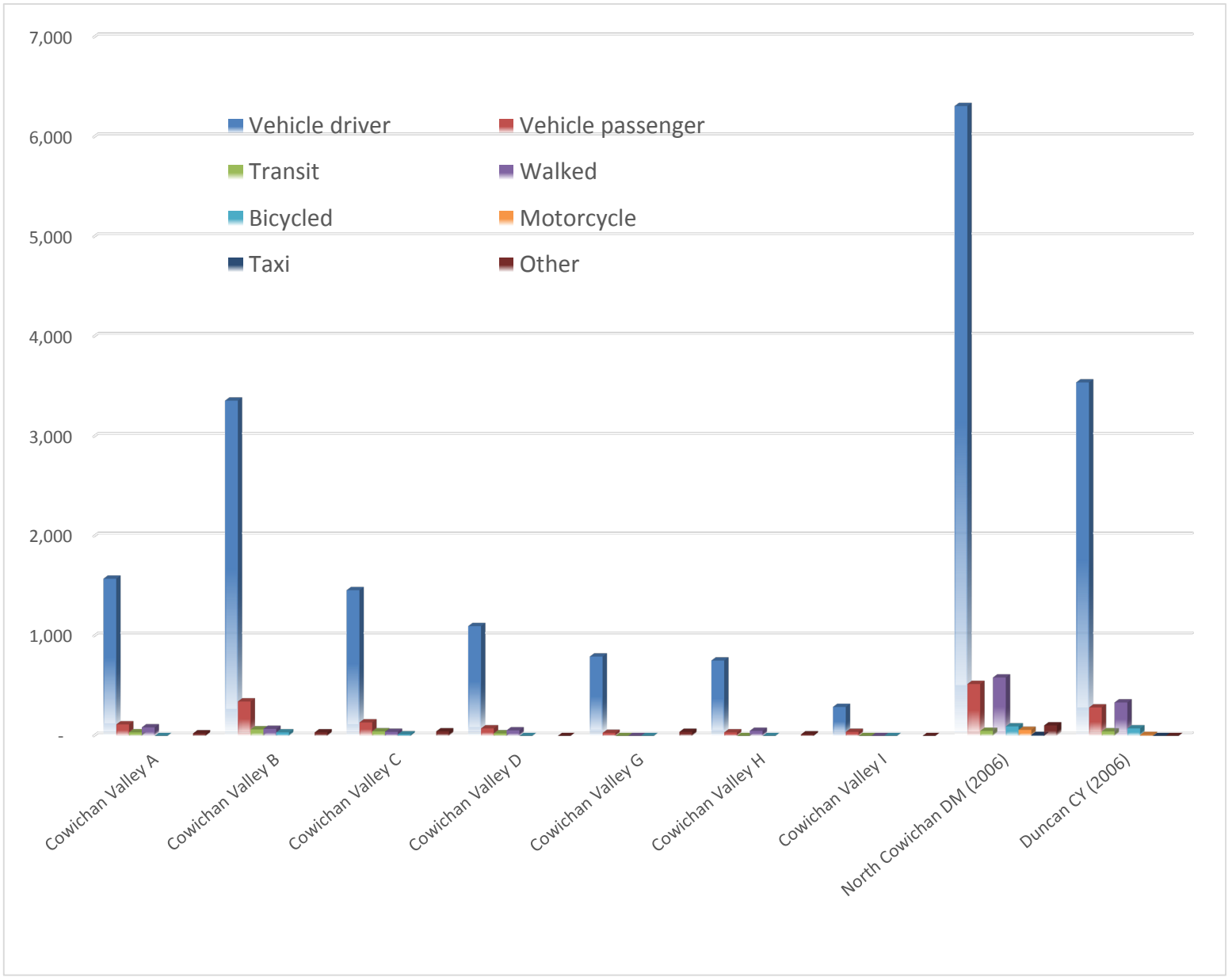


Figure 10: Journey to Work Mode Share (by Census Subdivision), 2011



Transit Services

The Cowichan Valley Transit System offers service to most communities within the Regional District with the exception of Electoral Areas G (Saltair / Gulf Islands) and H (North Oyster/Diamond). Local transit coverage serves major South Cowichan centres including Shawnigan Lake, Mill Bay, Cobble Hill, Cowichan Station and Cowichan Bay, while also covering Honeymoon Bay, Youbou and Cowichan Lake to the west, Duncan and North Cowichan (Chemainus, Crofton, etc.) in the core. Transit service has been added to Ladysmith effective September 2013, with routes matching those of the previous trolley services provided by the town. The Cowichan Valley Transit System also operates a weekday commuter service, the Cowichan Valley Commuter, running to and from Victoria.

Transit ridership is influenced by a number of factors including the proximity of the service (is there a bus stop close by, or one with a convenient park and ride?), frequency (is there a bus going where I want to go, at convenient times, and if I miss the bus how long would I have to wait?) and availability and accessibility of transit amenities (is there a visible, dry place to wait for the bus?).

The Cowichan Valley Region Transit Future Plan[5] provides information on transit ridership and levels of service as of 2012, together with a 25-year future vision for the Cowichan Valley transit system to 2036.

Data Sources and Reliability

BC Transit collects and presents annual ridership and route performance data to the CVRD on its system. For many of the routes, passenger data is collected using fare information (GFI).

The Cowichan Valley Region Transit Future Plan provides information to March 2012, and these data have been updated with information from BC Transit.

5 http://www.bctransit.com/transitfuture/pdf/COW_TF_Report_042612_web.pdf

Findings

As of October 2014, the Cowichan Valley Transit system provides 17 bus routes serving nearly 500 stops. The system also currently has 33 shelters (most were added in 2011¬–2012) to provide safe, dry places to wait for the bus and to improve the rider experience.

Total transit ridership has grown considerably from its inception in 1993, from 15,000 to 435,000 annual rides in 2012 (Figure 11) and to over 479,000 in 2014. Total ridership includes all systems (i.e. commuter, custom and conventional). As the strongest growing segment of ridership, use of the Cowichan Valley Commuter service from Duncan to Victoria has also grown, more than doubling between 2008 and 2011 (Table 9 and Figure 12). Between 2012/13 and 2013/14 commuter ridership grew by another 7%.

Figure 11: Growth in total transit ridership, 1993–2014

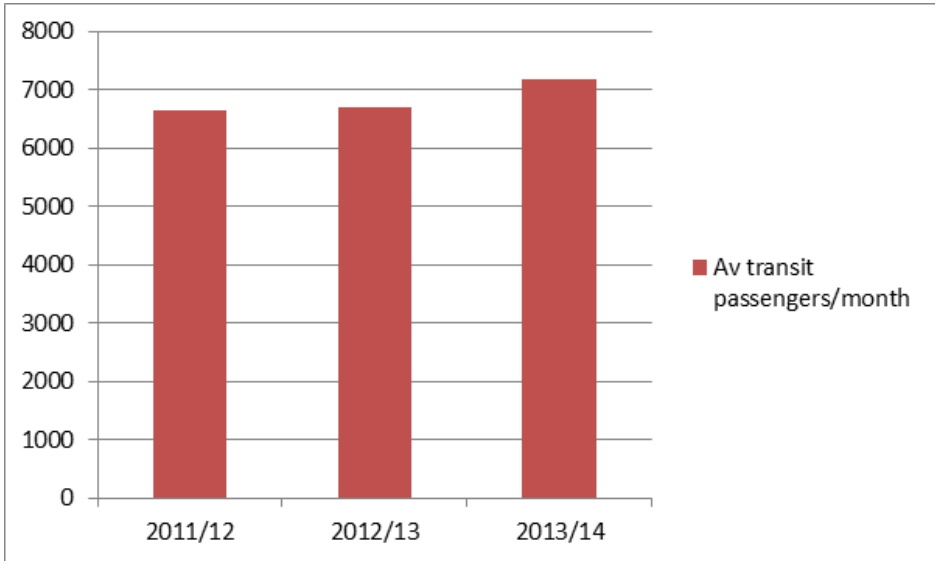
Source: Cowichan Valley Region Transit Future Plan and BC Transit.

Table 9: Ridership on Cowichan Valley to Victoria commuter route (average monthly passengers), 2011¬- 2013

2011/12	2012/13	2013/14
6,650	6,704	7,191

Source: BC Transit, GFI data.

Figure 12: Ridership on Cowichan Valley to Victoria commuter route (routes 66 and 99 combined, average monthly passengers), 2011¬- 2013



Source: BC Transit, GFI data.

Although ridership is growing, it should be noted that the percentage of commuter travel by transit is still very low at less than 2%. The 2012 Transit Future Plan Report noted that: "On weekdays most transit routes operate approximately every one to three hours throughout the day with more limited frequency on weekends. The existing level of service is not frequent and the availability of service is very limited in the evening and weekend periods." The CVRD's short-term priority is to look at improving evening and weekend service and enhancing service coverage to rural areas. Some steps have been taken to address more coverage to rural areas with implementation of transit route and service changes in October 2014 as a result of the Paratransit study.

Data Gaps

The available data provide some indication of growth and densification, but it is hard to precisely extrapolate where growth is occurring. The establishment of urban containment boundaries, with information on building starts inside and outside that boundary, would be helpful in providing a more complete picture.