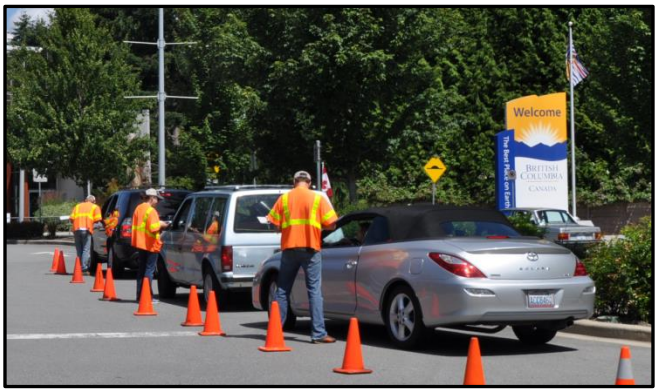
2013/14

IMTC Passenger Vehicle Survey

Report of Interim Findings

October, 2013



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Introduction

This is an interim report written at the midpoint of a passenger vehicle intercept survey administered to cross-border personal vehicles at five land border ports-of-entry between Western Washington State and Lower Mainland British Columbia – commonly referred to as the Cascade Gateway. The project is advanced by the International Mobility and Trade Corridor Program (IMTC) and is the third such survey undertaken by this regional cross-border planning coalition since 2000. This report summarizes high level findings from summer season passenger interviews conducted in July 2013. A second wave of passenger surveys will be conducted in February 2014, after which a final report will be completed and a survey database made.

Project organization

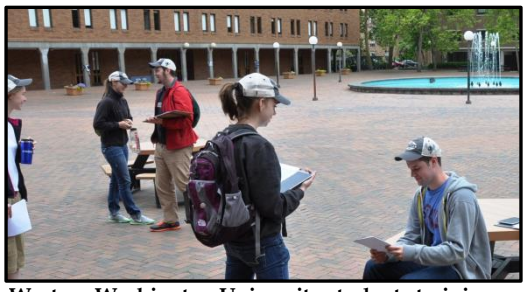
Agencies involved

The 2013 IMTC Passenger Vehicle Survey was a priority of all participating agencies. In addition to project funding from the U.S. Federal Highway Administration (FHWA), Washington State Department of Transportation (WSDOT), BC Ministry of Transportation and Infrastructure (BC MoTI), Border Policy Research Institute (BPRI), and Whatcom Council of Governments (WCOG), critical permissions, cooperative facilitation, and baseline traffic data were provided by U.S. Customs and Border Protection (CBP) and Canada Border Services Agency (CBSA).

Management and staffing

WCOG coordinated project funding and is managing the project. WCOG entered into an agreement with the BPRI to partner in undertaking the project.

Through BPRI, 13 students and 3 supervisors were hired from Western Washington University (WWU) to enable staffing two shifts per day.



Western Washington University students training with the survey instrument and tablets.

Surveying was conducted on the following schedule (ports, days, direction, hours):

Port	Direction	Day type	Date	Hours
Peace Arch	N	Weekday	10-Jul	6 am - 9 pm
	S	Weekend	11-Jul	6 am - 9 pm
	N	Friday	12-Jul	7:30 am - 9 pm
	S	Weekend	13-Jul	7:30 am - 9 pm
	N	Weekend	14-Jul	7:30 am - 9 pm
Pacific Highway	S	Weekday	17-Jul	6 am - 9 pm
	N	Weekend	18-Jul	6 am - 9 pm
	N	Friday	19-Jul	7:30 am - 9 pm
	S	Weekend	20-Jul	7:30 am - 9 pm
	S	Weekend	21-Jul	7:30 am - 9 pm
Lynden/Aldergrove	N + S	Weekday	19-Jun	1 pm - 4 pm
	N + S	Weekday	20-Jul	8 am - 9 pm
	N + S	Weekend	22-Jul	8 am - 9 pm
Sumas/Abbotsford-Huntingdon	N	Weekday	25-Jul	6 am - 9 pm
	S	Weekday	26-Jul	6 am - 9 pm
	S	Weekend	6-Jul	7:30 am - 9 pm
	N	Weekend	7-Jul	7:30 am - 9 pm
Boundary-Bay/Point Roberts	N + S	Weekday	27-Jul	8 am - 9 pm
	N + S	Friday	28-Jul	8 am - 9 pm
	N + S	Weekend	29-Jul	8 am - 9 pm

Software and hardware used

As in 2007/8, surveys were administered using PenDragon Forms 5.0. PenDragon Forms enables direct transfer of collected data to a Microsoft Access database. PenDragon Forms also allows the questionnaire to be structured with custom branching – asking designated questions only if certain initially determined traveler characteristics were true (ex. crossing location, lane type) or if answers to preceding questions met criteria for follow-up questions.

Unlike 2007/8, the questionnaire forms were loaded on to Google NEXUS 7 tablets. These tablets were chosen for their smaller, their price, and most importantly, their highly-rated battery life. In order to ensure enough battery to get through second shifts, a few portable power packs were also added to the equipment list.

Sample size & refusal rates

Through the course of the summer survey wave, students approached 12,848 vehicles. 10,755 drivers agreed to participate in the survey – an 85 percent acceptance rate.

After cleaning out erroneous records, the total number of useable records collected during the summer at each port is as follows:

Port	Sample records	Expanded to traffic volume
Abbotsford-Huntingdon--Sumas	1,482	12,363
Boundary Bay-Point Roberts	1,871	17,835
Pacific Highway	3,059	30,773
Douglas-Peace Arch	2,929	34,233
Aldergrove-Lynden	1,228	7,814
Total summer records	10,569	103,018

Time period

The survey records collected represent border traffic during approximate 12-hour days. Morning hour coverage varies by location and day of week. Data can be queried to look more specifically at traffic characteristics in those time frames.

Data cleanup and preparation for analysis

Following the 20 days of data collection, staff prepared the raw data for analysis. This entailed:

- Logic tests to identify unusable records or records with reparable errors
- Blending of location data fields
- Standardization of time and travel frequency values
- Creation of additional geographic categories
- Creation of lookup tables

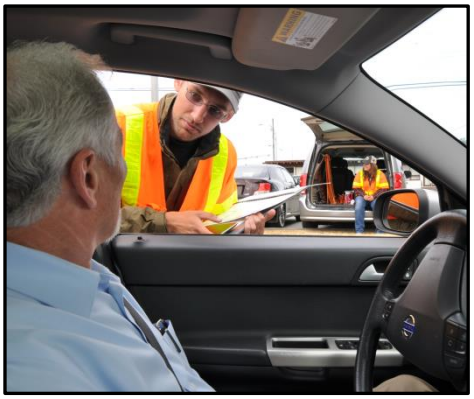
Expansion factors

Because the number of surveys that could be collected for a given period of time was relatively fixed and the volume of traffic moving though the ports varied significantly by time and location, sample records were subsequently weighted with expansion factors. For example, if 30 records were gathered during an hour in which 400 vehicles transited the port, each of the 30 records would be given a weight (and expansion factor) of 13.3. (30 cars x 13.3 = 400 cars) Hourly traffic totals were provided by U.S. CBP and CBSA for each port.

Organization of this memo

The remainder of this memo will focus on resulting information. Analyses about cross-border trips are grouped under six themes:

- Geography: residences and trip ends
- Purpose
- Duration and frequency
- Traveler tenure and attitude trends
- Border wait time systems
- Opportunities for increasing use of RFID and NEXUS



Another willing respondent at Pacific Highway

Each thematic section will include a review of the Cascade Gateway as a whole (Peace Arch–Douglas, Pacific Highway, Aldergrove–Lynden, and Abbotsford-Huntingdon–Sumas), and include port specific summaries as well, including Boundary Bay–Point Roberts.

Geography

Traveler residence

Surveyed drivers' reported country of residence is summarized below by port of entry:

Port	Country of Residence		
	Canada	USA	Other
Boundary Bay-Point Roberts	91.0%	8.8%	0.2%
Douglas-Peace Arch	77.7%	22.0%	0.3%
Pacific Highway	83.0%	16.7%	0.3%
Aldergrove-Lynden	86.6%	13.3%	0.2%
Abbotsford-Huntingdon--Sumas	88.3%	11.6%	0.1%

These data correspond well with monthly data on country of residence collected by CBSA and compiled by Statistics Canada. The 77 percent Canadian residents observed at Peace Arch is lower than others and lower than the corresponding data from Statistics Canada. A couple of possible reasons for this are 1) especially in the summer, more U.S. residents are traveling for recreation and vacation and Peace Arch-Douglas is the default route for these relatively infrequent cross-border travelers and 2) surveying ended at 9:00 PM which may have missed later northbound traffic which is predominately Canadian residents.

Cross-border trip ends – origin and destination

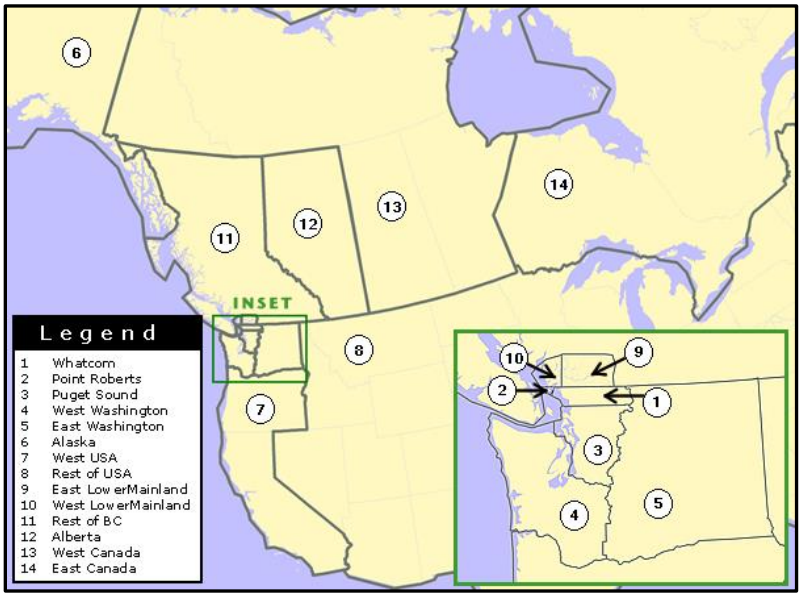
For the IMTC passenger vehicle survey, the notion of a "cross-border trip" is not as rigid a definition of "trip" as typically used in traffic modeling. While basic origin and destination data was collected here, our purpose was not to obtain a trip diary from our respondents that would

account for intermediary stops. Our interests were in the *primary* destination a traveler had when they left their residence and headed across the border.

For the origin and destination summary presented below, we started with respondents' residence (at a larger geographic zone level), designated that as the origin of the cross-border trip, and then assigned the opposite end of the trip (whether initially reported as the trip origin or destination) as the *cross-border* destination.

The "superzone" geography used is the same that was established for the IMTC passenger vehicle survey in 2000 shown on the map below.

Superzones designation map



Residence – Destination matrix: Cascade Gateway Ports (PA, PH, LA, SH), Summer 2013
(*Excludes* Boundary Bay – Point Roberts).

Origin-RESIDENCE \ Destination	Alaska	Alberta	E. Lower Mainland	E. WA	Point Roberts	Puget Sound	Rest of BC	Rest of USA	Western Canada	W. Lower Mainland	Western USA	W. WA	Whatcom County	total
Alaska	0.01%													0.01%
Alberta						0.13%		0.01%			0.02%	0.05%	0.15%	0.37%
Eastern Canada						0.06%					0.00%		0.08%	0.14%
E. Lower Mainland		0.01%	0.41%	0.15%	0.01%	2.52%		0.14%		0.05%	0.17%	0.14%	17.59%	21.19%
E. WA	0.01%		0.07%	0.03%			0.15%			0.25%				0.50%
Point Roberts					0.01%								0.01%	0.02%
Puget Sound	0.02%	0.02%	0.51%		0.01%		1.26%	0.02%		5.16%				6.99%
Rest of BC				0.04%		0.71%		0.06%			0.17%	0.05%	0.75%	1.77%
Rest of USA			0.05%				0.21%	0.03%		0.78%			0.01%	1.08%
Western Canada						0.03%		0.01%				0.01%	0.03%	0.07%
W. Lower Mainland			0.01%	0.30%		10.80%		0.39%		0.05%	1.60%	0.68%	45.60%	59.42%
Western USA	0.04%		0.05%		0.02%		0.39%	0.01%	0.02%	1.12%				1.65%
W.WA	0.00%	0.01%	0.04%				0.34%		0.01%	0.56%				0.97%
Whatcom County		0.03%	1.63%		0.21%	0.01%	0.32%			3.57%	0.01%		0.02%	5.81%
total	0.07%	0.07%	2.76%	0.52%	0.26%	14.26%	2.68%	0.67%	0.04%	11.53%	1.97%	0.93%	64.23%	100.00%

The above matrix shows, for example, that 59.42 percent of all cross-border trips in Summer 2013 were made by residents of West Lower Mainland and that 64.23 percent of all trips were destined for Whatcom County, WA.

Residence – Destination matrix: Peace Arch - Douglas, Summer 2013

Origin-RESIDENCE \ Destination	E. Lower Mainland	Eastern WA	Point Roberts	Puget Sound	Rest of BC	Rest of USA	Western Lower Mainland	Western USA	Western WA	Whatcom County	Total
Alberta				0.08%					0.02%	0.11%	0.21%
Eastern Canada				0.03%						0.02%	0.05%
Eastern Lower Mainland		0.03%		0.68%		0.03%		0.02%	0.02%	1.46%	2.24%
Eastern WA					0.16%		0.41%				0.57%
Point Roberts			0.02%							0.02%	0.05%
Puget Sound			0.03%		1.44%		8.01%				9.48%
Rest of BC				0.87%		0.10%		0.10%	0.05%	0.47%	1.58%
Rest of USA					0.25%	0.09%	1.33%				1.67%
Western Canada				0.03%							0.03%
Western Lower Mainland		0.12%		14.26%		0.48%	0.01%	1.85%	0.85%	57.59%	75.16%
Western USA			0.03%		0.34%		1.66%				2.02%
Western WA					0.49%		0.72%				1.21%
Whatcom County	0.10%		0.37%		0.24%		5.02%				5.73%
Total	0.10%	0.15%	0.45%	15.96%	2.92%	0.69%	17.17%	1.97%	0.94%	59.67%	100.00%

Summary observation: Over half of all trips at Peace Arch – Douglas (58 percent) are residents of West Lower Mainland traveling to destinations in Whatcom County.

Residence – Destination matrix: Pacific Highway, Summer 2013

Origin-RESIDENCE \ Destination	Alaska	Alberta	Eastern Lower Mainland	Eastern WA	Point Roberts	Puget Sound	Rest of BC	Rest of USA	Western Lower Mainland	Western USA	Western WA	Whatcom Co.	Total
Alberta						0.10%		0.03%		0.05%		0.23%	0.41%
Eastern Canada						0.11%						0.03%	0.13%
Eastern Lower Mainland		0.03%		0.26%		2.01%		0.11%		0.08%	0.02%	9.29%	11.79%
Eastern WA	0.02%		0.08%	0.07%			0.19%		0.24%				0.60%
Puget Sound	0.04%		0.50%				1.60%	0.02%	4.98%				7.14%
Rest of BC				0.11%		0.68%				0.26%	0.03%	0.69%	1.78%
Rest of USA			0.05%				0.28%		0.61%			0.02%	0.97%
Western Canada						0.02%							0.02%
Western Lower Mainland				0.61%		12.94%		0.48%	0.03%	2.21%	0.71%	52.31%	69.31%
Western USA			0.09%				0.53%		1.14%				1.77%
Western WA			0.07%				0.34%		0.68%				1.09%
Whatcom Co.		0.06%	0.77%		0.17%		0.41%		3.57%				4.98%
Total	0.07%	0.09%	1.57%	1.05%	0.17%	15.85%	3.35%	0.65%	11.26%	2.61%		0.75%	100.00%

Summary observation: Pacific Highway has a very similar residence-destination distribution to Peace Arch-Douglas, the main difference being a higher portion of Eastern Lower Mainland residents in the mix (11.8 percent vs. 2.2 percent at Peace Arch-Douglas).

Residence – Destination matrix: Aldergrove-Lynden, Summer 2013

Origin-RESIDENCE \ Destination	Alaska	Eastern Lower Mainland	Eastern WA	Point Roberts	Puget Sound	Rest of BC	Rest of USA	Western Canada	Western Lower Mainland	Western USA	Western WA	Whatcom County	Total
Alaska	0.09%												0.09%
Alberta					0.27%						0.09%	0.05%	0.40%
Eastern Canada										0.04%		0.07%	0.11%
Eastern Lower Mainland		2.70%	0.08%	0.07%	7.52%		0.46%		0.08%	0.26%	0.30%	46.77%	58.24%
Eastern WA		0.16%											0.16%
Puget Sound		1.32%				0.20%			1.47%				2.99%
Rest of BC					0.22%					0.12%	0.05%	0.35%	0.73%
Rest of USA		0.25%				0.11%			0.08%				0.45%
Western Canada												0.07%	0.07%
Western Lower Mainland		0.12%	0.36%		3.76%		0.21%		0.34%	0.23%	0.18%	23.11%	28.32%
Western USA				0.07%		0.21%	0.16%		0.24%				0.69%
Western WA		0.08%						0.05%					0.13%
Whatcom County		4.67%			0.11%	0.27%			2.40%	0.11%		0.05%	7.62%
Total	0.09%	9.31%	0.44%	0.14%	11.88%	0.80%	0.84%	0.05%	4.61%	0.76%	0.62%	70.47%	100.00%

Summary observation: As expected, this port serves a higher share of trips by residents of Eastern Lower Mainland, BC. Perhaps due to its straighter connection to U.S. Interstate 5, or because of recent improvements to WA State Route 539, Aldergrove-Lynden serves a higher percentage of cross-border trips destined for Puget Sound than Abbotsford-Huntingdon—Sumas does.

Residence – Destination matrix: Abbotsford-Huntingdon—Sumas, Summer 2013

Origin-RESIDENCE \ Destination	Alaska	Alberta	Eastern Lower Mainland	Eastern WA	Puget Sound	Rest of BC	Rest of USA	Western Canada	Western Lower Mainland	Western USA	Western WA	Whatcom County	Total
Alberta					0.30%						0.24%	0.13%	0.67%
Eastern Canada					0.08%							0.38%	0.46%
Eastern Lower Mainland			1.14%	0.28%	5.77%		0.34%		0.27%	0.75%	0.71%	65.08%	74.34%
Eastern WA			0.15%			0.14%							0.29%
Puget Sound		0.12%	1.43%			0.52%	0.09%		0.05%				2.22%
Rest of BC					0.65%		0.12%			0.17%	0.10%	1.92%	2.96%
Rest of USA			0.04%						0.11%				0.15%
Western Canada					0.06%		0.05%				0.05%	0.15%	0.30%
Western Lower Mainland					0.15%					0.18%	0.46%	9.41%	10.20%
Western USA	0.26%		0.08%			0.30%		0.16%	0.11%				0.92%
Western WA	0.03%	0.08%	0.06%			0.17%		0.06%	0.11%				0.50%
Whatcom County		0.05%	6.17%			0.38%			0.28%			0.13%	7.01%
Total	0.29%	0.26%	9.06%	0.28%	7.01%	1.51%	0.61%	0.22%	0.93%	1.11%	1.55%	77.18%	100.00%

Summary observation: Abbotsford-Huntingdon—Sumas predominately Eastern Lower Mainland residents (74 percent of traffic). This port also sees the fewest share of travelers traveling to the Puget Sound region.

Residence – Destination matrix: Boundary Bay-Point Roberts, Summer 2013

Origin-RESIDENCE	Destination							
	Eastern Lower Mainland	Point Roberts	Puget Sound	Rest of BC	Western Lower Mainland	Western USA	Whatcom County	Total
Alaska		0.12%						0.12%
Alberta		0.85%						0.85%
Eastern Canada		0.15%						0.15%
Eastern Lower Mainland		2.13%						2.13%
Point Roberts	0.19%		0.25%	0.22%	5.40%	0.10%	1.48%	7.63%
Rest of BC		1.21%						1.21%
Western Canada		0.02%						0.02%
Western Lower Mainland		87.90%						87.90%
Total	0.19%	92.37%	0.25%	0.22%	5.40%	0.10%	1.48%	100.00%

Summary observation: Less than 8 percent of cross-border trips at Boundary Bay-Point Roberts are made by residents of Point Roberts.

Trip purpose

All interviewed motorists were asked to give the primary purpose for their cross-border trip – the main purpose for leaving their place of residence and traveling across the Canada-U.S. border. Responses given were coded with one of the 12 pre-defined purposes.

Some notes on the list of purposes: While some *recreation* and *vacation* activities overlap, *vacation* was used for multi-day trips and *recreation* was used for same-day activities. The key difference between *Work commute* and *Business or work related* is that *Work commute* is between home and a permanent work site. Lastly, while it is widely accepted that most travelers to the U.S. purchase gas before returning to Canada, *Gas* was listed as the purpose of travel if the traveler said it was the main reason for crossing.

How does trip purpose break out by percentage all Cascade Gateway ports combined (excluding Boundary Bay – Point Roberts)? The following chart answers this question.

Summer trip purpose for all four Cascade Gateway ports

Purpose	Percent
Shopping	30.5%
Recreation	20.6%
Vacation	15.6%
Gas	14.3%
Family Visit	7.9%
Mail	4.3%
Business or work related	3.2%
Airport	1.6%
Work commute	1.1%
Church	0.4%
Doctor/dentist/healthcare	0.2%
School	0.1%

How does trip purpose vary by standard vs. NEXUS, by U.S. and Canadian residents, and by crossing location? The tables below summarize trip purpose for these specific categories of cross-border travelers.

Trip purpose by crossing, by country of residence, by inspection-booth type – Cascade Gateway ports

Purposes	Peace Arch - Douglas				Pacific Highway				Aldergove-Lyndnen		Abbotsford-Hungtingdon–Sumas			
	Can.		US		Can.		US		Can.	US	Can.		US	
	Std.	NEXUS	Std.	NEXUS	Std.	NEXUS	Std.	NEXUS			Std.	NEXUS	Std.	NEXUS
Shopping	42.6%	32.8%	3.2%	3.9%	40.3%	27.4%	1.8%	2.7%	54.2%	6.5%	28.0%	18.1%	2.7%	1.4%
Recreation	18.7%	19.7%	24.8%	24.7%	19.4%	16.7%	29.6%	17.1%	20.2%	31.7%	21.5%	24.3%	28.4%	16.0%
Gas	11.6%	26.2%			10.0%	26.3%			10.0%		20.7%	26.3%		
Vacation	12.0%	9.0%	48.0%	8.1%	13.5%	12.2%	34.5%	16.2%	5.4%	17.9%	13.8%	13.8%	23.6%	7.1%
Family Visit	6.5%	4.0%	12.9%	25.6%	5.1%	6.0%	20.2%	31.0%	5.3%	20.7%	5.1%	3.4%	35.9%	25.7%
Mail	3.0%	4.9%		1.1%	6.2%	6.3%		1.5%	0.9%		8.1%	10.6%		
Business or work related	2.6%	1.5%	7.4%	24.5%	2.4%	1.3%	9.2%	9.6%	1.7%	10.3%	1.5%	0.8%	3.1%	6.6%
Airport	2.5%	1.0%	1.7%		2.6%	2.1%	0.8%		0.9%	1.5%	0.7%	0.2%		1.8%
Work commute	0.2%	0.4%	1.2%	7.4%	0.2%	1.3%	2.2%	12.8%	0.9%	7.4%	0.3%	1.8%	4.4%	26.4%
Church	0.1%	0.4%	0.5%	1.0%	0.1%	0.2%	1.3%	5.8%	0.1%	1.7%	0.1%	0.7%	1.8%	14.8%
Doctor/dentist/healthcare	0.1%	0.2%	0.1%	2.6%	0.1%	0.1%	0.4%	2.8%			0.1%			
School			0.2%	1.1%	0.1%	0.1%		0.5%	0.2%	2.4%				

Summary observations:

- U.S. and Canadian residents have a very different distribution of trip purposes – Canadians traveling more for shopping and buying gas and U.S. residents traveling comparatively more for recreation and vacation.
- The NEXUS trusted traveler program also shows a different distribution of trip purposes – notably the much higher proportion of gas trips than for standard passenger vehicle traffic.

Trip purpose by country of residence, by inspection-booth type – Boundary Bay–Point Roberts

Purposes	Boundary Bay - Point Roberts			
	Can.		US	
	Std.	NEXUS	Std.	NEXUS
Shopping	6.4%	9.7%	7.2%	17.1%
Recreation	16.3%	19.6%	31.6%	34.6%
Gas	39.8%	39.9%		0.3%
Vacation	7.6%	15.0%	8.2%	2.7%
Family Visit	2.3%	1.8%	3.2%	6.6%
Mail	26.1%	13.0%		1.2%
Business or work related	1.3%	0.4%	30.8%	12.9%
Airport			1.7%	4.4%
Work commute	0.2%	0.5%	16.8%	12.9%
Church				0.5%
Doctor/dentist/healthcare			0.6%	6.3%
School		0.1%		0.5%

Summary observations:

- Boundary Bay-Point Roberts has the highest share of trips made for buying gas – both among Canadian NEXUS card holders and standard lane traffic.
- Mail is a more common trip purpose at Boundary Bay- Point Roberts than any of the Cascade Gateway ports and, behind buying gas, the second most frequent trip purpose. Interestingly, unlike trips for gas, there is a significant difference in the portion of mail trips made via the standard lanes than through the NEXUS lanes.

Changing distribution of trip purposes

The 2013 IMTC Passenger Vehicle Survey is the third such survey conducted. Early efforts were conducted in 2000 and 2007. In addition to showing the distribution of trip purposes captured in July, 2013, the chart below shows how these proportions have changed since 2000.

In looking at past years, please note that trip-purpose categories have been added. In 2007, the previously used *other* category was split into *airport, mail, church, doctor, and school*. *Gas* (trips for the primary purpose of buying gas) was added. Previously, when gas was given as the primary purpose by the driver, it was categorized as *shopping*.

Relative changes in summer trip purpose in the Cascade Gateway.

Purpose	2000	2007	2013	'07-'13 Change
Vacation	24%	31%	15%	-16%
Recreation	46%	22%	20%	-2%
Family Visit		11%	7%	-5%
Shopping	15%	19%	27%	25%
Gas			18%	
Business or work related	6%	6%	3%	-2%
Work commute	3%	4%	1%	-3%
Airport	4%	3%	1%	-1%
Mail		2%	7%	5%
Church		1%	0%	-1%
Doctor/dentist/healthcare		1%	0%	0%
School		0%	0%	0%

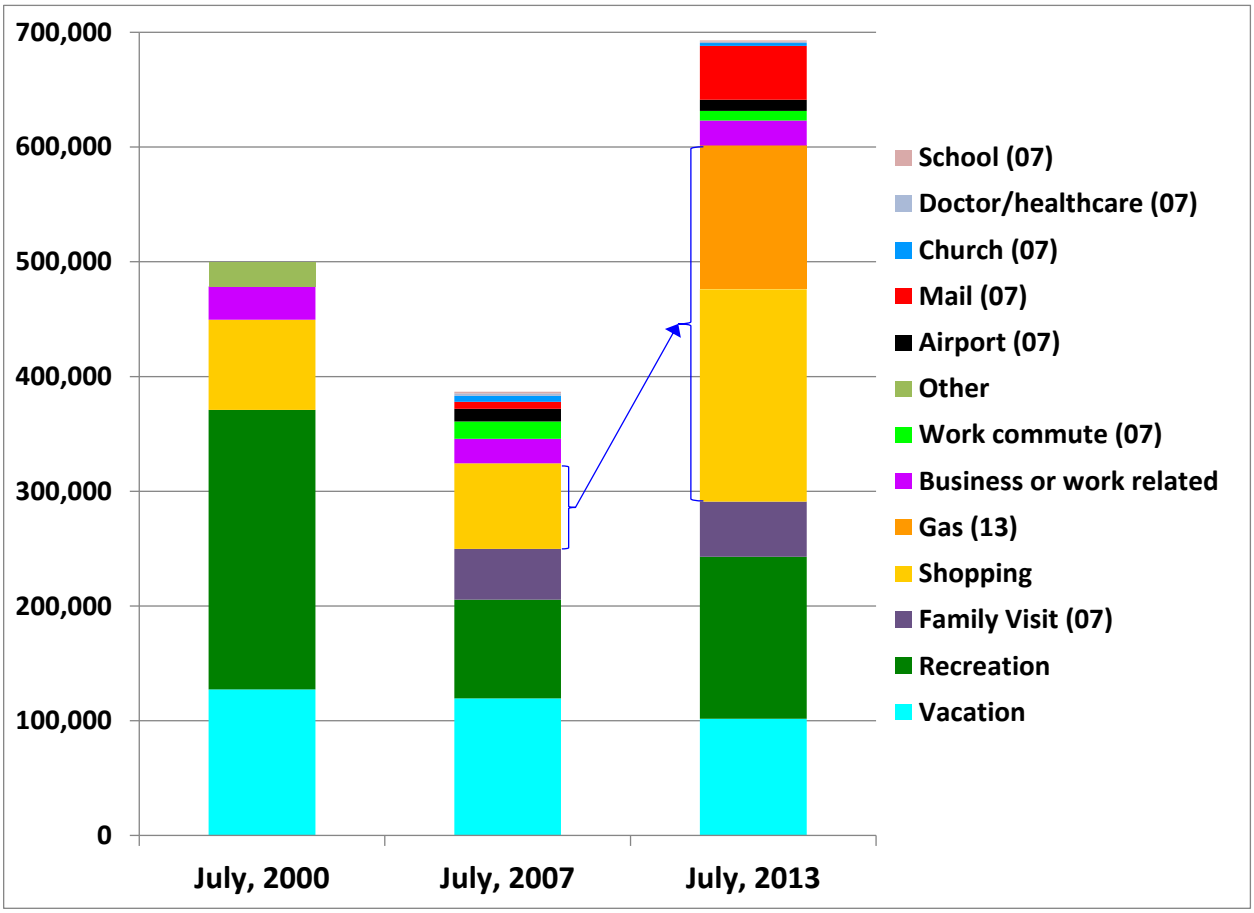
Summary observations:

- The far right column in the table above shows the percentage change from July 2007 to July 2013. The shift in the share of shopping trips is the main story here. The increase in trips made to pick up mail is also notable.

Surveying at Lynden, WA.

The next chart below illustrates these shifts with the share of purpose in absolute terms by applying the above percentages to the historic monthly southbound travel volumes through the Cascade Gateway ports-of-entry.

Absolute volume of different summer trip purposes, July 2000, July 2007, July 2013



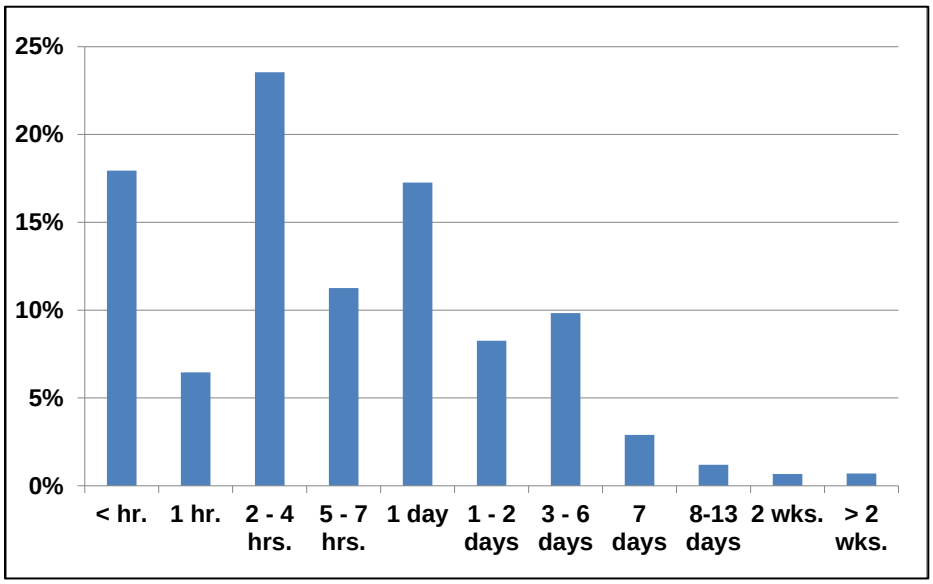
Trip duration & frequency

This section summarizes responses to the questions, "How long will you be/have you been across the border?" (duration) and "How often do you cross the border (frequency).

Duration

How long people stay across the border is often broken down between same day travel and multi-day or overnight trips. Respondents in our survey were simply asked to report their trip duration in their own terms. All responses were converted to days in post processing (or fractions of days). The histogram below uses 12 bins to illustrate how trip duration is distributed across the population of travelers in Summer 2013.

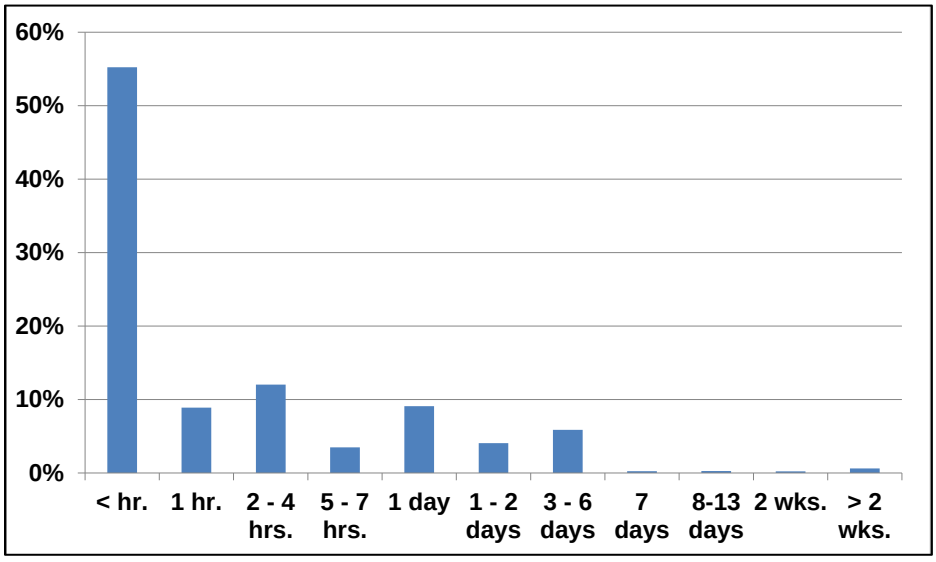
Distribution of trip duration. All Cascade Gateway Ports (excludes Boundary Bay-Point Roberts)



Summary observations:

- Three quarters of all trips are same-day trips.
- One quarter of all trips are for 1 hour or less.

Distribution of trip duration: Boundary Bay-Point Roberts



Summary observations: Boundary Bay-Point Roberts shows a distinctly different trip duration profile which, is partially due to the limited geography (you can't go very far south of the border) and the high concentration of transaction-based trip purposes (gas and mail).

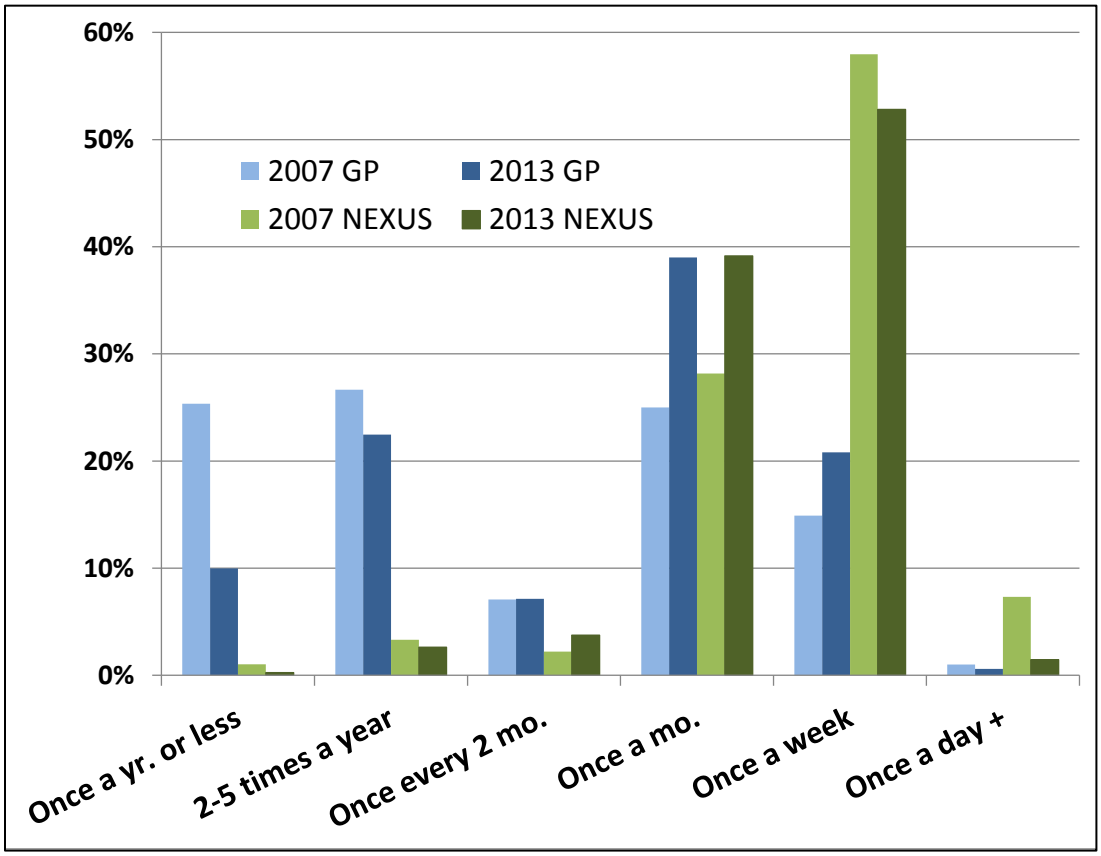
43 percent of Boundary Bay-Point Roberts trips were reported as 15 minutes or less. For many of these trips, the largest portion of the overall trip time would be the wait in line at the border itself.

Frequency

When assessing and forecasting travel demand on a given transportation network, it's important to know both how many individuals are using the network (along with how that population is growing or shrinking) and how frequently that user population is making trips on the system. When we say that 50,000 trips were made across the border last week, we usually don't know if it was 50,000 individuals traveling once or if it was the same 7,000 people traveling every day.

The following chart shows the distribution of reported trip frequency separated by standard traffic and NEXUS traffic and also shows how this measure has changed over the last six years.

Distribution of cross-border trip frequency by booth-type (General Purpose & NEXUS) and by survey year (summer 2007 & summer 2013)



Summary observations:

- Confirming the conventional wisdom, NEXUS card holders are more frequent cross-border travelers. Over half the NEXUS users observed at the border reported traveling at least once a week.
- From 2007 to 2013, it is evident that a significant source of observed traffic growth is caused by increased trip frequency by system users. 14 percent more general purpose lane drivers and 12 percent more NEXUS drivers reported crossing once a month than did in 2007.

Traveler tenure and attitude trends

This section of our survey was added this year as a way of examining which aspects of the border affect people's interest in and willingness to travel across the border. Because answering the questions required respondents to have enough experience to base a comparison on, the first question in the series simply asked about tenure – "How long have you been a regular cross-border traveler in this region?" Responses were entered in the four timeframes listed in the table below.

Tenure

The following table summarizes the tenure results. Because 1-5 years was considered insufficient exposure and experience to inform a perspective on *changing* border conditions, the table below rolls up three of the four timeframes into "6+ years," providing summary percentages of the share of respondents who were given follow-on questions and those who were not.

Cross-border travel tenure by country of residence

Cross border tenure	Canadian residents	U.S. residents
1-5 years	48%	42%
6+ years	52%	58%
6-10 years	14%	16%
10-20 years	11%	18%
20+ years	27%	24%

Perceptions of personal travel trends

After screening out drivers who were relatively new to cross-border travel in the region, "tenured travelers" were asked, "How does your *current* amount of cross-border travel compare to your *past* amount of cross-border travel?" The notion of "the past" was left open ended for respondents.

Summary of responses: Traveling more, less, or about the same compared the past.

Amount	Canadian residents	U.S. residents
More	47%	29%
Less	13%	23%
About the same	40%	48%

Summary observations: U.S. residents are fairly evenly distributed between change of some kind (*more* or *less*) and no change (*about the same*). Canadian residents are most likely to report they are traveling more with a more definite minority (13 percent) reporting a reduction in their cross-border travel.

Individuals' reported reasons for changing cross-border travel frequency

Depending on if tenured travelers said the traveled more or that the traveled less than in the past, they then were asked "What are the reasons you believe you cross more / cross less?"

Top of mind responses were attributed to a list of pre-defined categories. Multiple reasons could be recorded (though most stuck with a single answer).

Categories of reasons given by tenured, cross-border travelers that they have been traveling MORE than in the past.

	POEs, west to east					
Travels MORE often because…	Boundary Bay - Pt. Roberts	Peace Arch - Douglas	Pacific Highway	Aldergrove Lynden	Abb.-Hntgdn. -- Sumas	**All Ports**
Border Inspection	0.7%	0.3%	0.1%	0.3%	0.6%	0%
Changed life circumstance	23.8%	26.7%	25.3%	31.9%	25.3%	27%
Retired	6.5%	5.3%	6.1%	4.5%	5.9%	6%
Congestion	1.4%	0.3%	0.7%	0.2%	0.7%	1%
Duty Exemption	1.2%	0.3%		0.3%		0%
Exchange Rate	21.0%	11.2%	13.5%	10.5%	13.1%	13%
Gas Prices	10.0%	13.9%	12.1%	16.8%	13.3%	13%
Shopping related	22.6%	14.0%	16.6%	15.1%	16.1%	16%
Got NEXUS	1.4%	16.5%	14.6%	7.7%	7.0%	11%
Lost NEXUS						
Other	11.4%	11.6%	11.0%	12.7%	17.9%	13%
Total	**100%**	100%	100%	100%	100%	100%

Categories of reasons given by tenured, cross-border travelers that they have been traveling LESS than in the past.

	POEs, west to east					
Travels LESS often because…	Boundary Bay - Pt. Roberts	Peace Arch - Douglas	Pacific Highway	Aldergrove Lynden	Abb.-Hntgdn. -- Sumas	**All Ports**
Border Inspection	4.9%	3.4%	2.0%		3.9%	3.6%
Changed life circumstance	51.4%	47.8%	44.2%	34.6%	34.6%	43.1%
Retired	2.1%	7.9%	3.0%	1.5%	8.7%	4.6%
Congestion/Wait Times	19.0%	18.0%	26.4%	19.1%	17.3%	20.4%
Duty Exemption						
Exchange Rate	0.7%	2.8%	2.5%	7.4%	3.9%	3.3%
Gas Prices	1.4%	0.0%	1.0%	2.2%	0.0%	0.9%
Shopping related	1.4%	1.1%	1.0%	2.9%	1.6%	1.5%
Got NEXUS						
Lost NEXUS						
Other	19.0%	19.1%	19.8%	27.9%	29.9%	22.6%
Total	100%	100%	100%	100%	100%	100%

Summary observations:

- The reasons that people change their travel patterns or level of interest in cross-border travel are diverse. Clearly, we didn't anticipate all the measurable categories well enough given how many responses were most appropriately attributed *to changed life circumstances* and *other*. For those traveling more, the remaining categories did account for over half of respondents (60 percent). But for those traveling less, almost two thirds (65.7 percent) were attributed to life circumstances and other reasons.
- For those traveling more, the reasons given – *exchange rate, gas prices, shopping related* -- match will with the observed relative growth in certain trip-purpose categories.
- It is interesting to note that acquisition of a NEXUS card is cited as a reason for traveling more. Not surprisingly but important – NEXUS isn't only a response to frequent border travel but, as characterized thought this set of responses, can be seen to induce higher rates of travel by individuals.
- Recent studies and media have suggested that the 2012 harmonized increase to duty limits have likely increased interest in cross-border shopping. While that might be true, it was a rare, top of mind response in our sample.
- One of the reasons for including this line of questioning was to gauge the impact of increase border security since 2001, the assumption being that this would present as a reason travelers might give for traveling less than in the past. While it did show up as a measureable perception, it was very low – under 4 percent of the sub-set of respondents who were deemed tenured travelers and who say they travel less than in the past.

Crossing location choice

The Cascade Gateway, especially the Peace Arch-Douglas and Pacific Highway crossings, offers travelers options to route trips in response to congestion and incidents. Answers to the question on crossing location choice provide insights about what sources of information are being used and what circumstances are prompting diversions.

Summarized responses to question: Why did you choose this border crossing rather than another border crossing in the area?

Peace Arch - Douglas

	Northbound		Southbound	
	General	NEXUS	General	NEXUS
ATIS signs	8%	1%	8%	2%
Avoid congestion	4%	5%	11%	7%
Don't know	1%	1%	3%	1%
Following directions	10%	2%	5%	1%
Most direct route	55%	77%	52%	65%
NEXUS lane		4%		10%
Other	3%	1%	3%	2%
Preferred route	9%	7%	9%	8%
Radio Advice	1%			
Road came here	9%	1%	8%	2%

Aldergrove-Lynden

	Northbound	Southbound
Most direct route	57%	56%
Avoid congestion	20%	22%
Preferred route	11%	10%
Other	4%	4%
Following directions	3%	3%
ATIS signs	1%	1%
Null	1%	3%
Don't know	1%	
Radio advice	1%	1%

Pacific Highway

	Northbound		Southbound	
	General	NEXUS	General	NEXUS
Following directions	45%	1%	6%	1%
Duty Free Store	15%	6%		0%
Don't know	11%	1%	2%	6%
Radio advice	3%		1%	
ATIS signs	2%	1%	13%	2%
Avoid congestion	1%	5%	14%	8%
Most direct route	1%	2%	47%	2%
Road came here	1%	1%	2%	2%
Web page advice	1%			1%
Preferred route	0%	1%	11%	2%
Other	2%	1%	2%	66%
NEXUS lane		0%		1%

Abbotsford-Hungtingdon—Sumas

	Northbound		Southbound	
	General	NEXUS	General	NEXUS
Most direct route	84%	84%	84%	87%
Avoid congestion	5%		4%	1%
Other	3%	1%	2%	2%
Preferred route	3%	2%	2%	
Null	2%		3%	1%
Following directions	2%	1%	2%	2%
Don't know	1%		1%	1%
Web page advice	1%			
ATIS signs		3%		
NEXUS lane		9%		5%

Summary observations:

- Given Peace Arch-Douglas and Pacific Highway's proximity to each other, it makes sense that these ports had the highest percentage of travelers who indicated they chose the crossing because of the ATIS (border wait time signs). There may be overlap between respondents who cited the ATIS signs and those whose answer was more simply attributed to "avoid congestion" which may have been because of the wait time signs.
- Aldergrove-Lynden has the highest percentage of travelers who responded that they were "avoiding congestion."

Border Wait Time systems

Since being installed for Peace-Arch Douglas and Pacific Highway crossings in 2002, border wait time (BWT) measurement systems and the corresponding border wait time signs on approach highways to the crossings (regionally referred to as the Advanced Traveler Information System –ATIS) have also been installed for Aldergrove-Lynden and Abbotsford Huntingdon—Sumas.

More recently, BWT systems have been identified in the 2011 Beyond the Border (BtB)Vision and subsequent (2012) BtB Action Plan – both as a priority improvement for the top-20 vehicle volume U.S.-Canada land border POEs and as a source of performance measurement to be used in conjunction with other metrics like travel demand.

At the Cascade Gateway crossings, the state and provincial transportation agencies own and maintain the BWT systems – BC MoT for the systems pertaining to U.S. inspection facilities and WSDOT for systems pertaining to Canadian inspection facilities. While the two transportation agencies have undertaken past efforts to validate and calibrate the hardware and software components (and these efforts are expected to continue), this year's Passenger Vehicle Survey presented an opportunity to ask the traveling public if they used the system, what they thought about its accuracy, and if they were also obtaining the system-generated wait time information from other media – either services set up by transportation and inspection agencies or third party internet and mobile device applications.

If respondents had responded in the previous question about border choice that they had used the Border Wait Time signs, they were not asked the next question: "Do you use the border wait time signs?" This question was not asked of NEXUS users since it's assumed that their wait time will usually be very low.

The summary tables below, which break out the response categories by crossings, also continue a breakout by the responses to the subsequent question, "Do you think the border wait time signs give accurate information?" This question was asked of everyone who was asked the first question. Again, these are open ended questions and the responses given were attributed by the surveyor to the best matching category.

Peace Arch - Douglas

Do you use BWT signs?	Percent
Yes	70.3%
Sometimes	6.0%
No	23.7%

Do you think signs are accurate?	Percent	Joint Percent
No	18.3%	12.9%
Not sure	4.9%	3.5%
Not sure what the wait-time signs are	0.2%	0.2%
Sometimes, seems inconsistent, etc.	18.0%	12.7%
Yes	58.5%	41.2%
No	19.8%	1.2%
Not sure	10.5%	0.6%
Sometimes, seems inconsistent, etc.	44.9%	2.7%
Yes	24.9%	1.5%
No	22.5%	5.3%
Not sure	36.2%	8.6%
Not sure what the wait-time signs are	8.2%	1.9%
Sometimes, seems inconsistent, etc.	6.8%	1.6%
Yes	26.2%	6.2%

Pacific Highway

Use BWT Signs?	Percent
Yes	73.1%
Sometimes	5.6%
No	21.3%

Do you think signs are accurate?	Percent	Joint Percent
No	35.0%	25.6%
Not sure	4.9%	3.6%
Not sure what the wait-time signs are	0.2%	0.1%
Sometimes, seems inconsistent, etc.	14.8%	10.8%
Yes	45.2%	33.0%
No	32.4%	1.8%
Not sure	6.1%	0.3%
Sometimes, seems inconsistent, etc.	21.6%	1.2%
Yes	39.9%	2.2%
No	32.6%	6.9%
Not sure	38.3%	8.1%
Not sure what the wait-time signs are	3.2%	0.7%
Sometimes, seems inconsistent, etc.	7.3%	1.5%
Yes	18.7%	4.0%

Lynden - Aldergove

Use BWT Signs?	Percent
Yes	57.4%
Sometimes	11.2%
No	31.4%

Do you think signs are accurate?	Percent	Joint Percent
No	16.7%	9.6%
Not sure	2.2%	1.3%
Not sure what the wait-time signs are	0.2%	0.1%
Sometimes, seems inconsistent, etc.	23.8%	13.7%
Yes	57.0%	32.7%
No	17.1%	1.9%
Not sure	1.5%	0.2%
Sometimes, seems inconsistent, etc.	22.5%	2.5%
Yes	58.9%	6.6%
No	30.9%	9.7%
Not sure	25.5%	8.0%
Not sure what the wait-time signs are	5.1%	1.6%
Sometimes, seems inconsistent, etc.	8.0%	2.5%
Yes	30.5%	9.6%

Sumas - Abbotsford-Huntingdon

Use BWT Signs?	Percent
Yes	57.6%
Sometimes	7.3%
No	35.0%

Do you think signs are accurate?	Percent	Joint Percent
No	30.9%	17.8%
Not sure	4.0%	2.3%
Not sure what the wait-time signs are	0.1%	0.1%
Sometimes, seems inconsistent, etc.	21.0%	12.1%
Yes	43.9%	25.3%
No	32.2%	2.3%
Not sure	6.2%	0.5%
Sometimes, seems inconsistent, etc.	28.8%	2.1%
Yes	32.8%	2.4%
No	35.9%	12.6%
Not sure	29.2%	10.2%
Not sure what the wait-time signs are	3.5%	1.2%
Sometimes, seems inconsistent, etc.	8.7%	3.1%
Yes	22.6%	7.9%

Summary observations:

- Reported ATIS use rates at Peace Arch-Douglas and Pacific Highway are high – 70 and 73 percent respectively. They are lower (and identical) at the other two crossings – 57 percent. This is likely a result of the crossings being farther apart from each making a driver's interest in using them more dependent on balancing the anticipated time savings against longer route travel time and overall trip distance.
- Another indicator that system accuracy isn't the only determinant of use, about the same percentage of the "use sometimes" respondents at Aldergrove-Lynden crossing feel the system is accurate (59%) as do "Yes [I use it]" respondents (57%).
- Peace Arch – Douglas shows the highest use of BWT signs by travelers who also think the signs are accurate.
- Abbotsford-Huntingdon—Sumas has the lowest use and confidence in accuracy.

Border Wait Time systems at Point Roberts-Boundary Bay.

Under the BtB Action Plan mentioned above, Point Roberts-Boundary Bay, along with the other top 20 vehicle volume POEs, have been identified for installation of an automated border wait time system. Given this intention, we asked cross-border travelers at Point Roberts-Boundary Bay if they would use a BWT system. Given that there are not alternative land routes for this location, it is anticipated that BWT information would be used primarily to choose *when* to travel.

Bndry.-Bay--Pt. Rbts. Only If border wait time information was available, would you use it to plan your travel?	
Yes	46%
No	50%
Not Sure	5%

Radio Frequency Identification (RFID) – awareness of and attitudes about BC and WA enhanced driver's licenses

Evolving from the development of alternative forms of identification that, along with standard passports, meet specifications for compliance with the U.S. Western Hemisphere Travel Initiative such as the U.S. State Department's Pass Card and state and provincial enhanced drivers licenses (EDLs), the BtB Action Plan promotes initiatives to leverage the potential benefits of these new cards' underlying technology – vicinity readable radio frequency (RF) media.

Over the last few years, U.S. CBP has installed vicinity card readers in advance of primary inspection booths that use RF to initiate required queries of traveler information while the current primary inspection is still occurring. This expedites primary inspections and can reduce time at the inspection booth by more than 20 seconds per vehicle. The BtB Action Plan advocates for continued installation of RF technology by both the U.S. and Canada.

If the anticipated RF technology investments are to have the intended operational benefit (shorter primary inspections and reduced border wait times), significantly greater numbers of travelers will need to obtain and use RF identification documents (RFIDs). Both British Columbia and Washington issue EDLs to residents who choose to pay a higher fee and provide additional documentation ($35 more in BC & $15 more in WA).

The 2013 Passenger Vehicle Survey included two questions about the EDL (which were not asked of drivers using the NEXUS lane). The first question was, "Are you familiar with the

enhanced driver's license?" If the respondent said they were not familiar with it or that they had one, there were no more EDL questions. If they were at all familiar with the EDL, they were asked, "Is there a reason you haven't gotten an EDL?" Responses were attributed to predefined category that matched the best.

Summary of Enhanced Driver's License questions.

Familiar with EDL?	
Yes	53.8%
Have heard of it	8.0%
No	24.4%
I have one	13.8%

Is there a reason you haven't gotten an EDL?	
Have passport	39.4%
No reason	18.8%
Other	13.4%
Waiting for license renewal	7.7%
Plan to get one	7.6%
Price	4.5%
Hassle	4.2%
Would rather get NEXUS	2.4%
Not a citizen	1.1%
Privacy concern	0.9%

Summary observations:

- Nearly a quarter of border-crossers still don't know what an enhanced driver's license is.
- The share of respondents that say they have an EDL (13.8%) seems much higher than the reported rate of EDL use at inspection booths.
- The 39 percent of EDL-knowledgeable respondents who are happy with using their passports illustrates a widely held perspective that there is no individual benefit at the border as a result of obtaining an EDL.
- The 18.8 percent of EDL-knowledgeable respondents who have no particular reason for not having obtained an EDL represent a group that might be easier to convince to make a switch.
- While privacy concerns are often assumed to be significant deterrent, fewer than one percent of respondents indicated that this was their reason for not getting an EDL.

NEXUS

NEXUS has been a hugely successful program in the Cascade Gateway region where, at Peace Arch-Douglas and Pacific Highway ports, over 30 percent of vehicles cross the border through a NEXUS lane. This section summarizes the results of survey questions that provide information about the potential for continued growth in the program and the possible implications on border and transportation system operations.

Travelers at ports with NEXUS lanes and booths (not Aldergrove-Lynden) who were *not* already using NEXUS were asked, "Why don't you have a NEXUS card?" To use the responses to estimate the percentage of those travelers who would probably benefit from getting NEXUS, we filtered out responses from those who report crossing the border fewer than eight times a year. Lastly, to keep this particular analysis focused on the Cascade Gateway ports, Boundary-Bay-Pt. Roberts responses are not included in the tables below.

Applying the eight trips per year filter indicates that 58 percent of current non-NEXUS users at ports with NEXUS service cross the border 8 or more times per year.

Summary of reasons non-NEXUS users give for not having a NEXUS card.

Why no NEXUS?		
No reason/don't know	20.3%	
Meaning to	12.2%	
Don't cross enough	11.9%	52.2%
Cost too high	5.9%	
Unfamiliar	1.9%	
Other	10.9%	
Application a hassle	9.1%	
non-NEXUS passenger	8.6%	
Application in process	8.1%	
Don't want to	5.2%	
Not eligible	3.3%	
Other program flaw	1.5%	
Waiting for appointment	0.7%	
Card being renewed	0.4%	
total	100.0%	

Summary observations:

The top five rows are grouped to show those reasons that describe people who either feel that getting a NEXUS card is something they *could* do or people who have made benefit-cost decision not to get one. Both of these perspectives could be communicated to with messages about the growing ease of applying for NEXUS and the increasing value of the program.

For more information

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