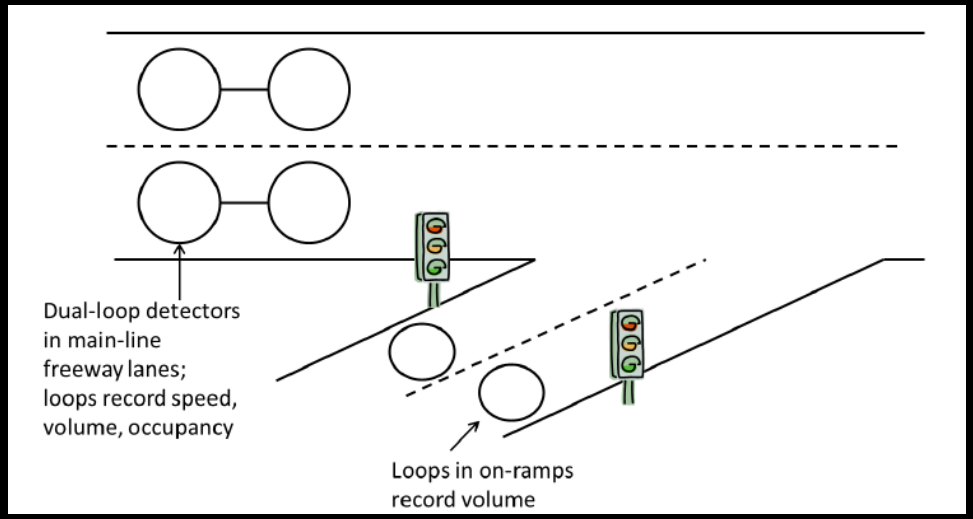
A Regional Transportation Data Warehouse

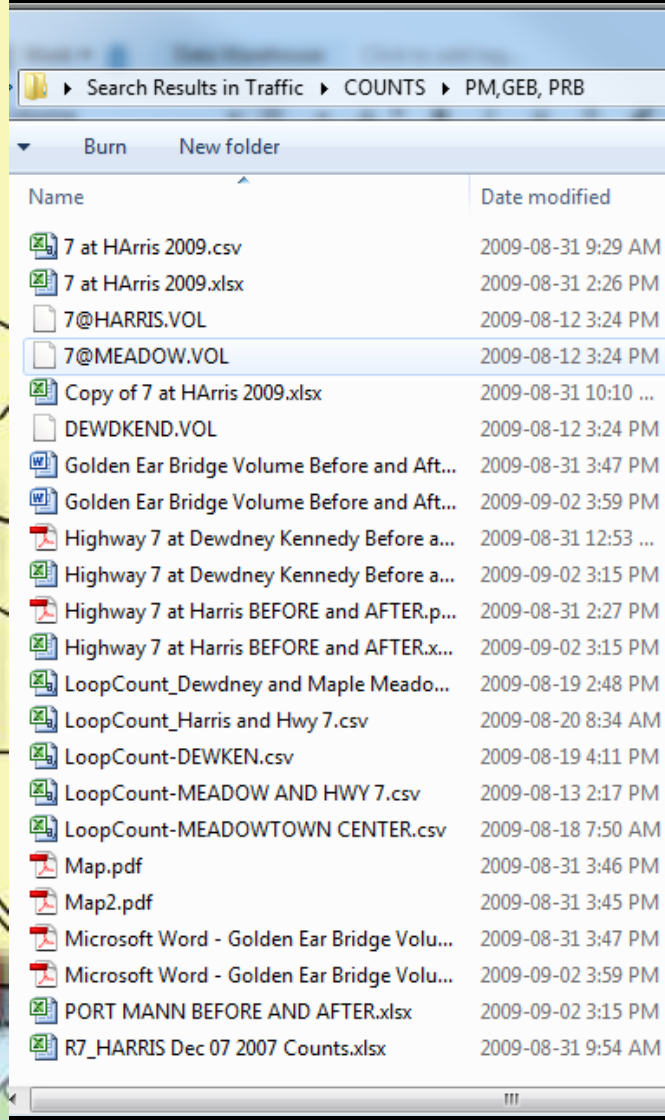
for the Lower Mainland of British Columbia

What data?

- Volume, speed, occupancy, classification
- Travel time, delay
- Infrastructure status – events, incidents, construction
- Short term or continuous?
- Real time or historical?



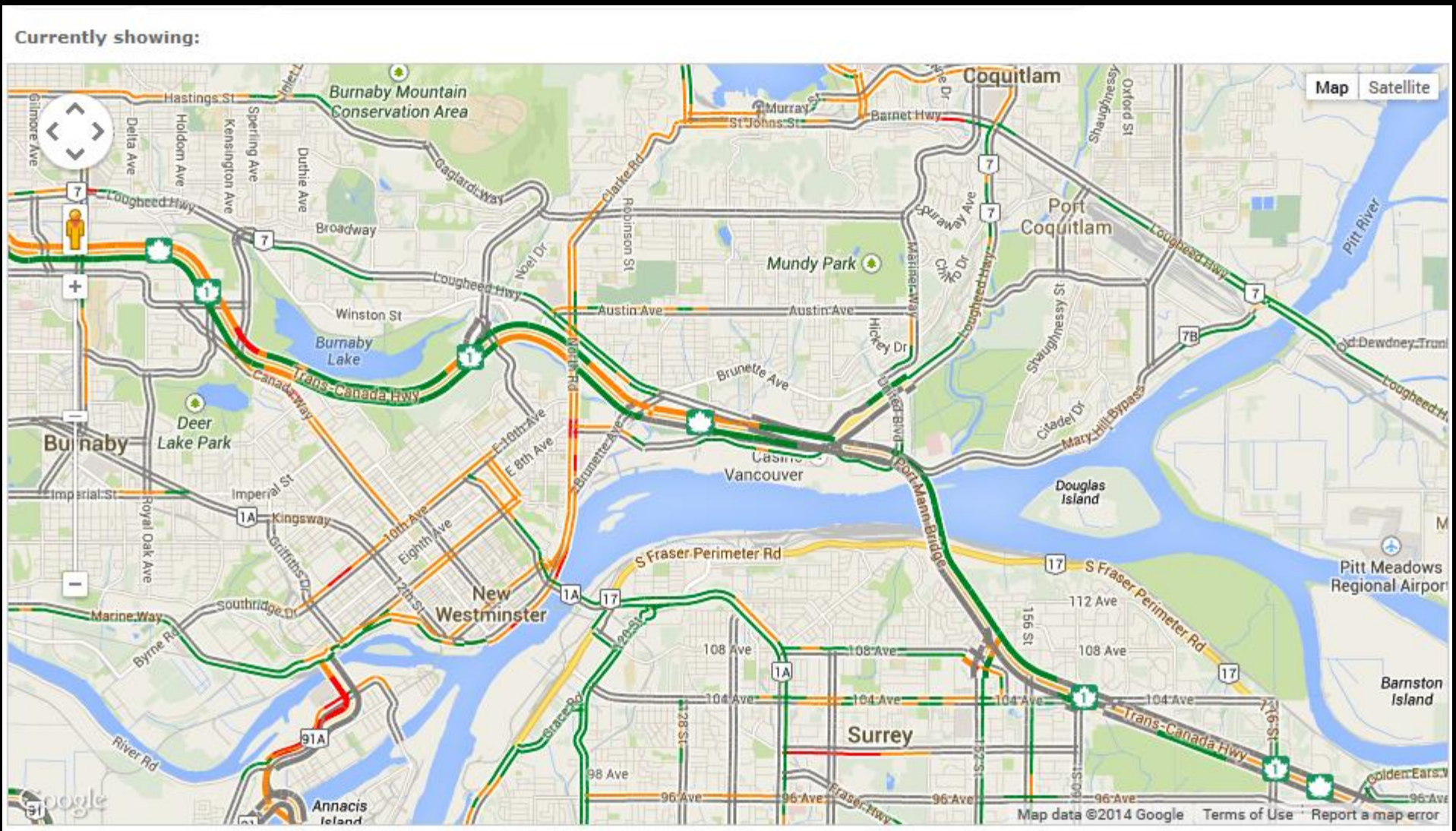
Who has what data?



Who has what data?

ID	Type	Severity	Cause	District	Route	Traffic Pattern	Description	Last Updated
170926	Incident	Normal	Ferry Service Interruption	Cariboo District	Big Bar Ferry Both directions	None	Closed in both directions at Fraser River because of high water. Updated on Sun Jun 1 at 10:03 pm PDT. (ID# 170926)	06/01/2014 22:03:10
RTMC_2582	Current Planned	Normal	Construction	Lower Mainland District	Highway 1 Both directions	Drive Carefully	Construction on Highway 1 at Nelson Creek Bridge in West Vancouver, approximately 2.5 km east of Horseshoe Bay. Construction will be in effect until January 2015. All lanes affected. Bike detour in effect. For more information: www.th.gov.bc.ca/highwayprojects/nelson Updated on Tue May 20 4:21 pm PDT. (ID# RTMC_2582)	05/20/2014 16:21:52
RTMC_2736	Future Planned	Normal	Utility Works	Lower Mainland District	Highway 1 Both directions	Drive Carefully	Utility Work on Highway 1 both directions Cassiar Tunnel to Cape Horn Interchange will be in effect 01/06/2014 at 11:00:00 PM until 02/06/2014 at 5:00:00 AM. Lane closure will be in effect. Updated on Wed May 28 5:01 pm PDT. (ID# RTMC_2736)	05/28/2014 17:01:28
RTMC_989	Current Planned	Normal	Construction	Lower Mainland District	Highway 1 Both directions	Drive Carefully	Truck Climbing Lane project on Highway 1 from 232nd St to 264th Street.Road Work will be in effect until 31/05/2014 at 11:59:00 PM.Intermittent lane closures in effect. Updated on Mon Apr 28 11:42 am PDT. (ID# RTMC_989)	04/28/2014 11:42:09
-47441	Current Planned	Normal	Paving	Thompson Nicola District	Highway 1 Both directions	Single Lane Alternating Traffic	Paving 13 km east of 10 kilometers east of Cache Creek to 21 km west of Exit 362, Junction with Highway 5 Coquihalla in Kamloops (27.1 km), 7:00 am to 7:00 pm Mon-Sat through Jun 30. The road is reduced to single lane alternating traffic. Updated on Wed May 7 at 6:18 am PDT. (ID# -47441)	05/07/2014 06:18:32
-42438	Current Planned	Normal	Construction	Okanagan Shuswap District	Highway 1 Both directions	Single Lane Alternating Traffic	Construction 14 km west of Chase 7:00 am to 5:30 pm Mon-Sat starting Jul 8 2013 through Jul 31 2014. There will be 5 minute delays. Updated on Fri Jul 5 at 4:39 pm PDT. (ID# -42438)	07/05/2013 16:39:28
-47636	Current Planned	Normal	Construction	Okanagan Shuswap District	Highway 1 Both directions	Single Lane Alternating Traffic	Construction at Chase Overhead 5 km east of Chase through Fri Jun 13. The road is reduced to 24-hour single lane alternating traffic, expect up to 10-minute delays. Updated on Wed May 14 at 12:57 pm PDT. (ID# -47636)	05/14/2014 13:00:13
-47952	Current Planned	Normal	Paving	Okanagan Shuswap District	Highway 1 Both directions	Single Lane Alternating - 20 minutes delay	Paving at Salmon Arm 7:00 am to 7:00 pm Mon-Sat through Jun 7. The road is reduced to single lane alternating traffic with up to 20 minutes delay. Updated on Thu May 29 at 6:12 am PDT. (ID# -47952)	05/29/2014 06:12:33

Who has what data?



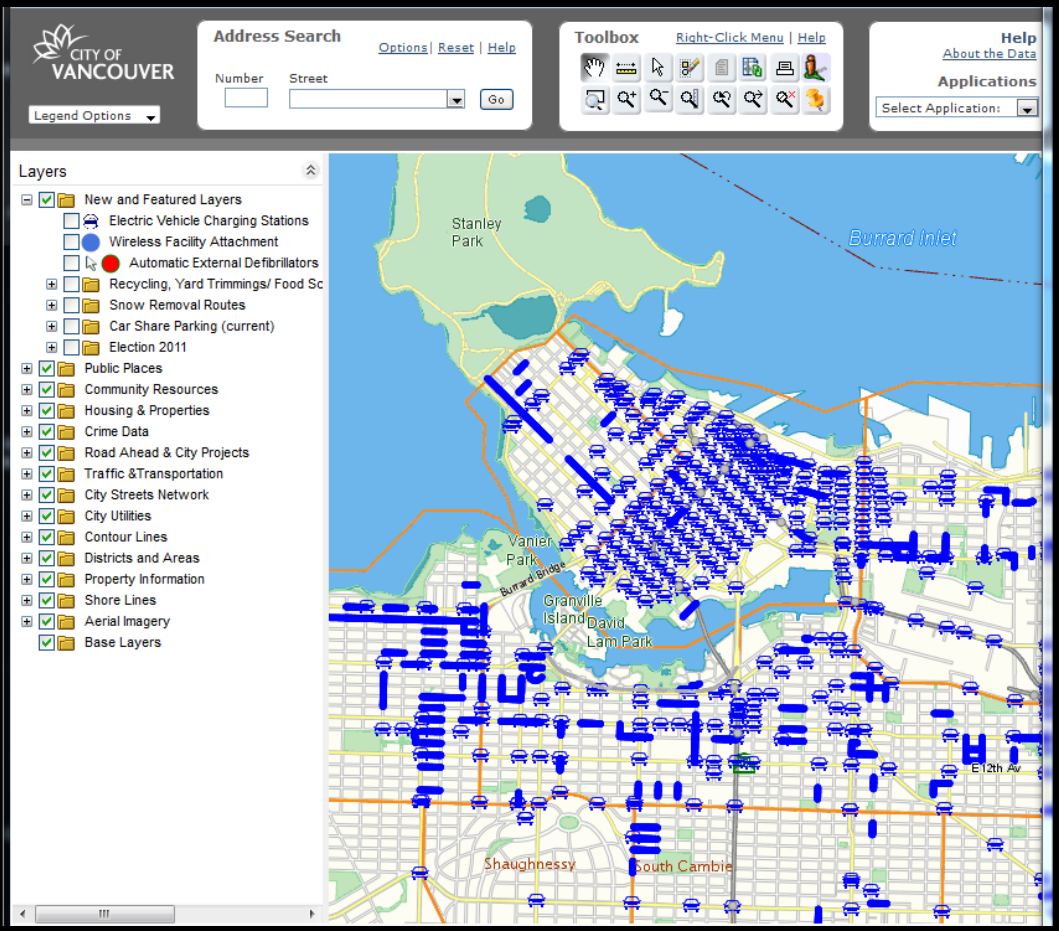
Average Speed: The average speed of vehicles moving along the selected road segment.

Travel Time: Amount of time it's expected to take to drive along the selected road segment.

Data Reliability: Amount of data available for the selected road segment.

00 These icons indicate multiple listings

Who has what data?



AUTOMATIC TRAFFIC COUNTS

3300 BRIDGEWAY

Coordinates: 568295 Location: 3300 BRIDGEWAY

DIRECTION: EB

ID	Date	Hour	12-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	24 Hours	9AM-4PM	7-9AM	4-6PM
80469	Dec-05, 12	A.M.	26	8	3	0	4	10	20	130	169	109	93	89	1729	771	299	305
		P.M.	93	119	110	158	176	129	85	44	42	32	47	33				
80468	Dec-04, 12	A.M.	11	32	6	7	5	14	27	120	193	118	89	100	1765	790	313	296
		P.M.	105	120	125	133	156	140	74	52	33	36	33	36				

DIRECTION: WB

ID	Date	Hour	12-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	24 Hours	9AM-4PM	7-9AM	4-6PM
80471	Nov-22, 12	A.M.	7	4	1	1	10	28	125	273	298	174	158	176	4591	1992	571	1337
		P.M.	237	240	234	773	782	555	195	105	70	63	54	28				
80470	Nov-21, 12	A.M.	11	3	1	3	3	33	155	223	262	202	170	223	4120	1859	485	1177
		P.M.	251	268	242	503	667	510	156	99	36	47	27	25				

DIRECTION: EB

ID	Date	Hour	12-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	24 Hours	9AM-4PM	7-9AM	4-6PM
22575	May-06, 05	A.M.	17	7	5	1	2	5	36	88	108	84	109	150	745	476	196	0
		P.M.	133	-	-	-	-	-	-	-	-	-	-	-				

DIRECTION: WB

ID	Date	Hour	12-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	24 Hours	9AM-4PM	7-9AM	4-6PM
22576	May-06, 05	A.M.	3	19	3	2	6	14	147	293	274	155	111	97	1232	471	567	0
		P.M.	109	-	-	-	-	-	-	-	-	-	-	-				

DIRECTION: EB

ID	Date	Hour	12-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	24 Hours	9AM-4PM	7-9AM	4-6PM
22572	May-05, 05	A.M.	13	7	7	6	5	5	54	74	103	76	87	107	2934	1227	177	852
		P.M.	122	123	230	482	462	390	233	98	83	74	49	44				

DIRECTION: WB

ID	Date	Hour	12-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	24 Hours	9AM-4PM	7-9AM	4-6PM
22574	May-05, 05	A.M.	3	2	3	5	7	11	141	309	301	157	84	106	2053	758	610	227
		P.M.	91	91	100	129	115	112	89	78	48	35	21	15				

DIRECTION: EB

ID	Date	Hour	12-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	24 Hours	9AM-4PM	7-9AM	4-6PM
22571	May-04, 05	A.M.	-	-	-	-	-	-	-	-	-	-	-	-	2168	765	0	885
		P.M.	-	99	195	471	471	414	221	102	75	57	42	21				

DIRECTION: WB

Who has what data?

TRAFFIC SIGNALS

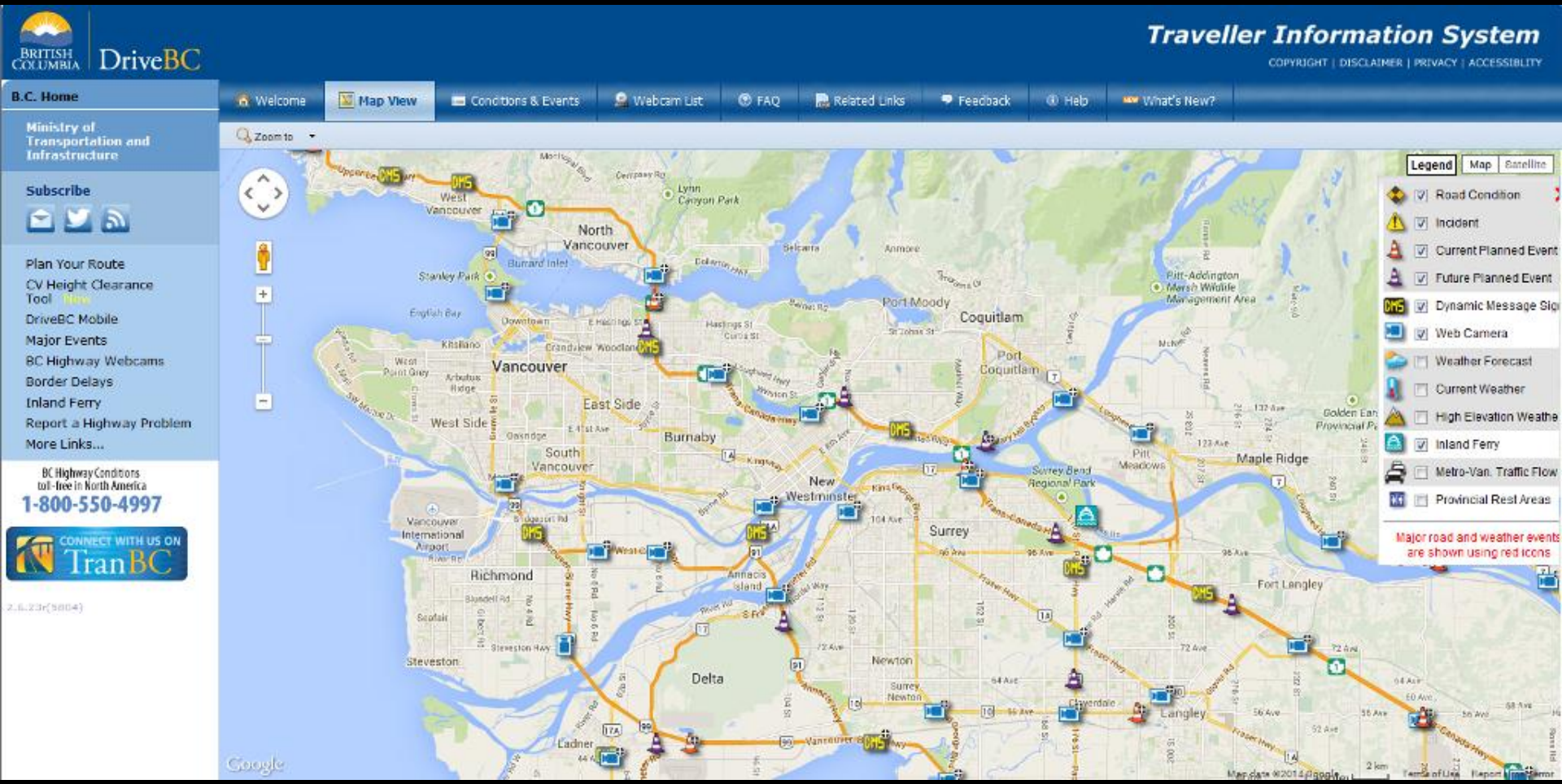
Traffic Counts

Vehicle traffic is automatically counted at all Richmond traffic signals using the same vehicle detectors the controller uses to allot green light movements. The counting detectors are located in each lane behind the stop line. There are approximately 1,650 volume counting detectors throughout the city monitoring traffic flow in five minute increments, 24 hours per day, 365 days per year. The following traffic flow data is available online:

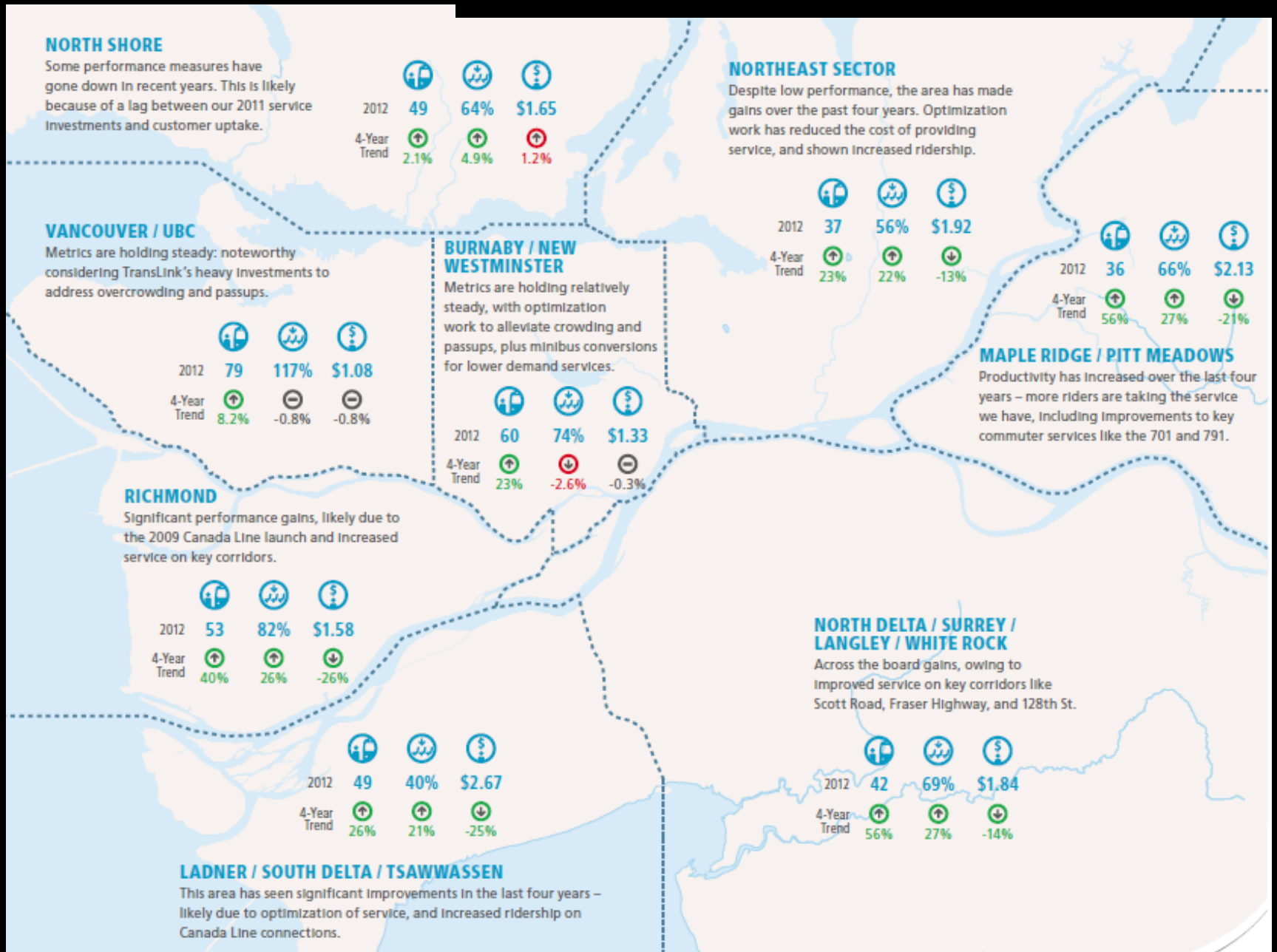
- **A.M. peak hour traffic flow map**
  - February 2003
  - February 2006
- **P.M. peak hour traffic flow map**
  - February 2003
  - February 2006
- **Lane by Lane Traffic Counts** (zoom down to the intersection level and click on the red icon to view counts)
  - February 2003
  - February 2006
- Pedestrian Signal Data (Average over 2000-2006)
- Special Crosswalk Data (Average over 2004-2006)
- Traffic Signal Ranking by Volume
- Graph of Traffic Volume at Russ Baker Way and Cessna Drive

How is the data used?

How is the data used?



How is the data used?



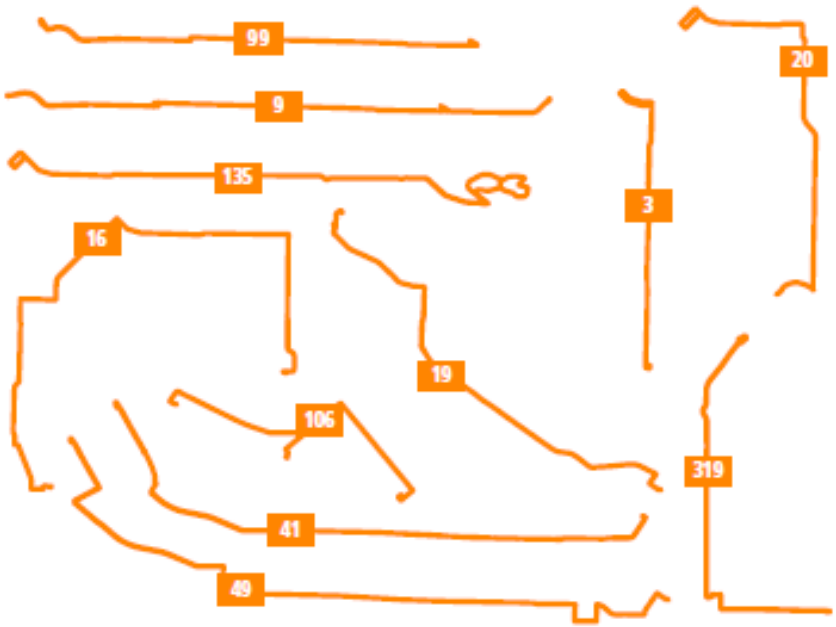
How We Measured Up

How is the data used?

ROUTE-BY-ROUTE RESULTS

Looking at each route helps us tease out the performance of individual pieces of the transit network, and identify characteristics of high and low performing services.

HIGHEST PERFORMING ROUTES



LOWEST PERFORMING ROUTES

COMMON CHARACTERISTICS:

- Direct, simple and consistent routing
- Serve areas of strong demand
- Busy destinations at both ends (strong anchors) and along the route
- Services are designed to maximize ridership

COMMON CHARACTERISTICS:

- Circuitous, indirect routing
- Serve lower-density, auto-oriented areas
- Destinations with limited activity (weak anchors)
- Serve mainly a basic access role in the transit network

Data Warehouse Examples

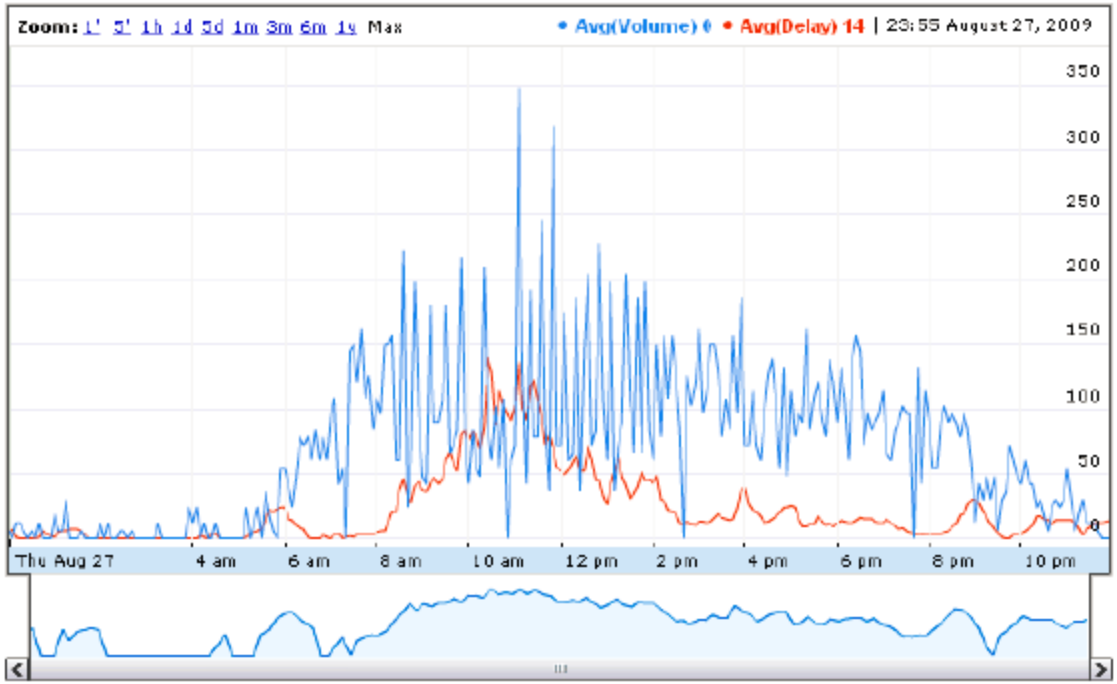
Cascade Gateway Border Data Warehouse

Table | Chart

Export CSV

Time	Avg(Volume)	Avg(Delay)
Aug 27 00:00	6.0	5.0
Aug 27 00:05	0.0	7.0
Aug 27 00:10	12.0	1.0
Aug 27 00:15	12.0	0.0
Aug 27 00:20	6.0	0.0
Aug 27 00:25		
Aug 27 00:30		
Aug 27 00:35		
Aug 27 00:40		
Aug 27 00:45		
Aug 27 00:50		
Aug 27 00:55		
Aug 27 01:00		
Aug 27 01:05		
Aug 27 01:10		
Aug 27 01:15		
Aug 27 01:20		
Aug 27 01:25		
Aug 27 01:30		

Table | Chart



Microsoft Excel - 27.csv [Read-Only]

File Edit View Insert Format Tools Data

Arial 10 B I U

I9

Export CSV

	A	B	C
1	Group Starts	Avg(Volume)	Avg(Delay)
2	8/27/2009 11:10	132	101
	1:15	42	92
	1:20	192	118
	1:25	78	122
	1:30	78	107
	1:35	246	93
	1:40	90	73
	1:45	36	79
	1:50	318	70
	1:55	72	55
	2:00	72	52
	2:05	174	49
	2:10	60	53
	2:15	66	59
	2:20	186	64
	2:25	36	52
	2:30	144	52
	2:35	204	71
	2:40	72	61
	2:45	84	45
	2:50	228	46
	2:55	108	33

Data Warehouse Examples

U.S. - Canada Border Wait Time Archive

Welcome to the U.S. - Canada Border Data Warehouse, a website that stores historic wait times from all land ports-of-entry equipped with wait time measurement systems.

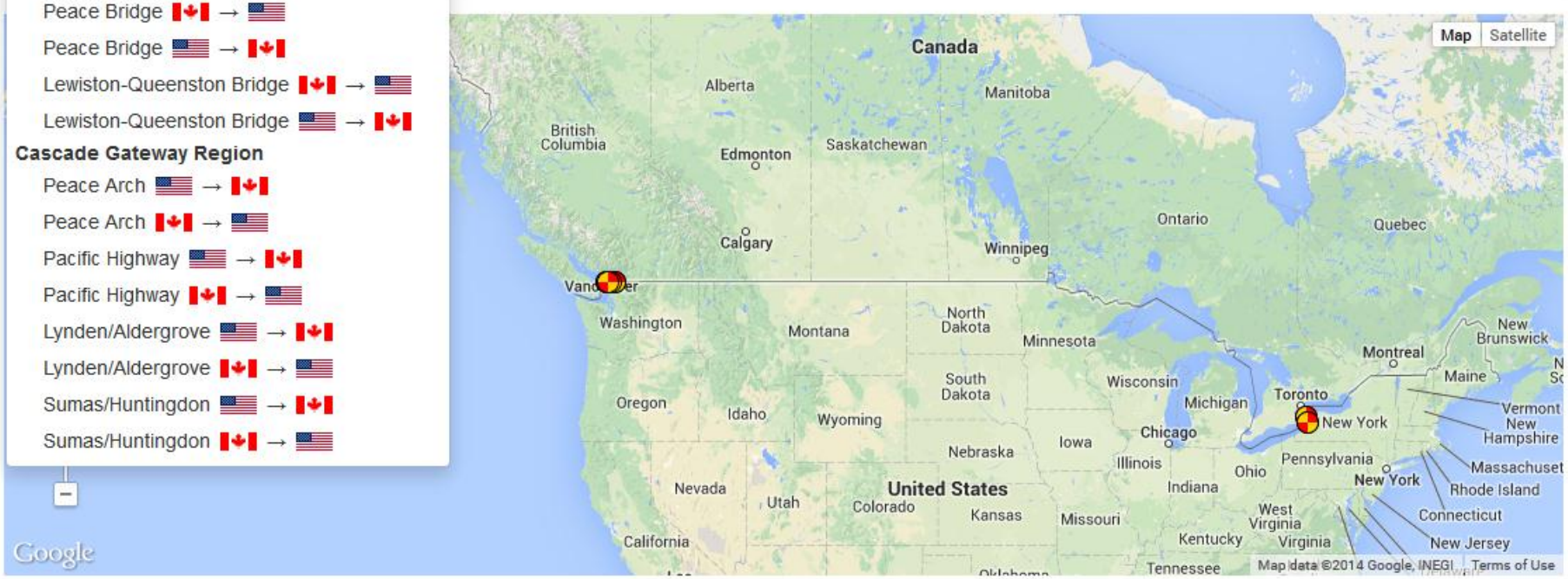
To view and download archived estimated wait times for a region or a specific crossing, click on the map below or select a border crossing from the drop-down menu. Once a crossing is selected the site will display a graph of the current month's average delays (in minutes) by day, and a chart beneath that has the average wait time of cars by day.

Crossings | Query | API | Reports | Subscriptions | Help | Admin

Select a port...

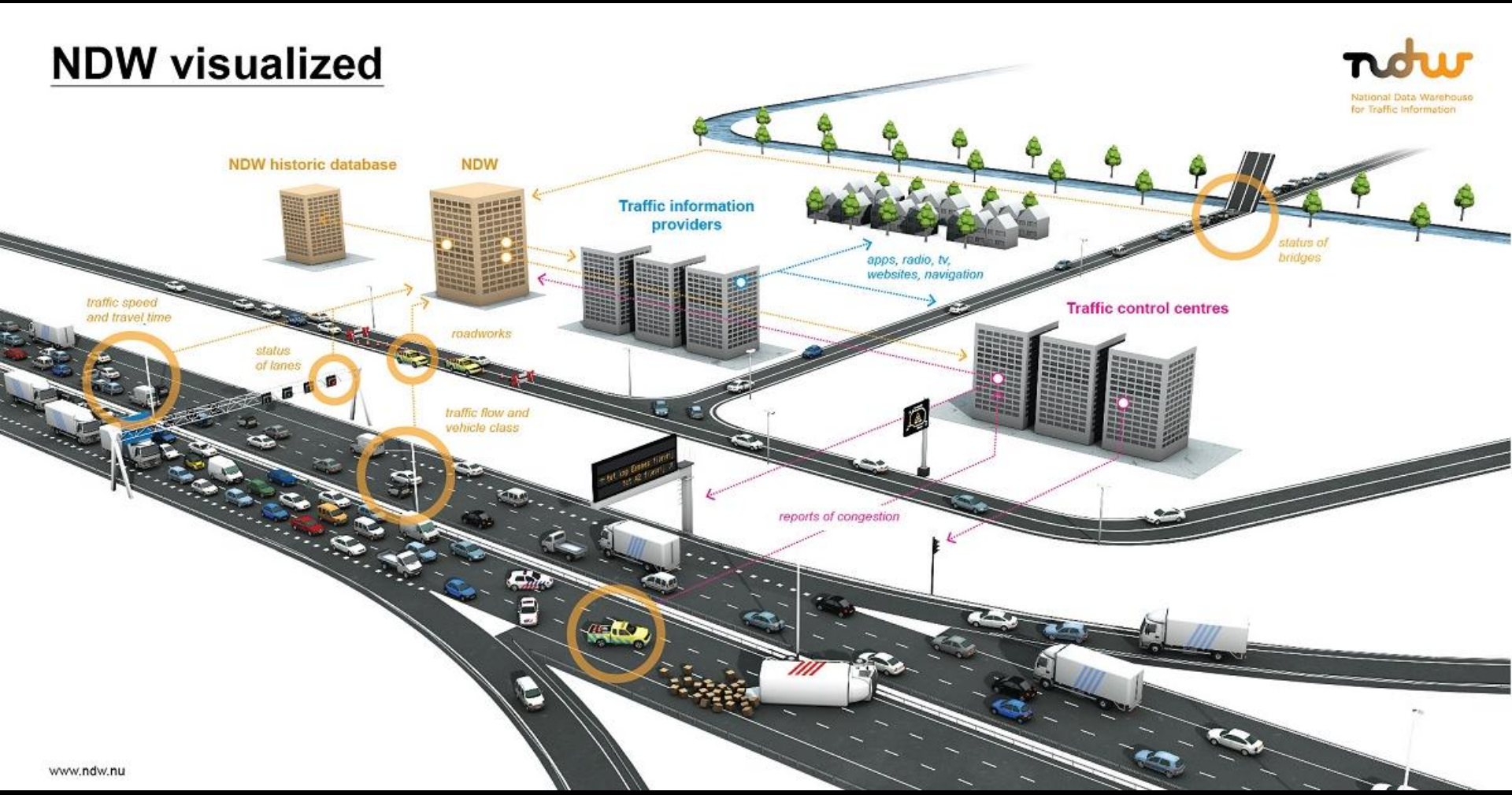
Buffalo-Niagara Region
- Peace Bridge →
- Peace Bridge →
- Lewiston-Queenston Bridge →
- Lewiston-Queenston Bridge →

Cascade Gateway Region
- Peace Arch →
- Peace Arch →
- Pacific Highway →
- Pacific Highway →
- Lynden/Aldergrove →
- Lynden/Aldergrove →
- Sumas/Huntingdon →
- Sumas/Huntingdon →



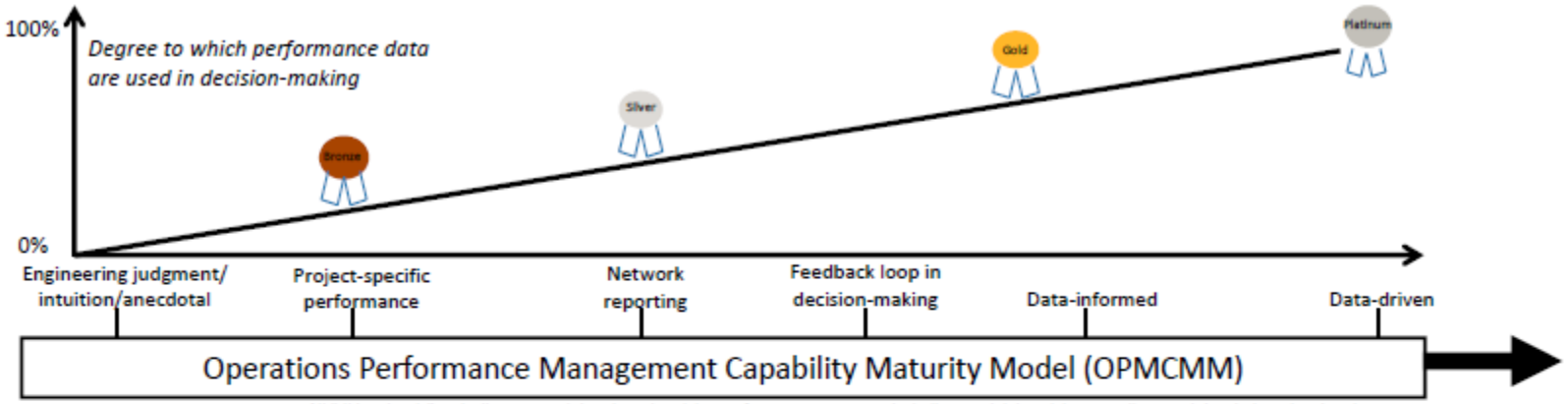
Data Warehouse Examples

National Data Warehouse for Traffic Information



Benefits and Opportunities

Figure 1. Illustration of Operations Performance Management Capability Maturity Model for Gauging Current Practice



All "ribbon levels" typically use travel time-based or delay performance measures, including total delay, delay per mile, travel time index, planning time index, etc. Measures are computed at the spatial and temporal scales of interest.

Perf. Measures (Content):	*Limited, project-specific "after" study; snapshot of outcome measures (averages)* →	*Only required ("siloed") reporting* →	*Family of output and outcome measures in some areas of organization* →	*Full/seamless family of output/outcome measures across organization; real-time link (and decision-making) between project-level and system reporting; averages and reliability*
Perf. Mgmt (Culture):	*Minimal perf mgmt interest; performed only as required* →	*Isolated champions of perf mgmt; nothing coordinated across any agency "silos"* →	*Evidence of entire portions of agency implementing and making decisions with perf measures; evidence of "data-informed" process to select projects* →	*Perf mgmt is ubiquitous in agency culture; entire agency speaks "perf mgmt language" – it feeds mgmt decision-making; "data-driven" decisions using real-time information*

All "ribbon levels" typically use speed, volume and roadway inventory information at spatial and temporal scales of interest. As the industry matures to the "platinum level," real-time performance management and decision-making are possible.

Data:	*"Siloed" datasets; no connections* →	*Dataset connections possible – requires programming/processing* →	*Evidence of some coordination of datasets across traditional agency "silos"* →	*Connected with other agency datasets (volume, crashes, pavement, etc.); application programming interface (API) to visualize/query data for decision-making*
Modes:	*Mode areas are "siloed" in agency; limited communication* →	*Some ability to capture/estimate mode shifts within "silo" of interest* →	*Ability to capture mode shifts across entire agency* →	*Ability to capture mode shifts over time and across the agency, including intermodal considerations (freight and person)*
Facility and Trip Coverage:	*Limited temporal/ spatial coverage in "silos"* →	*Selected modes/facilities and temporal coverage* →	*All modes, all all days, all times covered* →	*In addition to gold level, ability to capture diversion from traveler info or control strategies*
Traveler Preferences/ Tradeoffs:	*Limited ability to capture trip preferences or revealed behavior* →	*Some ability in selected agency "silos" to capture some trip preferences* →	*Technological methods identified/used to capture trip preferences or revealed behavior* →	*Agency ability to gauge or capture traveler preferences and revealed behavior (i.e., how you traveled and How/where you really wanted to travel)*

What's Next

- Presented to Transportation Technology Advisory Board
- Working group formation
- Explore agencies data, business needs for sharing
- Feasibility, business case