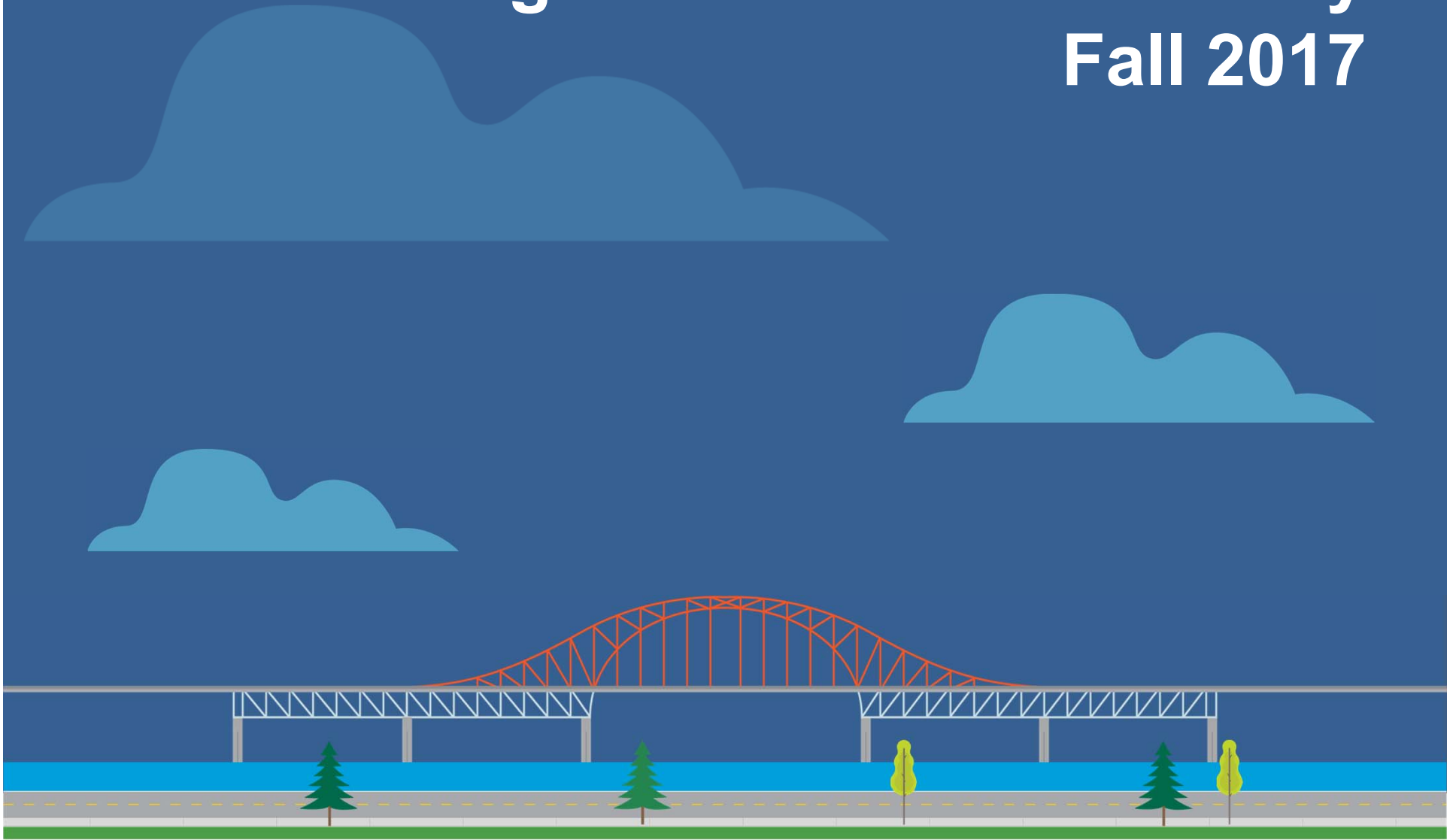


Regional Screenline Survey Fall 2017



EXECUTIVE SUMMARY:

2017 Regional Screenline Survey

The 2017 Screenline Survey collected traffic counts as part of ongoing regional data collection efforts to track trends in travel volumes.¹

The objectives of the 2017 Metro Vancouver Regional Screenline Survey were to:

- Record vehicle volumes crossing major transportation boundaries on typical fall weekdays when commuter demand is at its peak and most predictable;
- Determine current travel conditions in the Lower Mainland commuter shed;
- Quantify changes in travel usage throughout the region;
- Identify trends in vehicle composition along key corridors throughout the region;
- Provide a basis for comparative assessment of the potential effect of alternative infrastructure investments or land use changes; and
- Provide information to calibrate and validate TransLink's regional transportation model to reflect current travel conditions and infrastructure.

Each screenline in the survey was comprised of individual count stations at which data were collected for vehicle volume and classification. Three new screenlines were added for the 2017 survey, Arbutus Street, North Surrey, and Coquitlam River, while the Scott Road screenline was removed. Figure 1 illustrates the 2017 screenlines. Some count stations were moved to better capture specific regional flows or account for new facilities, such as the South Fraser Perimeter Road. The Agassiz Bridge was under construction during the entire survey period and was not counted. In total, 84 of 109 stations that were counted in 2011 were counted again in 2017 and can be directly compared. Figure 2 compares the count stations for the 2011 and 2017 screenline surveys.

Automatic Vehicle Counts were conducted to determine the total number of vehicles passing each roadway station for 136 stations at 34 regional screenlines. Counts were collected in 15-minute intervals over 24-hours for a two-week period. Following validation, the 10 weekday counts were averaged to produce typical weekday traffic volumes at each station.

Classification Counts separated vehicle volumes into several length bins that can then be grouped to typical vehicle types including passenger cars, light goods vehicles (LGV), and heavy goods vehicles (HGV).

Transit Surveys were not conducted in 2017. The full implementation of the Compass Card program in 2016 and the development of additional data processing techniques created a richer data source than the previous manual transit counts. This data source was used to automate the Transit Service Performance Review and create an accompanying data dashboard². Transit passenger volumes are available separately using this new dashboard.

¹ The 2017 Screenline Survey data is available as an interactive dashboard at <https://public.tableau.com/profile/translink#!/vizhome/RegionalScreenlineSurveyFall2017/Cover>

² <https://www.translink.ca/tspr>

Figure 1: Regional Screenlines 2011 & 2017

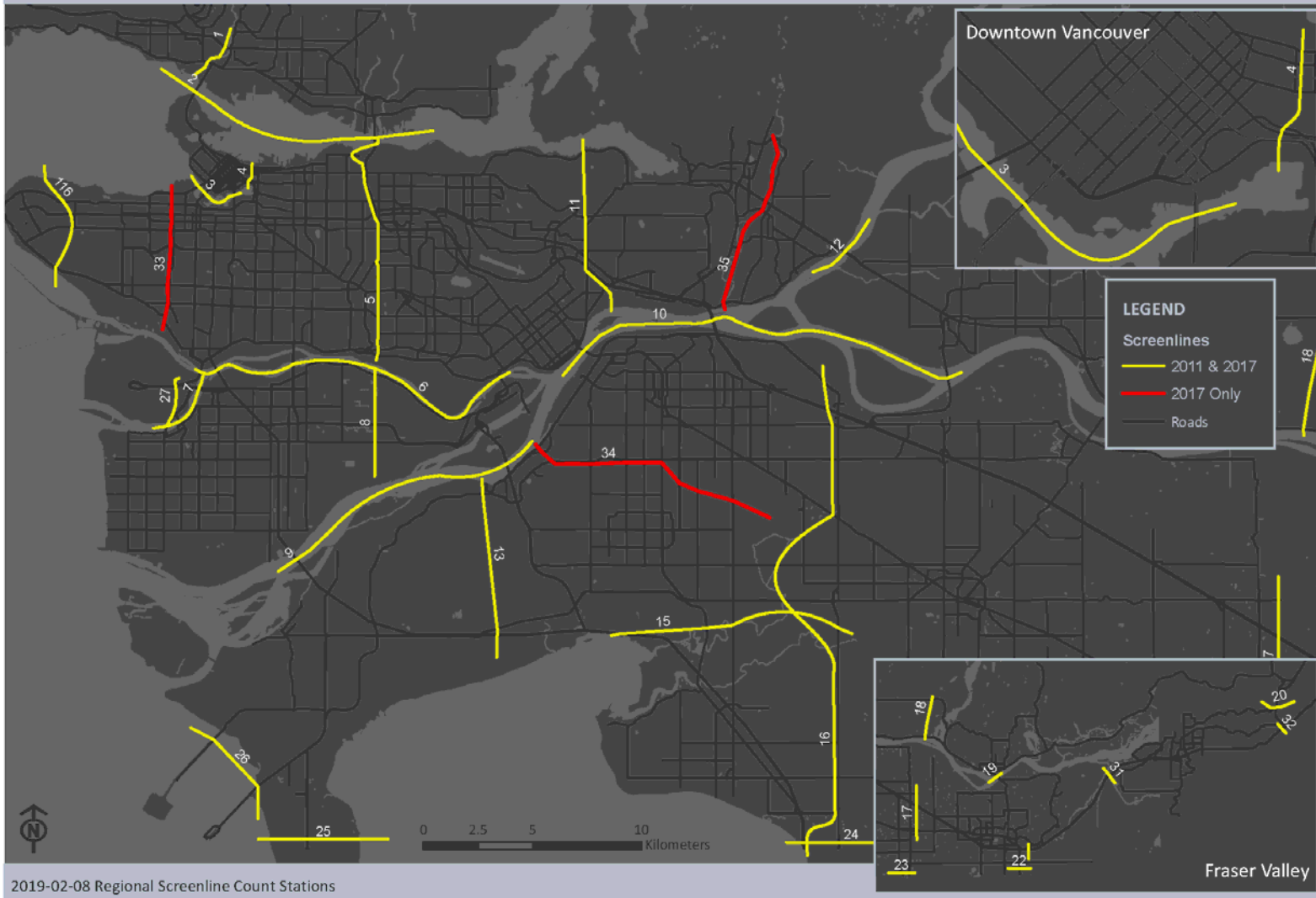
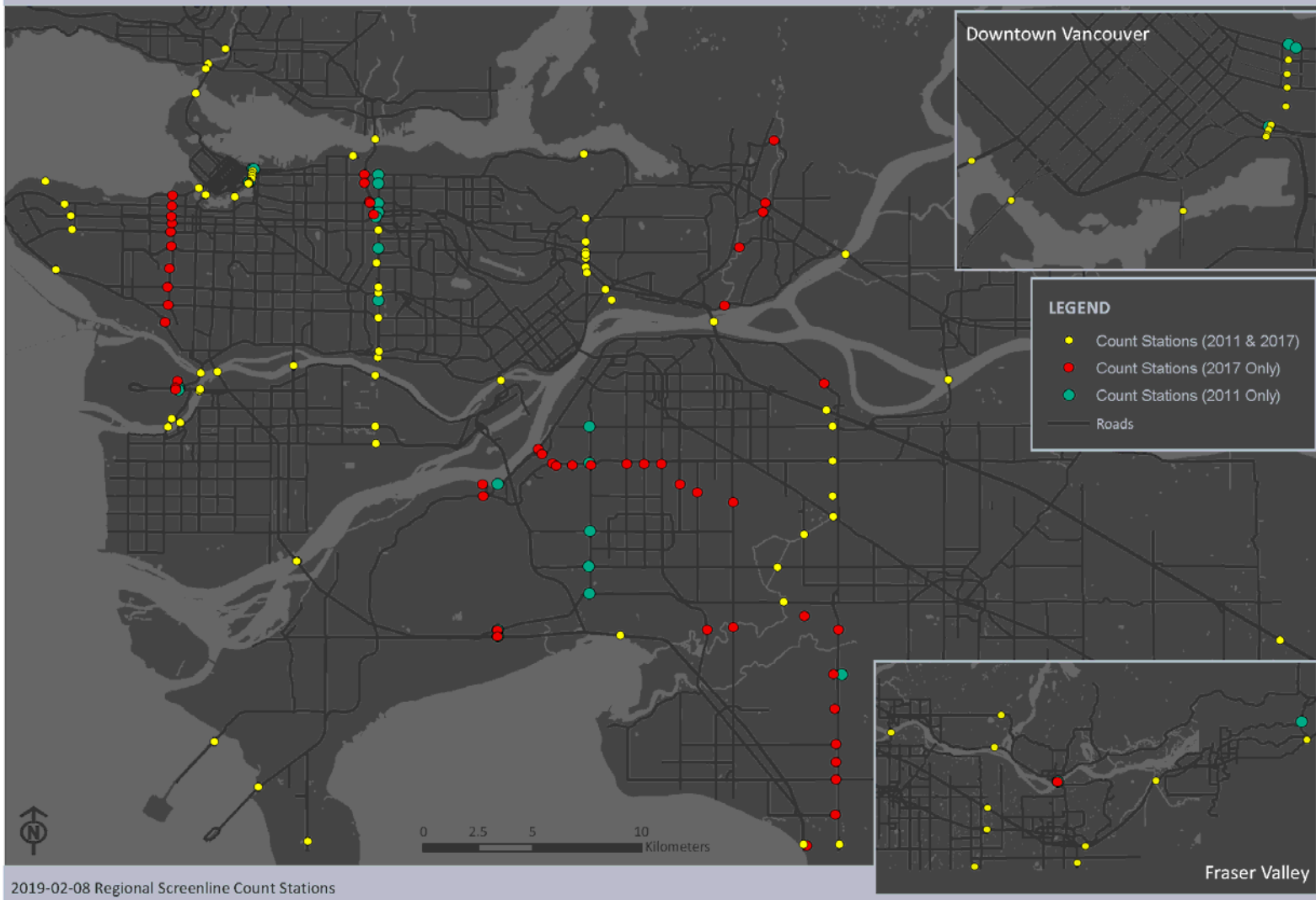


Figure 2: Regional Screenline Count Stations 2011 & 2017



Notable Infrastructure Changes Since the 2011 Screenline Survey

The Gateway Program expanded roadway capacity on the Highway 1 corridor – including a new Port Mann Bridge, provided a new Highway between the Roberts Bank Port and Highway 1 in Surrey (the South Fraser Perimeter Road or SFPR), improved roadway connections north of the Fraser River in Coquitlam, and expanded capacity on the Pitt River Bridge.

During the 2011 Screenline Survey:

- Highway 1 improvements were under construction, which included widening the highway between 200th street and the Cassiar Tunnel. This construction activity led to considerable travel time delays and unreliable travel times which suppressed volumes on these facilities and led to greater usage of parallel local routes, such as Austin Avenue and Barnet Highway.
- The new Port Mann Bridge was under construction, also contributing to construction delays. This bridge opened in fall of 2012 and was tolled until early September 2017. The tolls were removed in early September 2017, which coincided with the start of the 2017 Screenline Survey.
- The South Fraser Perimeter Road was under construction. This construction activity did not have the same disruptive effect on local traffic as the Highway 1/Port Mann projects, but the opening in 2013 altered regional traffic patterns, particularly for trucks.
- The new Pitt River Bridge was completed in 2009 and open at the time of the 2011 Screenline Survey.
- The Golden Ears Bridge (GEB), opened in 2009, was not part of the Gateway Program. During the 2011 Screenline Survey this facility was operational but tolled. The tolls were removed in early September 2017, which coincided with the start of the 2017 Screenline Survey.

Additionally, the Evergreen extension of the Millennium SkyTrain line between Lougheed Town Centre and Lafarge Lake in Coquitlam opened in December 2016.

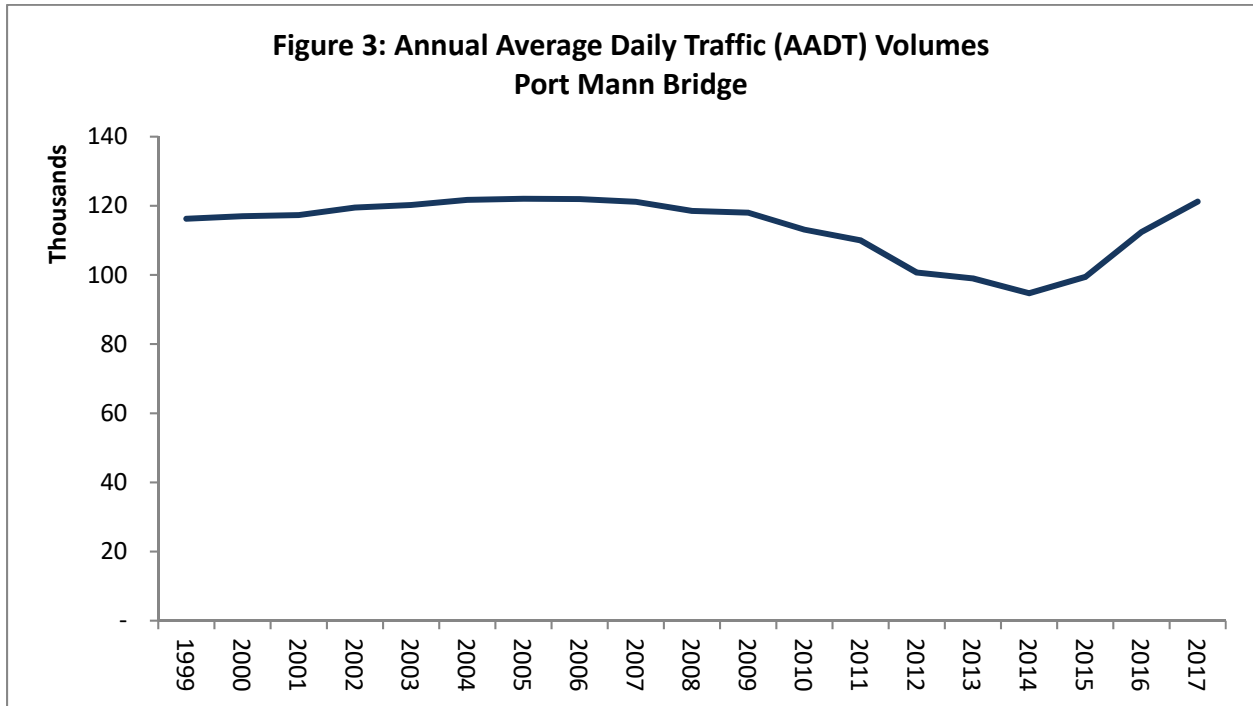
Average Weekday Vehicle (ADT) Volumes

A review of total automatic vehicle count volumes reveals that since 2011, region-wide weekday vehicle volumes have increased by 11% among comparable stations, or 1.78% per year. No comparable screenline average daily traffic volumes decreased between 2011 and 2017, whereas the 2011 Screenline Survey found “a review of combined automatic vehicle count volumes reveals that since 2008, region-wide vehicle volumes have not changed significantly among comparable stations.”³

Traffic across the Fraser River Main Arm increased by 31%, which included the completion of construction activity and additional capacity on the Port Mann Bridge, and the removal of tolls on the Port Mann and Golden Ears Bridges. Figure 3 shows annual average daily traffic (AADT) volumes on the Port Mann Bridge from 1999 to 2017 and illustrates the drop in daily

³ 2011 Metro Vancouver Screenline Survey Summary Report. TransLink, August 2013. https://www.translink.ca/-/media/Documents/plans_and_projects/trip_diary/2011-Screenline-Survey-Report.pdf

traffic volumes during the construction period. Tolls were removed early September 2017, so the 2017 average includes the eight months the tolls were in place and the four months that the tolls were not in place. The 2017 Screenline Survey total is based only on the fall period, when the tolls were not in place.



Traffic into and out of the Central Business District (CBD) increased by 10% between the 2011 and the 2017 Screenline surveys. The traffic decline on the Burrard Street Bridge (-14,000 vehicles/day) was more than offset by increases on the Granville Street Bridge (21,000) and the Cambie Street Bridge (15,000).

Traffic growth was below the regional average on capacity constrained screenlines such as the Burrard Inlet (Lion’s Gate and Second Narrows: 3%) and the Fraser River South Arm (Massey Tunnel and Alex Fraser Bridge: 1%).

Screenlines characterised by inter-regional trips into and out of the Lower Mainland but within Canada generally showed the largest percentage increases in traffic volumes. These screenlines include Highway 99 North of Lion’s Bay (62%), and the Hope Screenline (67%).

Cross border volumes were flat between 2011 and 2017. It is assumed that the main reason for this was the change in exchange rate which limited the interest of Canadians to travel south of the boarder; the fall 2011 CAD:USD exchange rate was around \$1.00, while in fall 2017 it was around \$0.76⁴. It is notable that the opposite was true between 2008 and 2011; screenline volumes were flat at most comparable stations but grew at border crossings as the CAD:USD exchange rate climbed from \$0.85 to \$1.00.

⁴ Source: Bank of Canada

The top 10 count stations by absolute daily average volume change were:

- Highway 1 - West of North Road (+49,000)
- Port Mann Bridge (+43,000)
- Highway 1 - West of 176th Street (+38,000)
- Golden Ears Bridge (+23,000)
- Granville Bridge (+21,000)
- Highway 1 - East of Highway 11 (+16,000)
- Cambie Bridge (+15,000)
- Arthur Laing Bridge (+14,000)
- Highway 1 at Vedder Canal (+13,000)
- Highway 1 - East of 264th Street (+12,000)

The change in average daily traffic volumes between 2011 and 2017 at comparable screenline station is shown in Figure 4.

Peak Hour Volumes and Peak Spreading

Peak hour volumes remained flat or declined at some capacity constrained count locations. In some cases this decline is due to changes in infrastructure, such as the reduction of vehicle lanes for the provision of bike lanes (Burrard Bridge and Dunsmuir Viaduct), while in other cases the decline could be the result of significant congestion causing these facilities to operate below their maximum flow rate (such as the Massey Tunnel).

The greatest peak hour volume increases were observed at count stations with increased capacity, specifically the Port Mann Bridge and the Highway 1 corridor. The greatest peak hour volume decreases were generally seen at routes paralleling facilities with increased capacity, such as Barnet Highway. Again, it is important to note that many of the increased capacity facilities were under construction during the 2011 survey and that construction activity likely distorted local traffic routing, particularly in the North Road area at the border of Burnaby and Coquitlam.

While the share of the peak one-hour of traffic within the AM and PM peak periods remained mostly unchanged or declined slightly, off-peak traffic grew at a greater rate than peak period traffic between 2011 and 2017. AM and PM peak hour traffic grew 10% and 8% respectively while off-peak traffic grew by 13%. This could be a result of peak-spreading and/or an indication of travel behaviour change – where more activities start or end in the middle of the day or in the evening.

Total traffic for all comparable counts stations by hour is illustrated in Figure 5, which shows that traffic has grown during all times of day between 2011 and 2017. The share of daily traffic by hour for each count year is illustrated in Figure 6, which shows that the share of daily traffic occurring in the AM and PM peak hours is declining, while the share of traffic immediately after each of these peaks is increasing.

Figure 4: Change in Average Daily Traffic Volumes Between 2011 & 2017

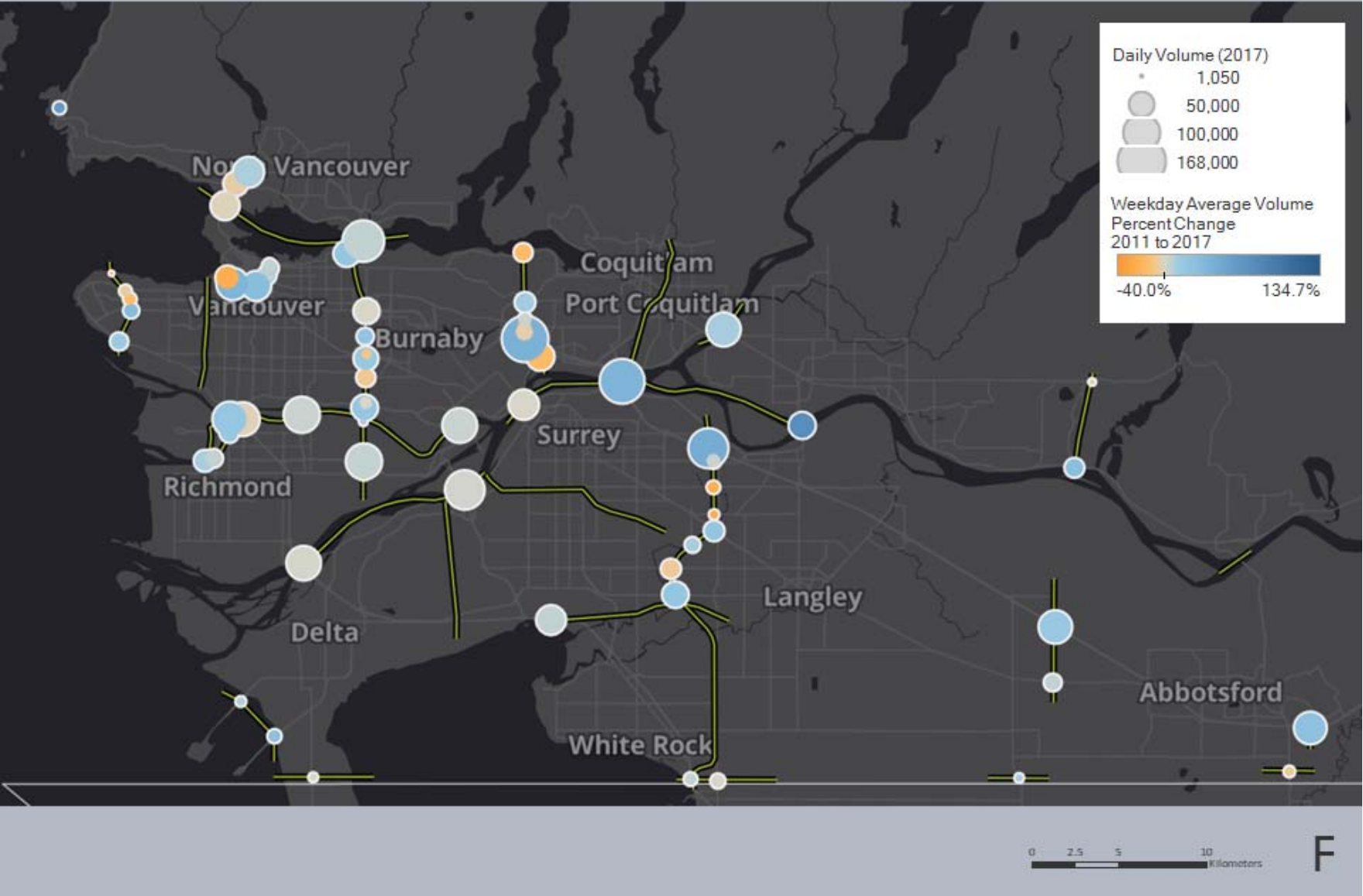


Figure 5: Total Traffic by Time of Day

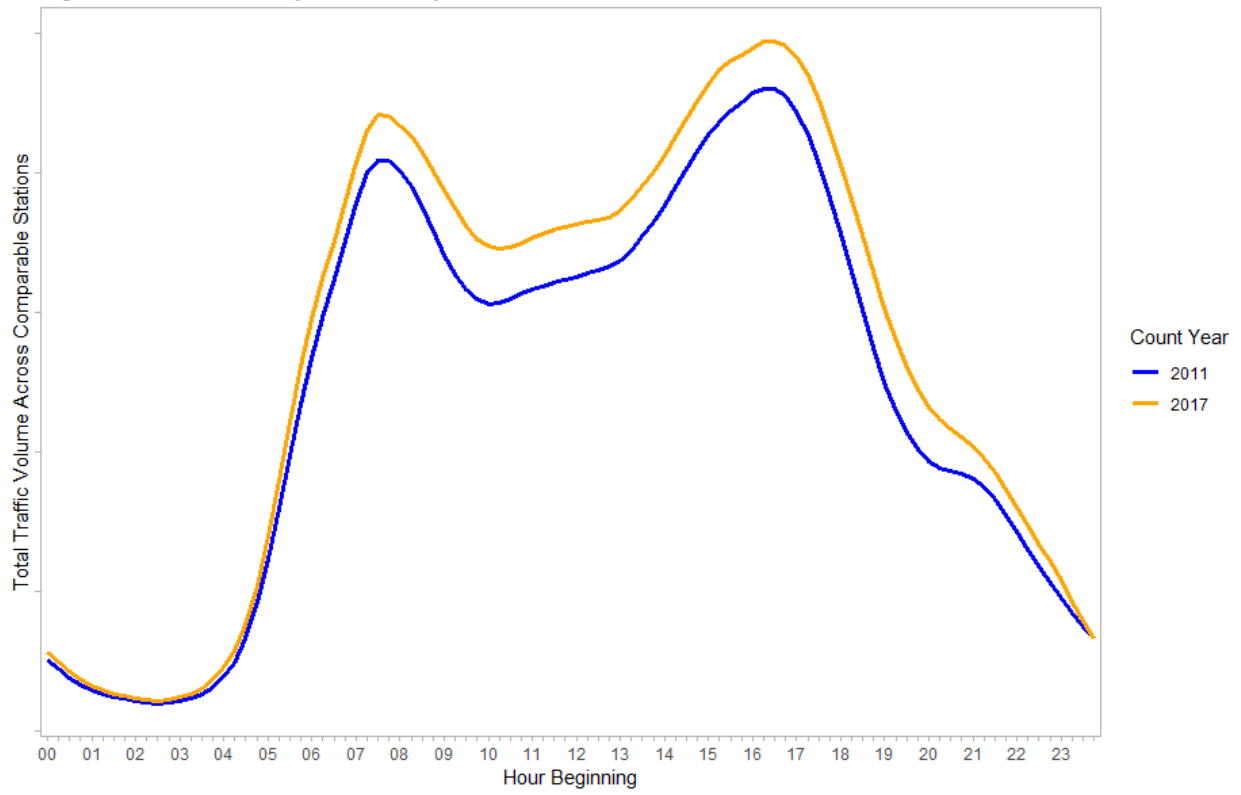
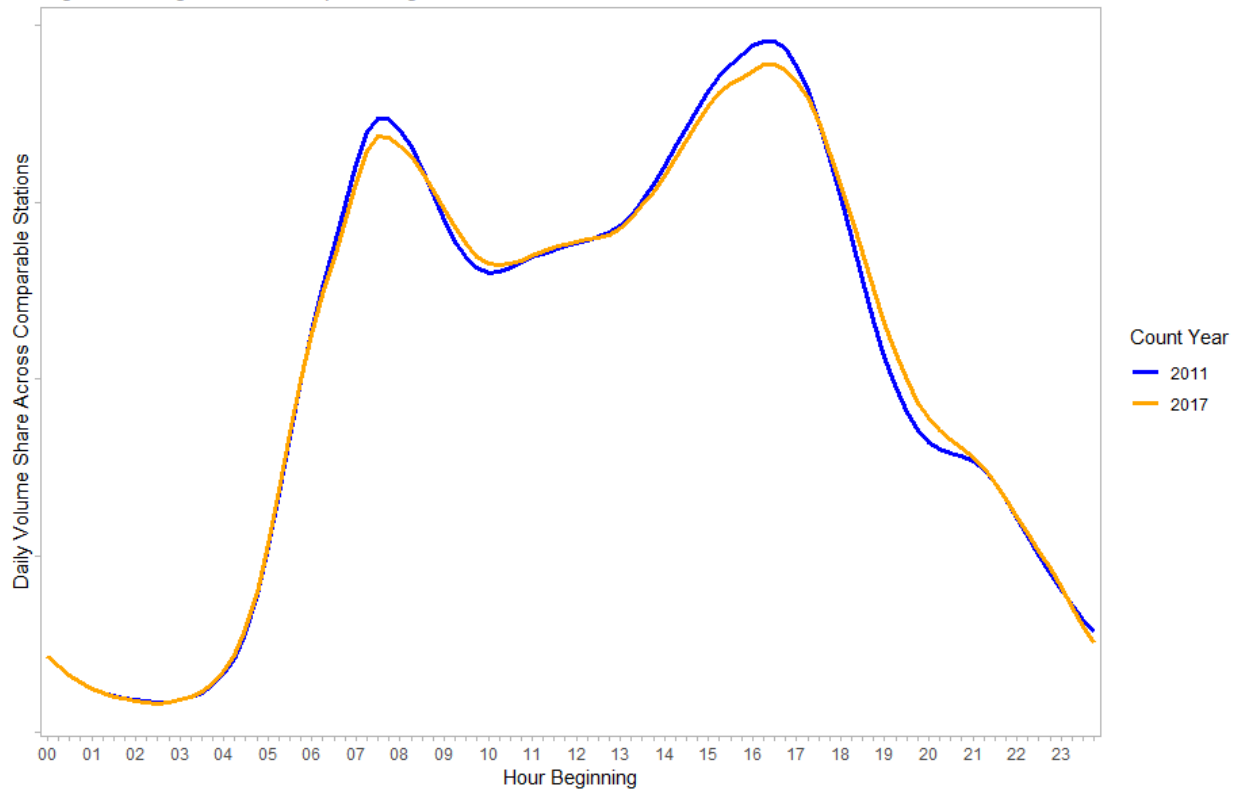


Figure 6: Regional Peak Spreading



Truck Volumes

Trucks, as defined for the survey, are vehicles with six or more wheels⁵, excluding buses and emergency vehicles. Vehicle classification counts were conducted at all stations for the entire survey period.

Overall, trucks represented about 4% of the vehicular traffic during the 24-hour count period. Truck volumes peak during the middle of the day between the AM and PM commute peaks. Afternoon peak hour truck volumes are somewhat lower than in the morning peak hour. This is consistent with previous studies and can be attributed to the requirement of many truck drivers to start deliveries early, as well as avoiding the afternoon peak period due to the difficulty of driving trucks in heavy traffic.

The South Fraser Perimeter Road (SFPR) opened in late 2013 and provided a new connection between the Roberts Bank Port facility and Highway 1 at 176th street in Surrey. This corridor generally has the highest share of truck volumes. The count station with the single highest share of truck volumes is Deltaport Way (40% trucks), which connects Roberts Bank Port to the SFPR, followed by River Road at 96th Street (26%), which connects port and industrial land uses in the Tilbury Island area and the SFPR. Trucks account for 18% of average daily vehicular traffic on the SFPR between the Alex Fraser Bridge and 104th Avenue in Surrey. Additionally, trucks are an above average share of volume on highways leaving the region to the east, where average daily traffic was 23% trucks on Highway 1 and 18% on Highway 7.

Summary

Regionwide traffic volumes have increased since 2011. Between 2011 and 2016 population in the survey area grew by 9% and total employment grew by 10%⁶. It is also important to note that the 2011 screenline survey followed an economic recession. The monthly unemployment rate for Metro Vancouver reached 7.2% during the fall 2011 screenline survey period, while it was as low as 3.9% during the 2017 survey period⁷.

Figure 7 shows annual average daily volumes from 1999 to 2017 for a selection of major regional crossings⁷ that handle significant quantities of commuter traffic. Figure 8 shows the average annual Greater Vancouver unemployment rate⁸ between 2001 and 2017. Finally, Figure 9 shows Greater Vancouver population⁷ between 2001 and 2017.

⁵ This is consistent with previous screenline surveys which defined trucks by the number of axles; two axles for light trucks and three or more axles for heavy trucks.

⁶ Source: Metro Van

⁷ Source: Statistics Canada

Figure 7: Annual Average Daily Traffic Volumes (1000s)
Selection of Major Crossings

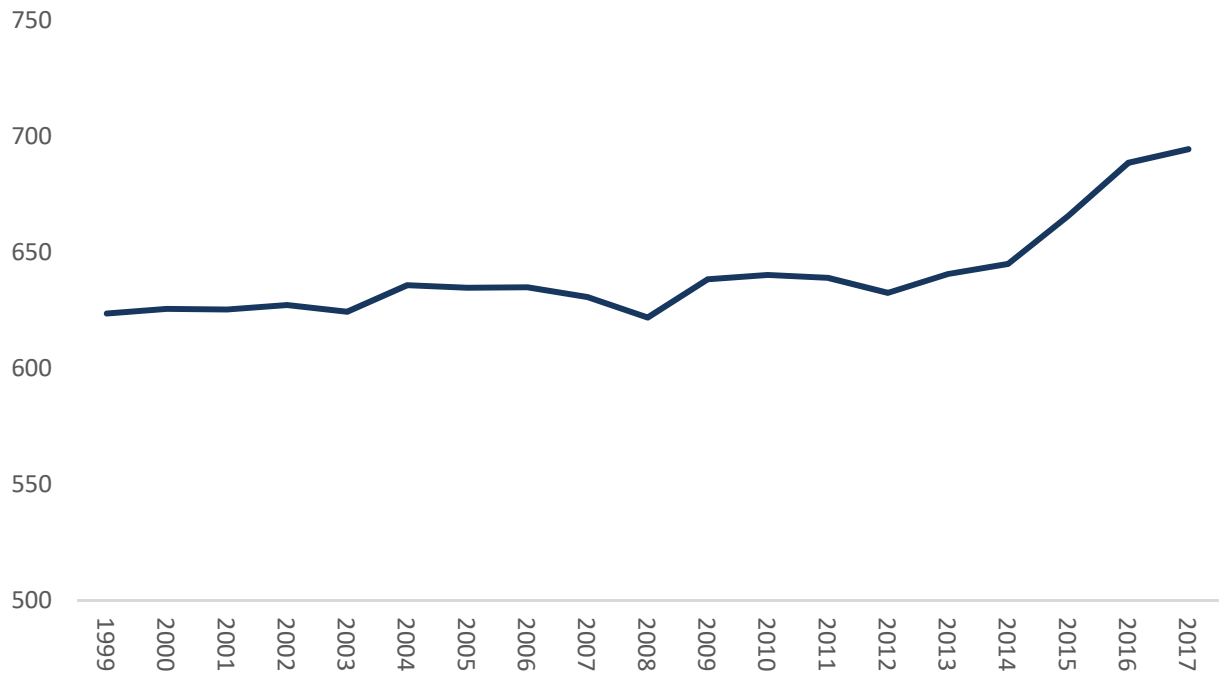
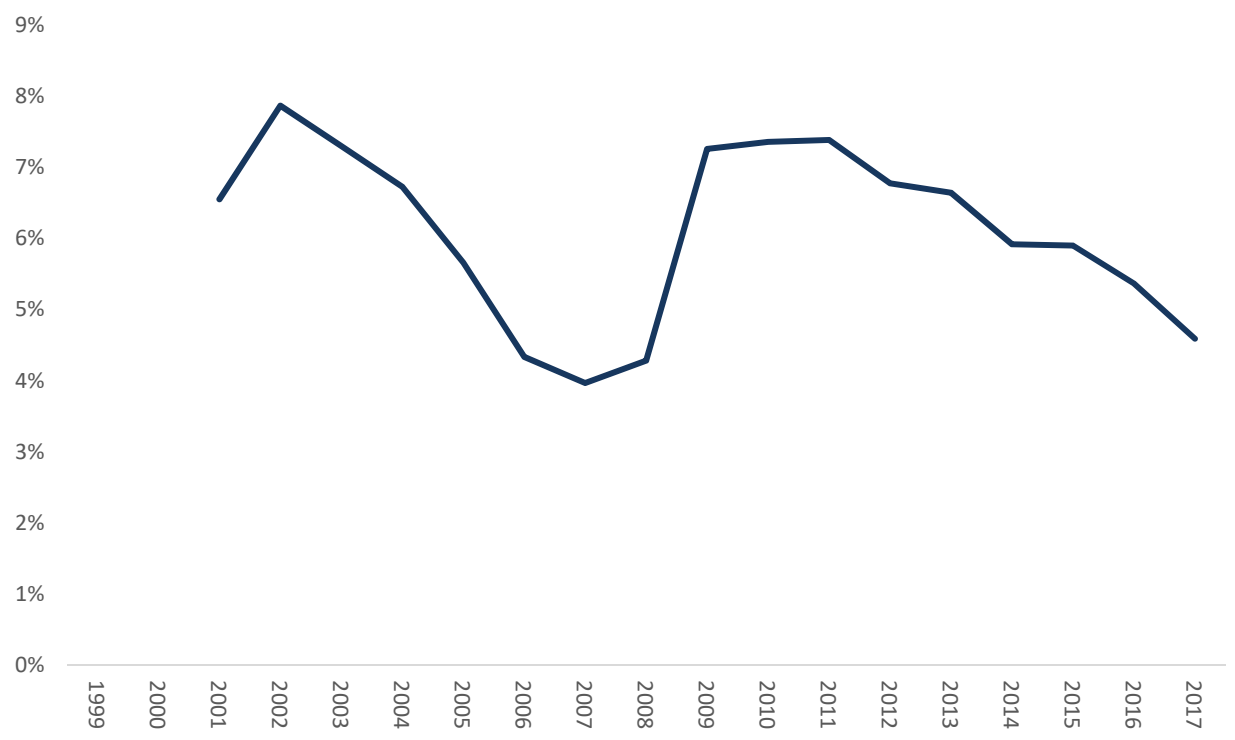
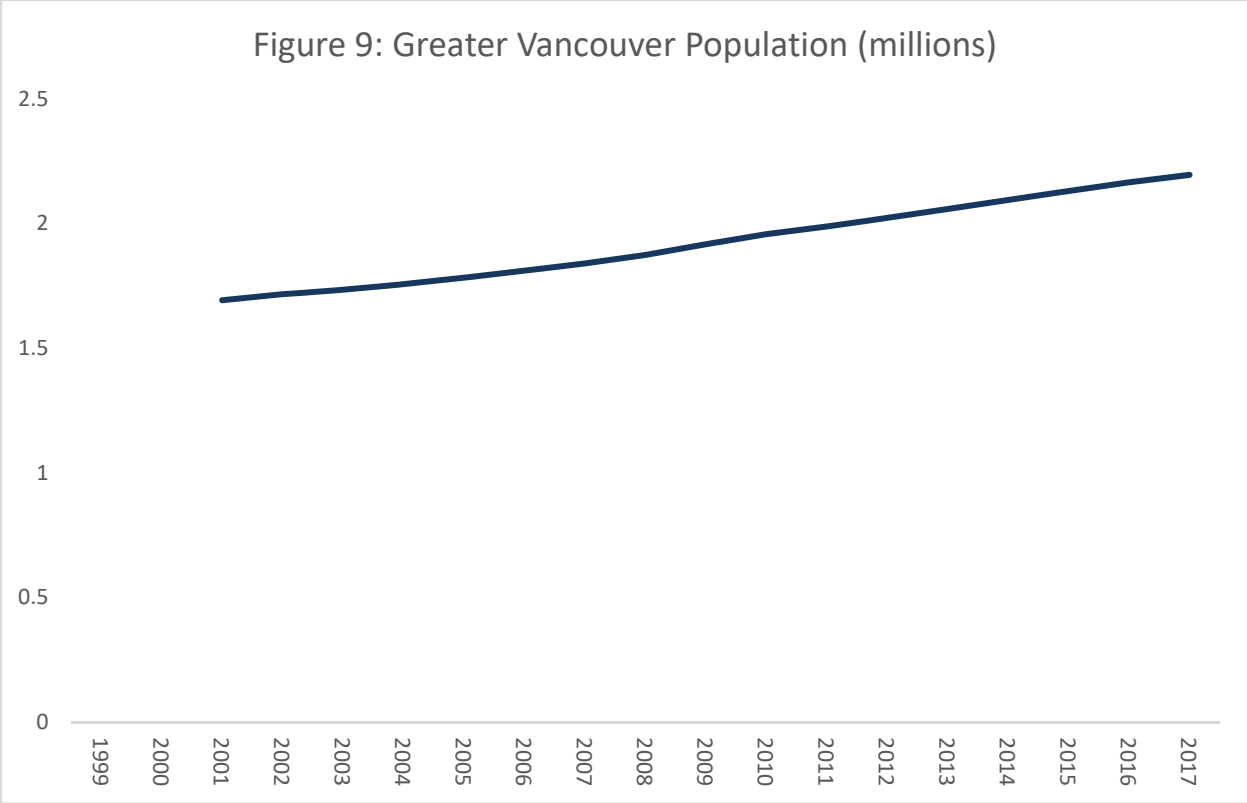


Figure 8: Greater Vancouver Unemployment Rate Over Time





Traffic volumes are a function of population and economic activity. Fluctuating economic activity, as shown through the unemployment rate has put both upward and downward pressure on traffic volumes, while a steadily growing population has put consistent upward pressure on traffic volumes, occasionally reducing the impact of economic downturns on traffic volumes. Finally, increased capacity at the measured facilities, specifically the Golden Ears and Port Mann Bridges, allowed for increased traffic volumes at key regional chokepoints.