



Toronto Airport Rail Link Updated Comparison of Surveys and Forecasting Assumptions

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This is a comparison of the Northstar survey results with past ARL/airport user surveys used to underpin the SDG forecasting assumptions

- I A number of surveys with airport users have been undertaken in the past 12 years including:
 - Halcrow 1999
 - GTAA 2006
 - SDG 2006
 - SDG 2009
 - Northstar 2011

- I When determining the consistency of the survey results, we need to be sure we are comparing “like with like”

- I This is equally the case in comparing forecasting assumptions and outputs from the forecasting work.

The Northstar survey is largely consistent with previous studies

- | This is particularly the case with the unweighted Northstar survey responses for residents and visitors which shows many similarities
- | However once re-weighted by journey purpose some of the similarities are lost:
 - The journey purpose data weighting was applied equally to all trips, regardless of whether the trip was from downtown or elsewhere. This may not be so appropriate for the key business areas in the downtown zones where business travel is likely to be higher than the airport-wide average
 - We recommend using the unweighted data for the production of any statistics that will be in the public domain

However each data source has its pros and cons - we recommend taking the best and most relevant information from each

- I For statistics regarding the likely number of passengers using Bloor Station we recommend using the forecasts
 - The Northstar data tells us what station people might use, but without information about their propensity to use the ARL at specific fare levels
 - I Business travel is under-represented in the Northstar weighted sample as airport-wide journey purpose proportions have been adopted
 - Using the weighted data will suppress the sensitivities of business travellers who are likely to pay higher ARL fares and perceive the time-saving benefits offered by the ARL more highly
 - I Modes of travel to access the 3 ARL stations are broadly consistent across historical data sources and Northstar unweighted data

Exclusion per Committee Direction

Clarifications provided by Northstar on their survey responses as well as 'unweighted' response tables allow us to understand the limitations of each data set more clearly

I As mentioned by Northstar in their report, the differences in the sampling methodologies for residents and visitors will have an impact:

- Resident trips are historical (trips in past 12 months) - recollections of this trip will be less 'accurate' and there is no supporting information regarding how long ago this trip was made (i.e. 1 week or 11 months) and when (Summer or Winter)
- Whereas visitor trips are current (at time of interview) and therefore experiences and perceptions fresh. Interviews were carried out in August which is the peak month at the airport - but also the peak holiday time

I Unfortunately no new information has been collected on:

- Time of travel to the airport which is important as those travelling during most congested road periods will gain the greatest advantage by switching to the ARL
- Demographic information which will allow us to compare between residents and visitors such as household incomes or car ownership. This could help explain differences in price sensitivity between these groups

Following analysis of the data and historical sources, the main sources of difference we have found are in journey purpose, group size and sensitivity to price

- I Northstar have reweighted their sample to reflect GTAA airport-wide average journey purpose split of 30% business and 70% non-business
 - This is not necessarily appropriate for the ARL corridor which links the downtown business areas to LBPIA
 - It is perhaps more appropriate to compare the un-weighted Northstar data for with previous studies and forecasting assumptions
- I The Northstar sample contains a greater proportion of those traveling in groups of 2 people or more: this seems to be a sampling issue
 - This will impact on the ARL's competitive position as it will be most attractive for those travelling alone for whom a taxi will be expensive
- I The differences in methodology will impact price sensitivity
 - Both within the Northstar survey comparing visitors with residents - where visitors have a higher willingness to pay than GTHA residents
 - And between the SDG and Northstar research comparing SP techniques with direct questioning

Data sources and other points to note

Five sources of survey data that can be compared and contrasted

- I Halcrow survey 1999
 - 3,625 residents and visitors, after cleaning for out-of-scope areas and non-competitive modes of travel (e.g. rental cars, hotel shuttles)
- I GTAA customer satisfaction survey 2006
 - 1,854 residents and visitors, post data cleaning (as above)
- I SDG survey 2006 (for SNC Lavalin)
 - 1,937 residents and visitors, pre-screened to be 100% in-scope
- I SDG survey 2009 (for SNC Lavalin)
 - 1,267 residents and visitors, pre-screened to be 100% in-scope
- I Northstar survey 2011
 - 4,150 residents from in-scope zones (consistent with forecasts)
 - 829 visitors from all areas of GTHA, not just in-scope areas
 - 16% of residents and 24% of visitors from non-competitive modes, which means that the survey comparisons are not yet truly “like for like”

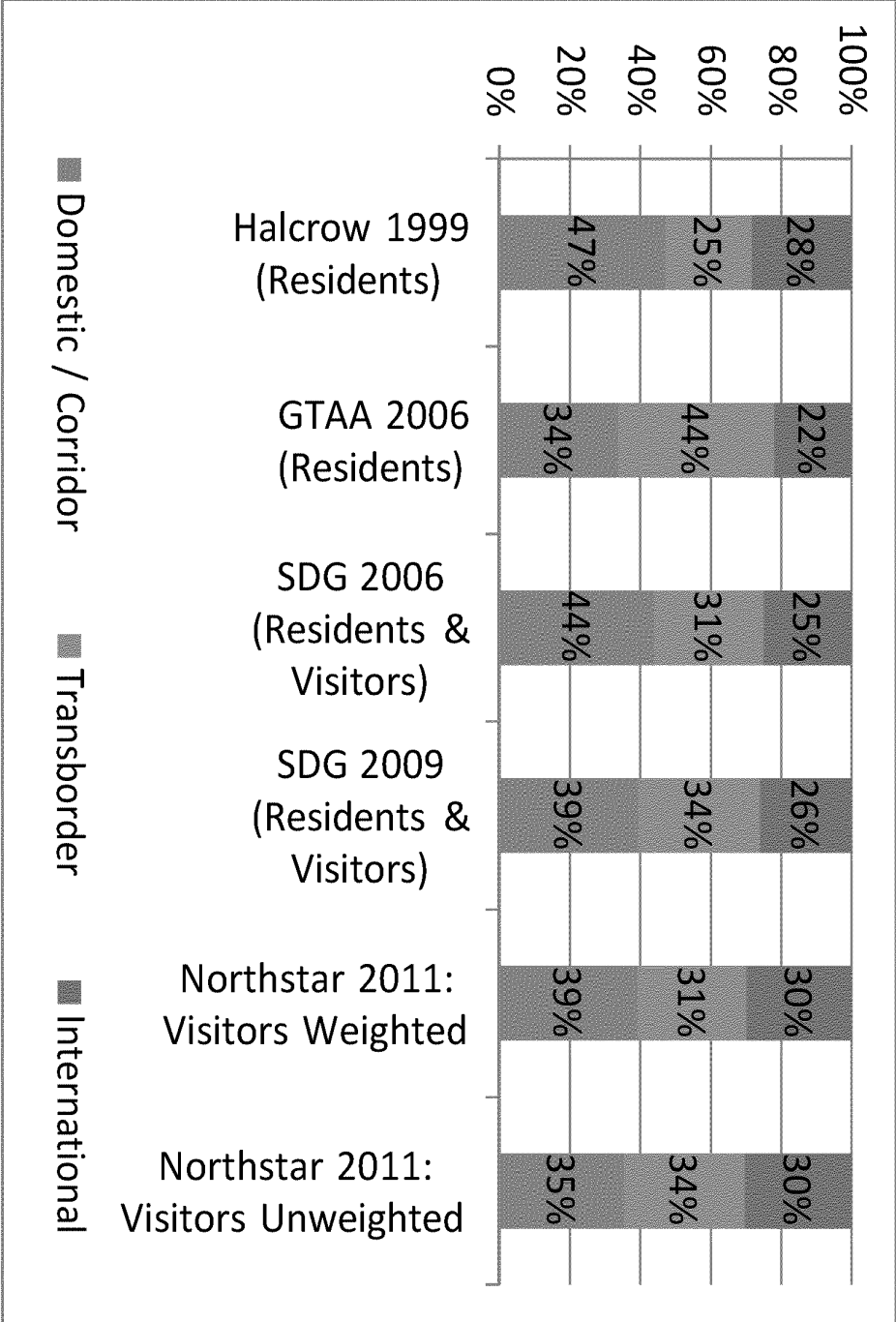
We have compared six key forecasting assumptions/outputs with the Northstar data

I These include:

- Average group sizes
- Current surface access mode shares
- Distribution of trips around Toronto
- ARL stations that passengers would use
- Access mode that would be used to travel to the ARL station
- Implied rate of capture at specific fare levels of ARL

Comparison of Survey Statistics

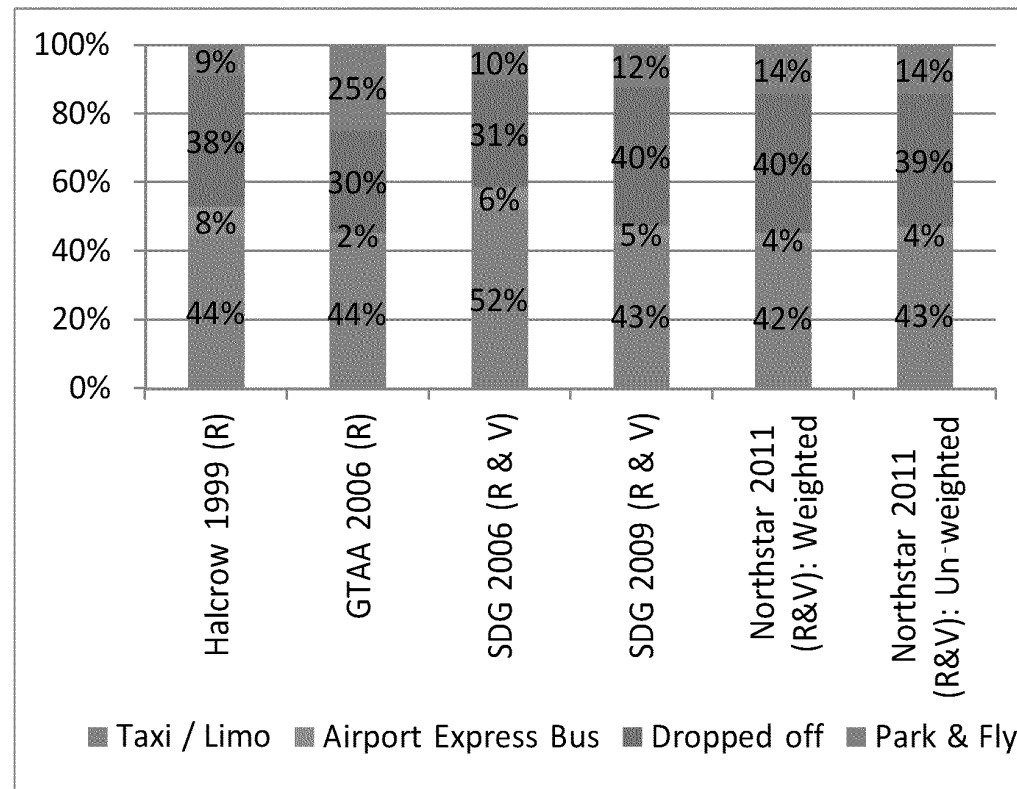
At flight sector levels, all five sources appear relatively balanced



Looking at the samples by current mode of travel and only for competitive modes of travel, there are strong similarities

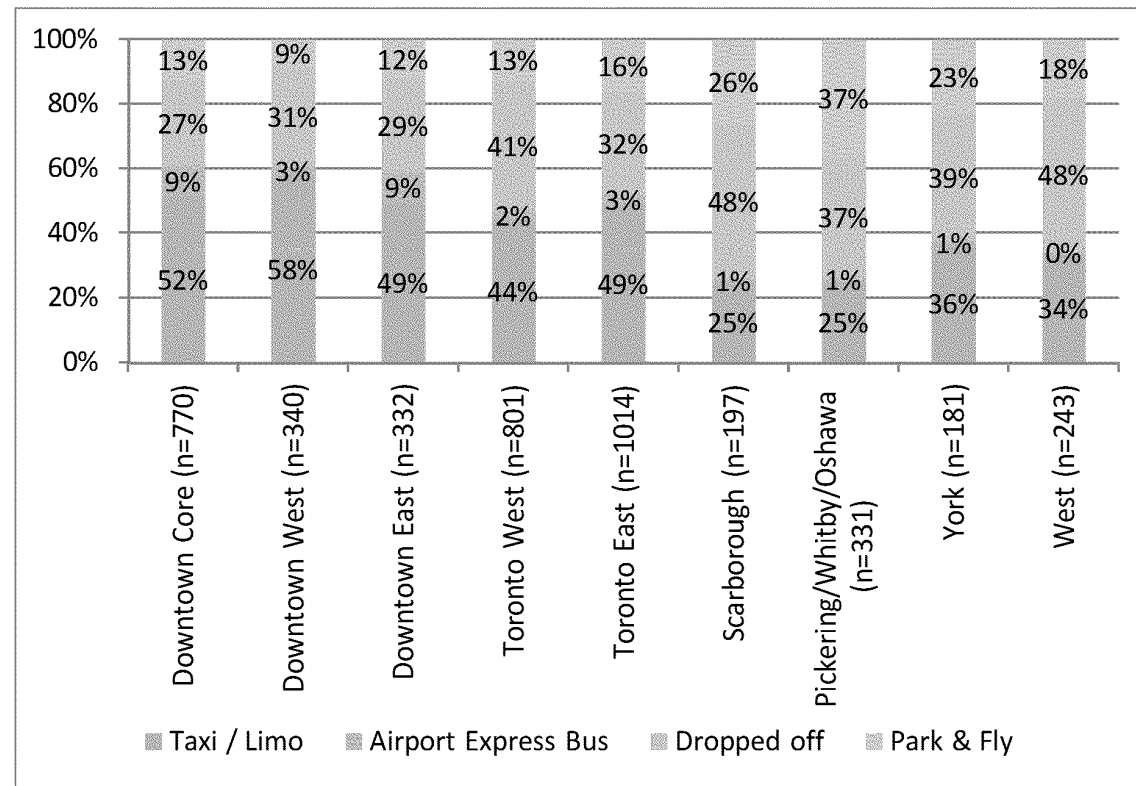
I Competitive modes here include:

- All taxi and limousine trips
- Airport Express bus only
- And all those arriving by car, either being dropped off or parking at the airport.
- Non competitive include: rental cars, TTC and hotel shuttles (17% of Northstar sample)



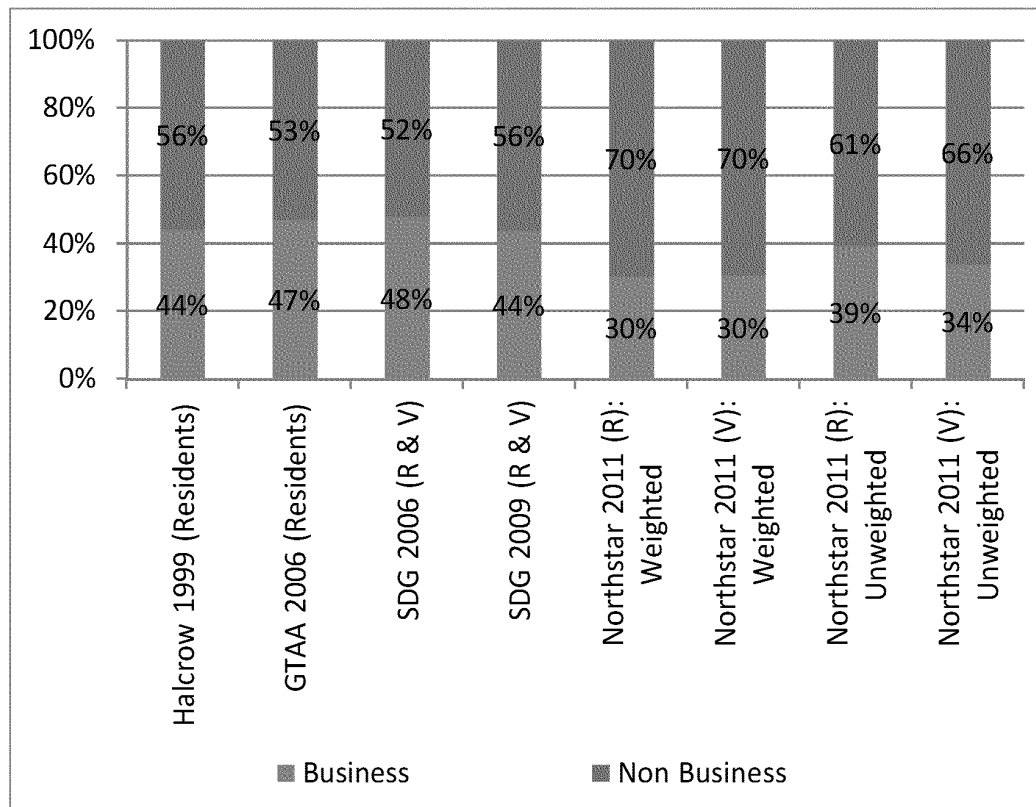
Looking at the Northstar un-weighted resident data only, taxi is most important for those travelling from downtown areas

- | Car based modes become more important in areas further away from the core downtown.
- | This is consistent with forecasting assumptions
- | Analysis excludes non competitive modes



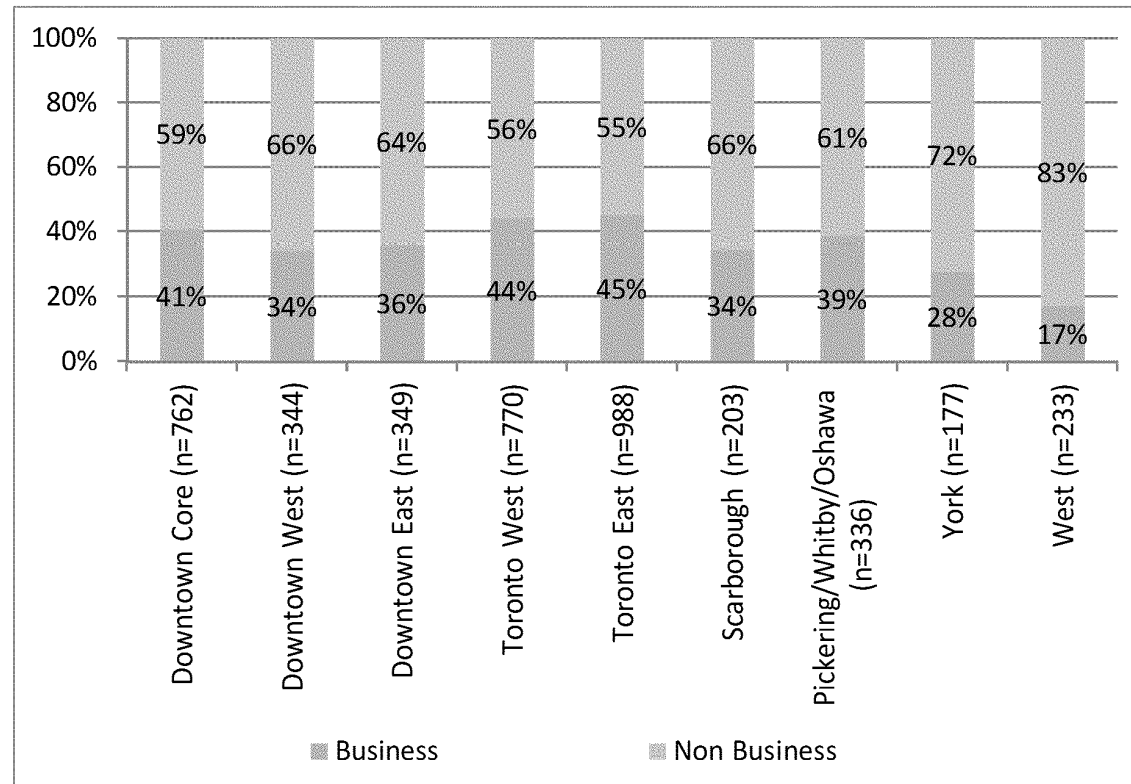
The weighted Northstar sample appears to under-represent business trips

- I The un-weighted data bears more resemblance to historical data however
- I Business trips made by visitors remain lower than expected - however the research was carried out in August when leisure travel is highest
- I This raises the question as to whether it is appropriate to reweight the ARL corridor sample with airport-wide statistics



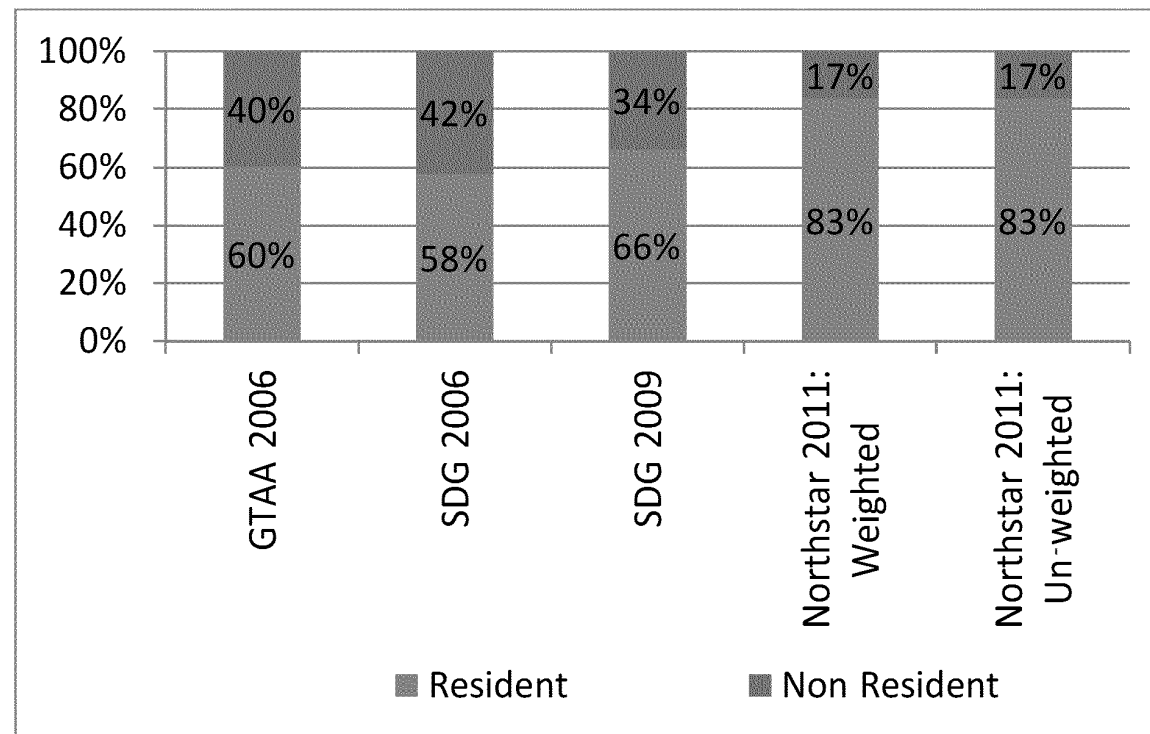
There are higher proportions of business travellers from downtown areas, looking more at the Northstar un-weighted resident sample

- I This result gives confidence in the reasonableness of the data - it is consistent with historic data, and fits with what might be expected intuitively of downtown zones



The Northstar sample has a lower representation of non-residents (visitors) than previous studies

- I However this may not have been part of the Northstar sampling plan and should be taken into account when considering combined statistics

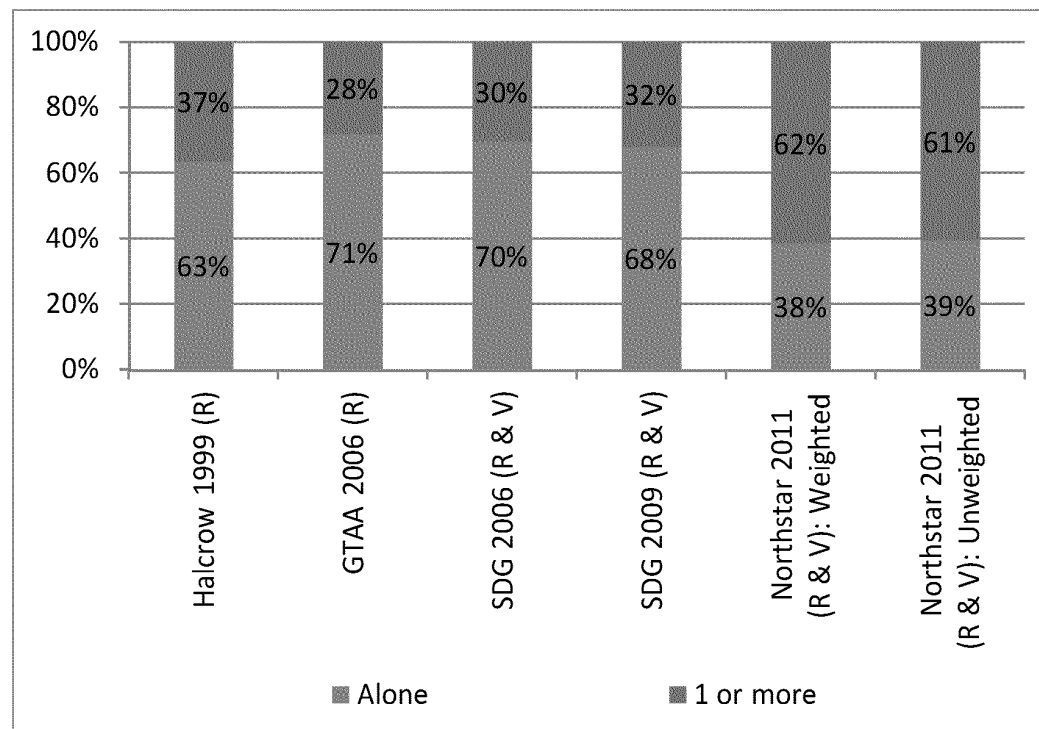


Taking into account both residents and visitors - the Northstar sample has fewer persons travelling alone than the other surveys

I This seems to be a sample issue rather than a reflection of the data weighting (weighted and unweighted data are very similar)

- However average group sizes of those who are travelling in groups are quite similar:

- * Northstar: 2.4 - 2.9 persons
- * SDG 2009: 2.4 - 2.5 persons

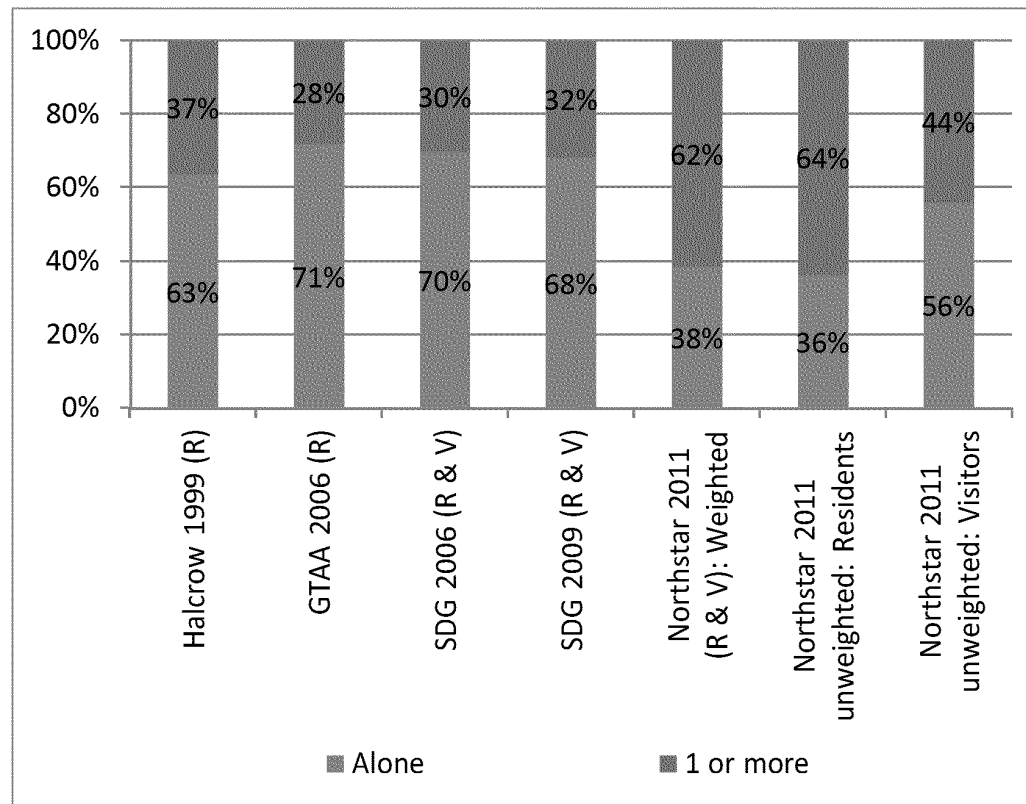


Looking more closely at the Northstar data unweighted - there are significant variations between the group sizes of visitors and residents

I Northstar visitors have a similar profile to the historical data collected

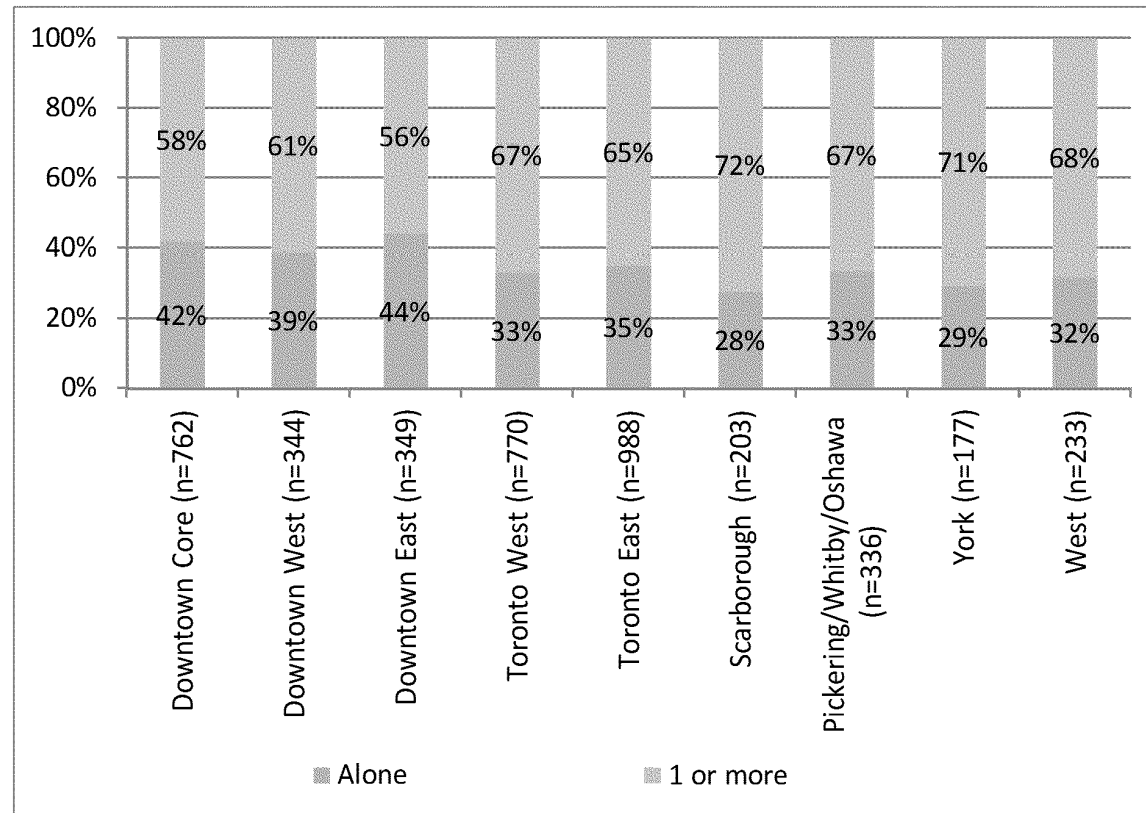
I This may be a result of the different methodologies employed for each of these target groups:

- Visitors intercept in the airport
- Residents on-line recalling trips in past 12 months



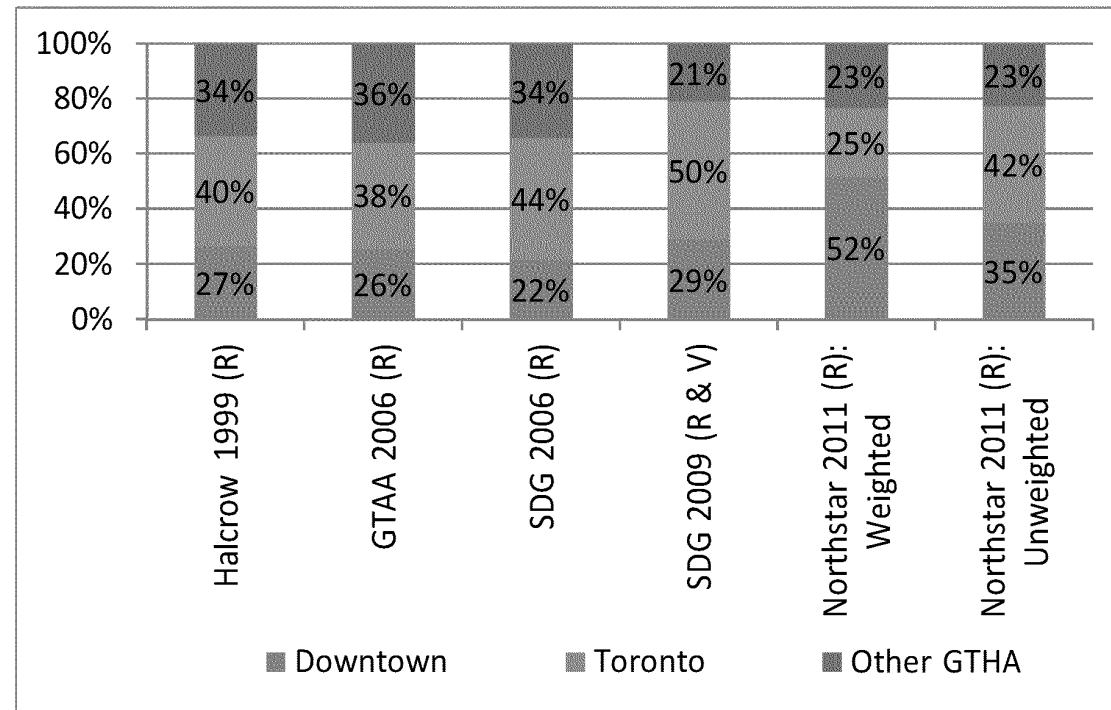
The proportion of those travelling alone however was highest from downtown origins (Northstar un-weighted residents)

- I However the proportions are still lower than those travelling alone in the historical surveys
- I This will have a bearing on likelihood to use ARL as it is a more competitive option for those travelling alone



Combining trip origins together into three main areas the sources are broadly consistent with the exception of the Northstar weighted sample (residents only)

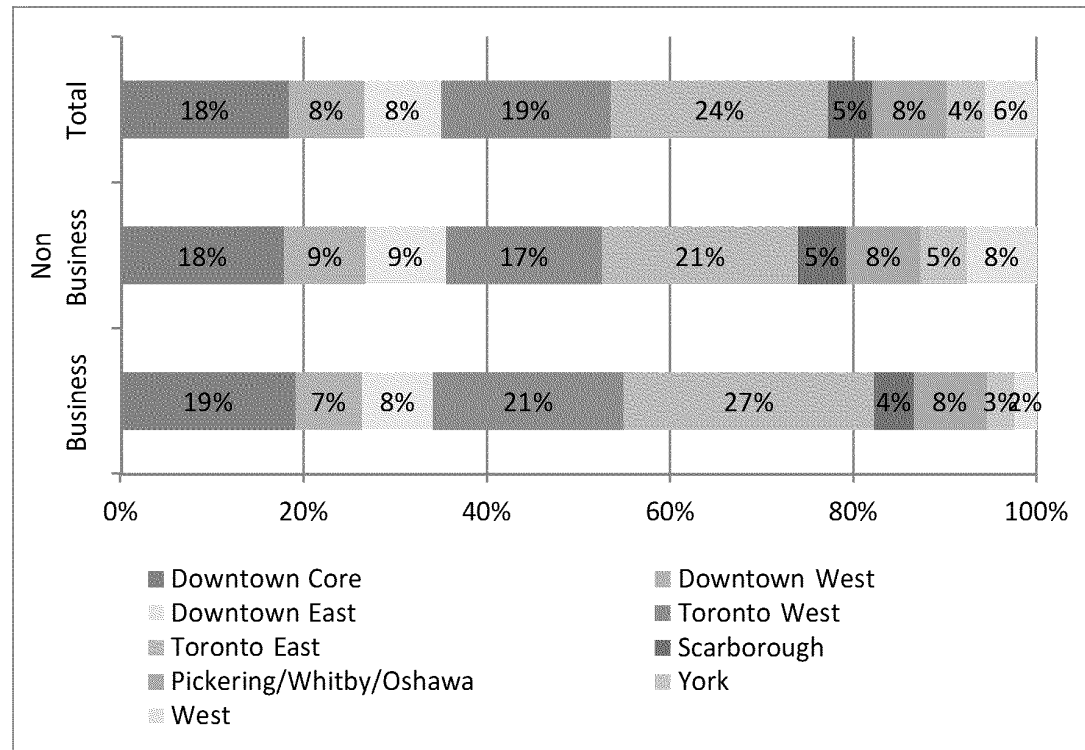
- I The weighted Northstar sample has a far higher representation of downtown travellers than other sources
- I The unweighted data is a better match



Amongst the Northstar un-weighted residents, those coming from the downtown core area represent one of the largest parts of the sample

I The areas of Toronto east (zones 1,2,4,5) and west (7, 8, 9a and 9b) were also important amongst business travellers

- This is consistent with the SDG Forecasting model which was used for the sampling plan



Comparison of Forecasting Assumptions with Northstar data

Looking specifically at car parking assumptions, the distribution across terminal parking and other lower cost options is similar

- I However the price of parking in the Northstar survey is significant lower than that assumed in the SDG forecasts
- I This may be a result of different length of stay profiles - unfortunately no information was collected by Northstar on this
- I The difference in current price will have an impact on willingness to pay for the ARL with this market segment

	Northstar Weighted	SDG Forecasting Assumption
Terminal Parking %	39%*	43%
Average Parking Charge (\$2011)	\$43.60	\$116.03

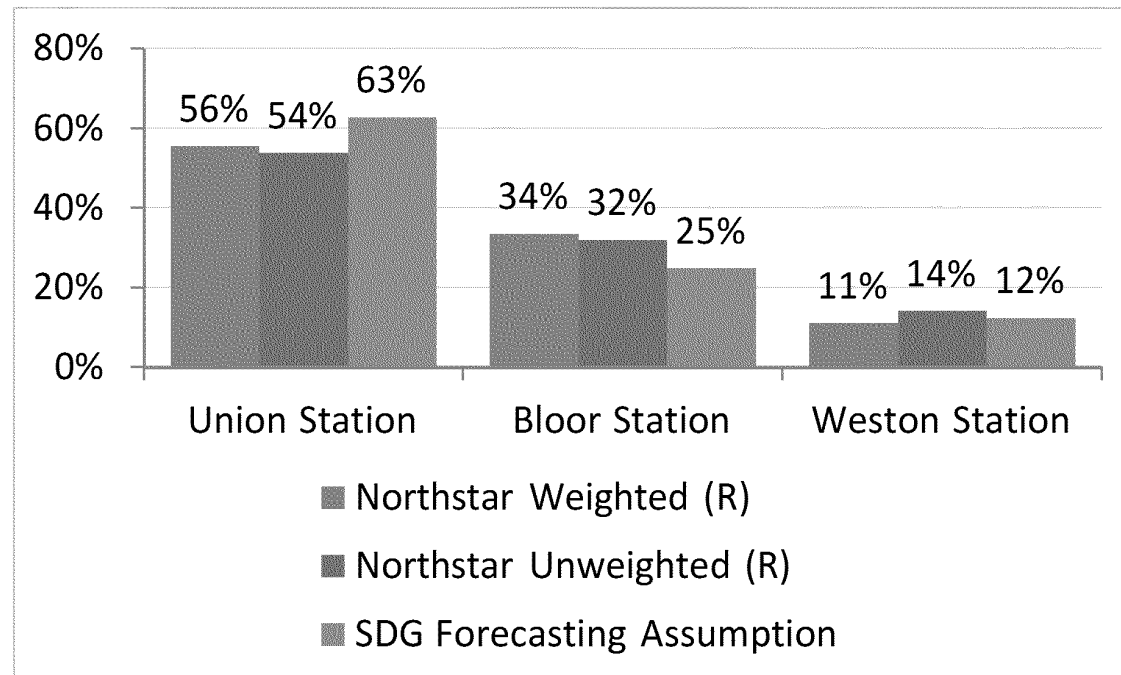
% Rebased over 100%, this was a multipick question

- I Equivalent Northstar unweighted data unavailable at this point

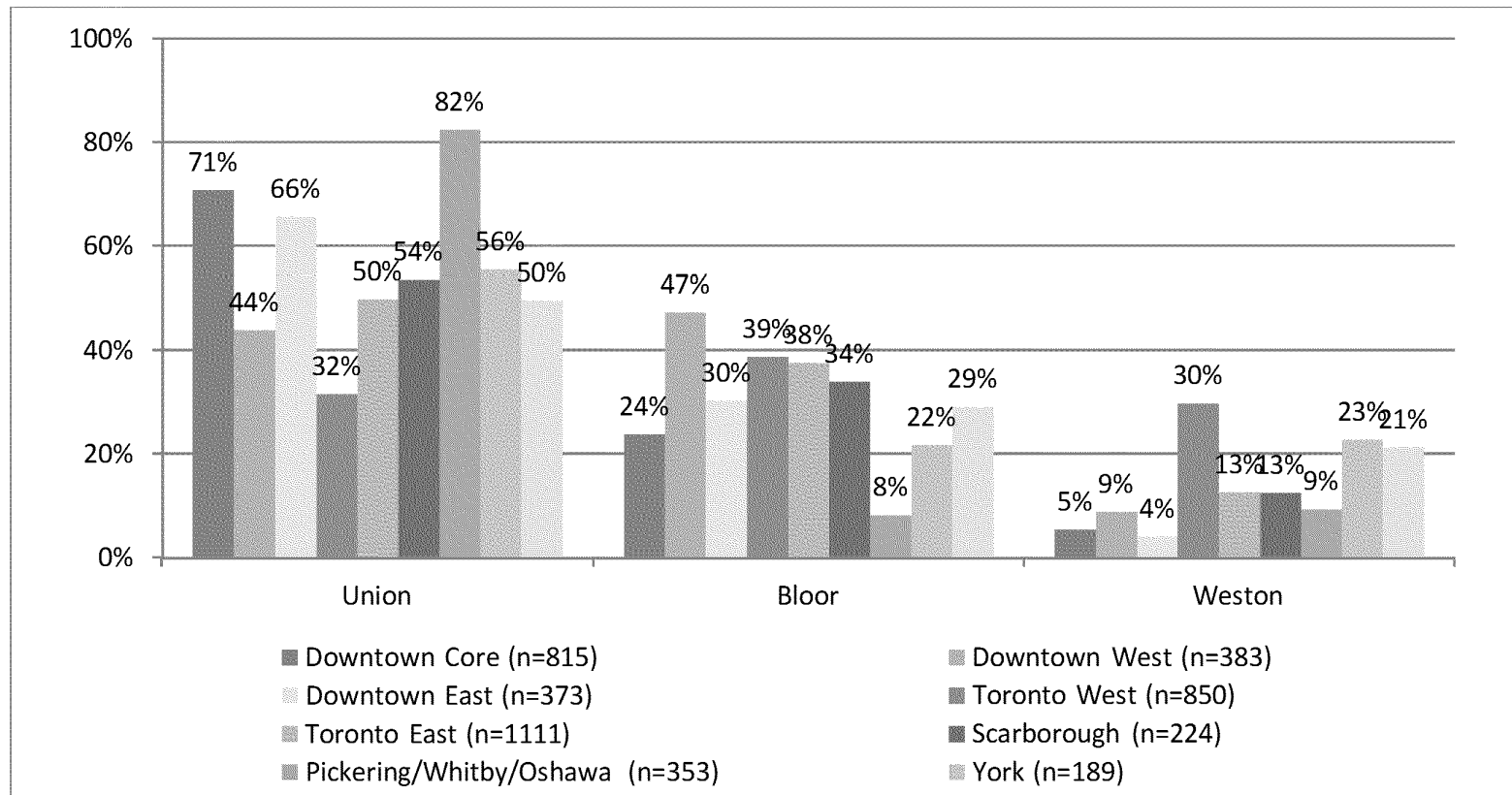
The ARL station that people would use is consistent between the SDG forecasting assumptions and Northstar survey responses

I Note in the case of the SDG forecasting assumption this is the % of the in-scope market who would use each station

- This is different from who is forecast to use each station
- Given no price was offered to respondents in the survey, this is the more appropriate comparison

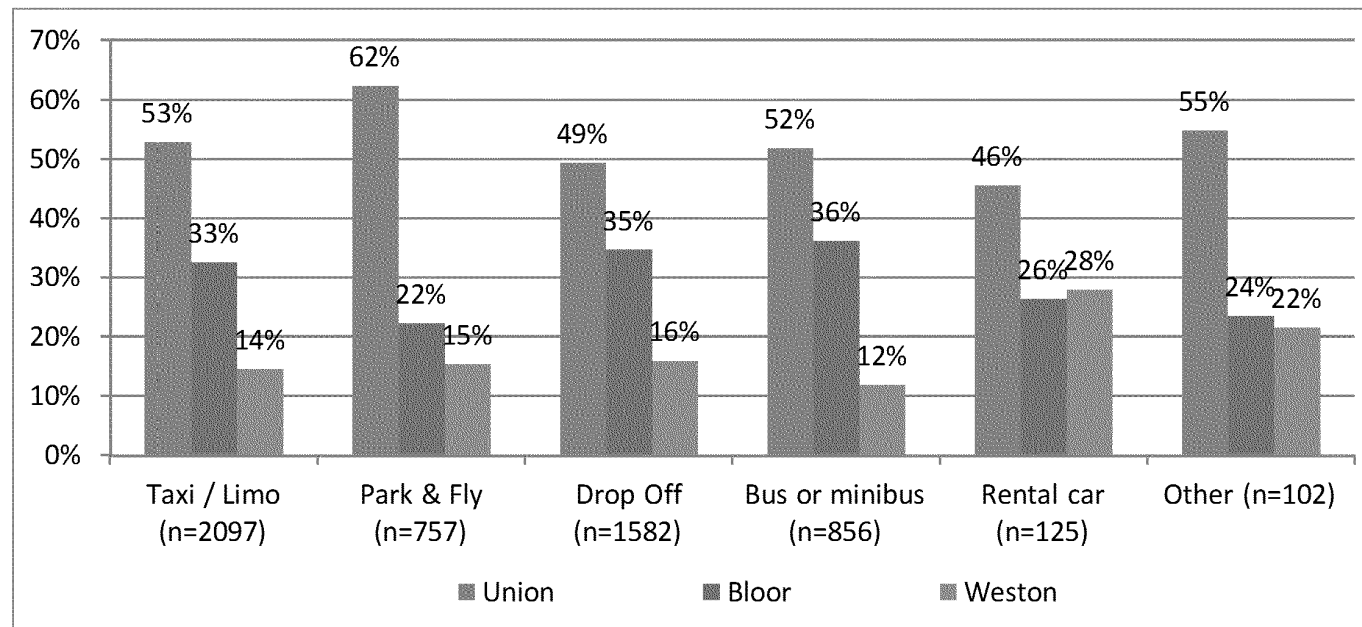


Bloor station is most favoured by those starting their trip in Downtown west (zones 106-111) where access to this station is easiest (Northstar residents unweighted, n=383 respondents)



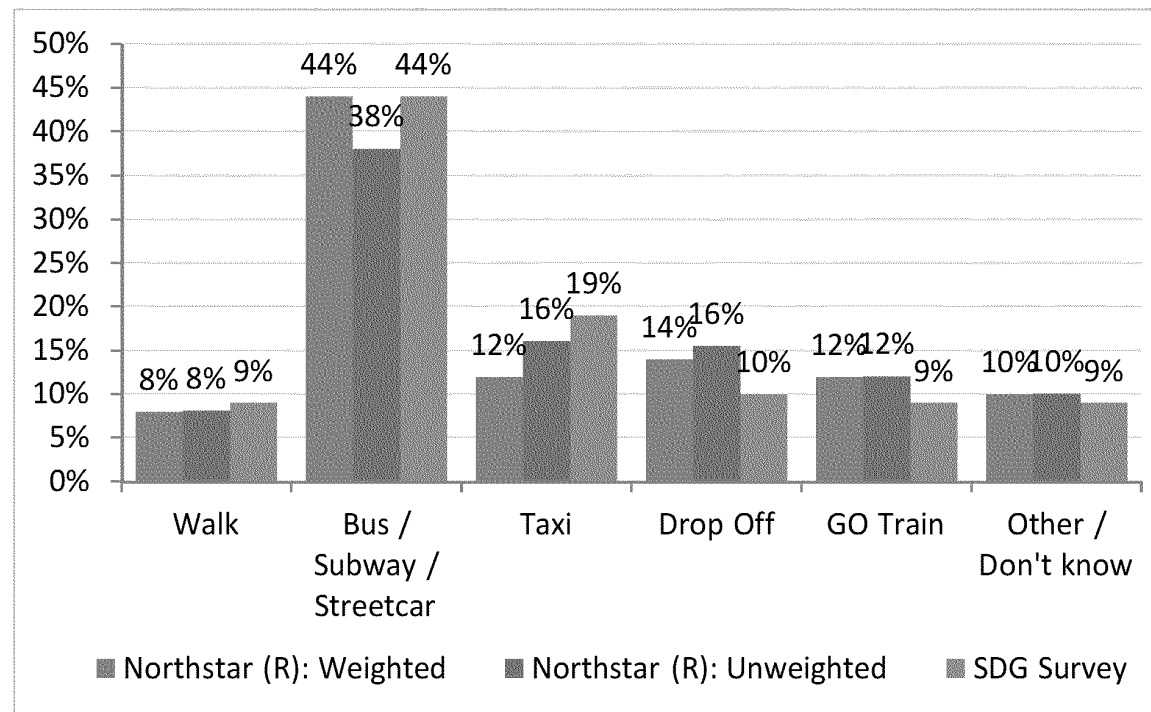
The Northstar data does not suggest any particular trend in preferred station by current mode of travel (residents only unweighted)

- I Union is preferred by around 50% of each current market
- I Bloor is the next preferred by all with the exception of those using rental cars who would arguably be unlikely to switch in any case.



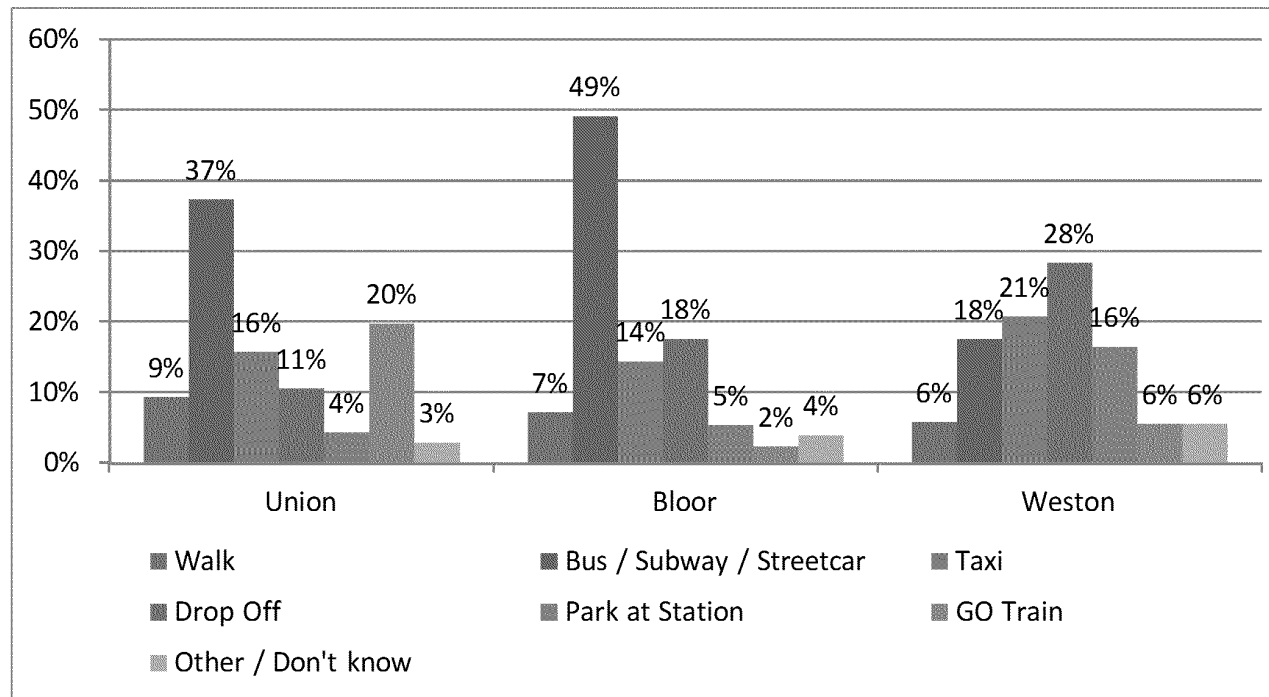
The mode of access that people would use to travel to the ARL station is broadly consistent across the surveys

- I Both the weighted and unweighted Northstar responses (residents data available only) and the SDG 2009 survey are very similar



Transit modes are the most popular way to access Union and Bloor Station (Northstar, un-weighted residents), this is consistent with forecasting assumptions

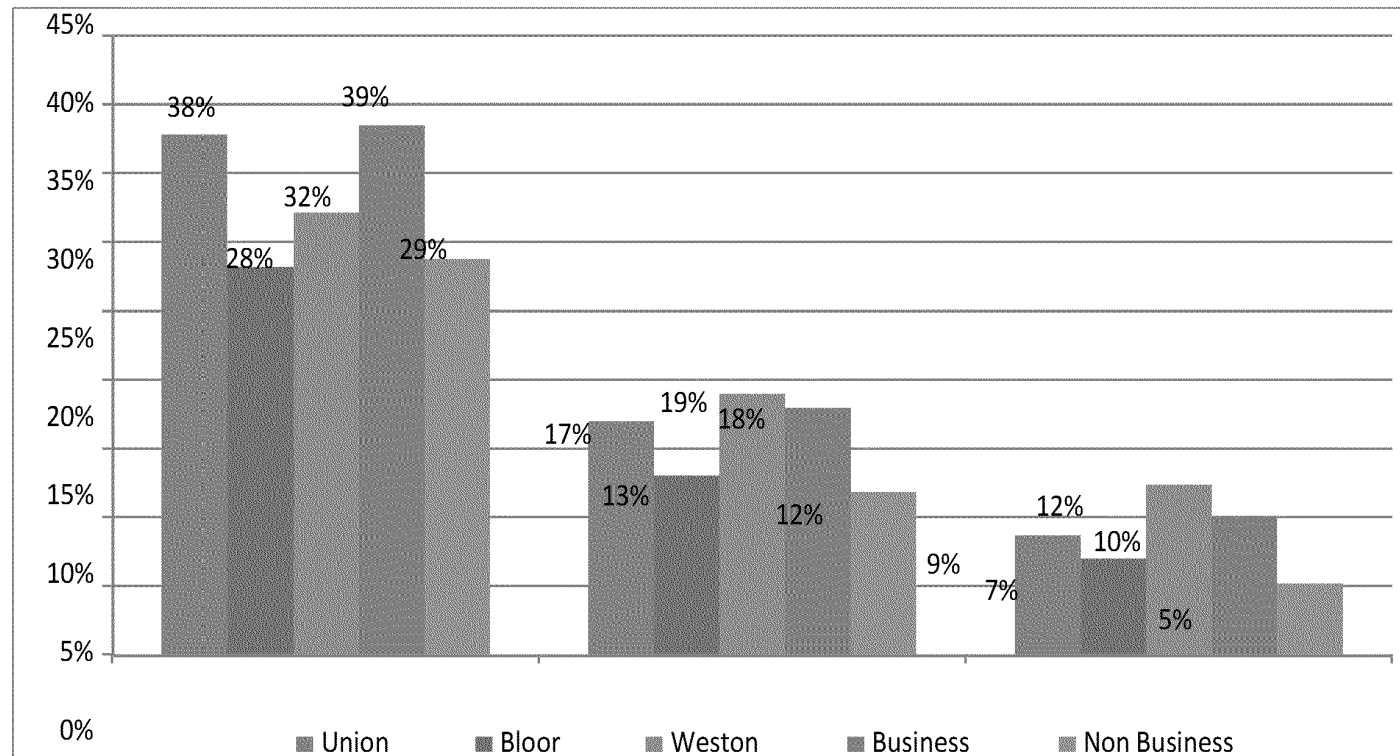
- I Drop off access is surprisingly high, particularly at Weston
- I And 16% of those travelling to Weston say they will park there



Exclusion per Committee Direction

- I We need to account for differences in methodology (direct questions vs Stated Preference techniques and logit modelling).
 - Direct questioning can distort implied capture rates and introduce biases.

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 Thank you