

Toronto Union Pearson Express

Ridership Forecast Update May 2013

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Prepared for:

Metrolinx

Suite 600

20 Bay Street

Toronto, M5J 2W3

Canada

Prepared by:

Steer Davies Gleave

28-32 Upper Ground

London, SE1 9PD

+44 (0)20 7910 5000

www.steerdaviesgleave.com

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Professional practices and procedures have been applied in the development of the analysis, findings and conclusions reported herein. The base case projections contained within this document represent SDG’s estimates. While they are not precise forecasts, they do represent, in our view, a reasonable expectation for the future, based on the most credible information available as of the date of this Report.

The views expressed within this Report are based upon:

- Information collected by us up to May 2013
- Information provided to us up to May 2013;
- Review of written information supplied by Metrolinx

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Glossary

ARL	Airport Rail Link
Avg	Average
CAD	Canadian Dollar
CAGR	Compound Annual Growth Rate
GDP	Gross Domestic Product
GTAA	Greater Toronto Airport Authority
GTHA	Greater Toronto and Hamilton Area
km	Kilometre
LBPIA	Lester B. Pearson International Airport
LRT	Light Rail Transit
One-way	Passengers travelling either to or from LBPIA
Pax	Passengers
SNC	SNC Lavalin
SP	Stated Preference
TTC	Toronto Transit Commission
UPAG	Union Pearson Air-Link Group
UPE	Union Pearson Express

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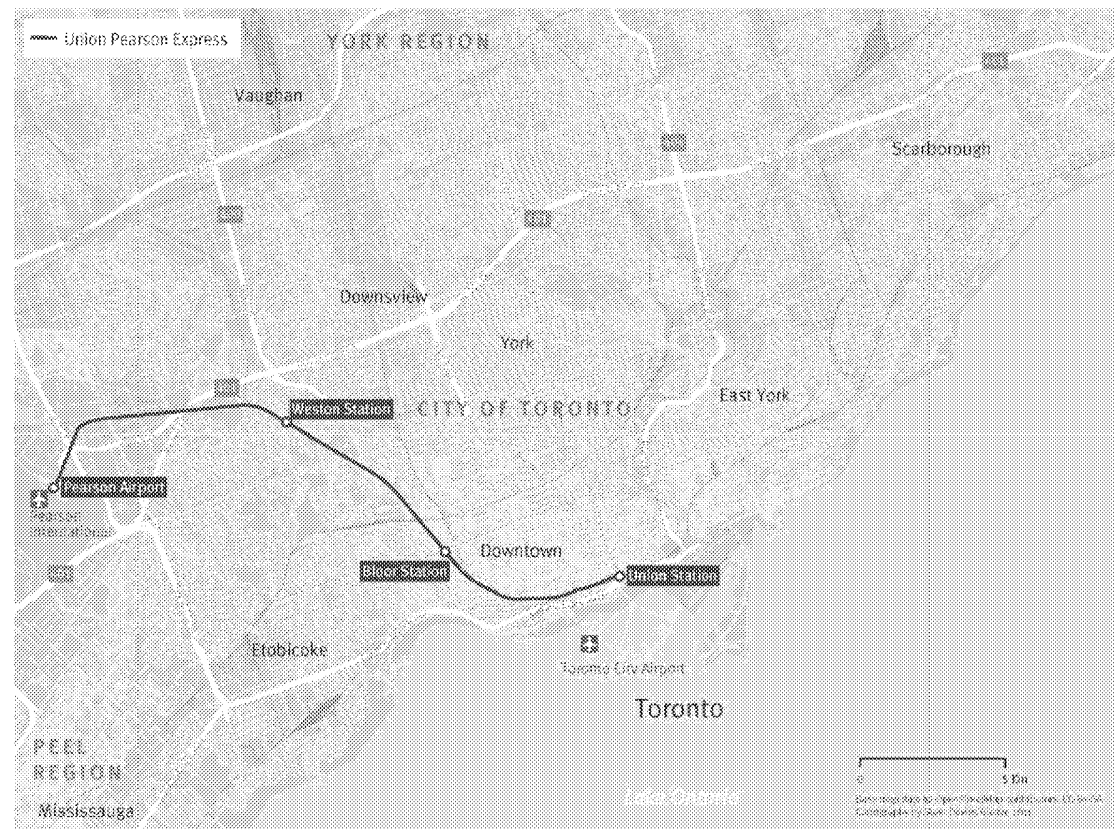
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Context

Background

- Lester B. Pearson International Airport (LBPIA) is located in the City of Mississauga and serves the population of Toronto and the Greater Toronto and Hamilton Area (GTHA). In 2012 34.9 million passengers travelled through LBPIA. By 2031 this is forecast to reach 49.5 million.
- These high volumes of passengers puts pressure on the existing modes of surface access serving the airport where passengers currently have the choice between taxis, driving and parking or being dropped off, the privately-operated airport express bus (Pacific Western) or a number of local bus services operated by Toronto Transit Commission (TTC).
- Since 2001, there have been plans to develop a new airport rail link - the Union Pearson Express (UPE) - which would provide a new direct and rapid passenger rail service between Union Station in downtown Toronto and LBPIA some 22.5km away. The service is planned to open in the spring of 2015, in time for the Pan American Games which will be held in Toronto in the summer of 2015.
- The UPE will use the existing Georgetown alignment from Union Station passing through Bloor and Weston before travelling along a new dedicated spur to LBPIA.



Context

Scope

- I In 2009 Steer Davies Gleave undertook an Investment Grade Ridership and Revenue study for SNC Lavalin for the UPE service. Having taken over as sponsors of the scheme, Metrolinx commissioned a new study in 2011 to update these forecasts under a number of new operating assumptions both for the UPE and for a number of the competing modes, as well as taking into account the latest passenger growth at LBPIA.
- I In July 2010, the Ontario Government asked Metrolinx to build, own and operate the UPE from Union Station to LBPIA. From this date Metrolinx assumed responsibility for the project including design, construction and operations, building on the work that had been undertaken in the past. The project had previously been led by Union Pearson Air-Link Group (UPAG), a subsidiary of SNC Lavalin.
- I This report in 2013 is an update on the ridership forecast for Metrolinx. The scope has been to:
 1. Review actual air passenger data and the forecast made in 2011
 2. Update the air traffic forecasts to account for actual 2011 and 2012 data and updated assumptions
 3. Update the population and employment forecasts underpinning the spatial distribution of potential demand
 4. Review Deloitte discrete choice work of 2012
 5. Update travel time assumptions for principal highways
 6. Update other assumptions for competitive modes

Exclusion per Committee Direction

 8. Consider the impact of the Pan/Parapan Am Games in 2015.



Assumptions Update

I Air traffic

- GTHA forecast air traffic has increased for domestic and transborder flights, largely due to higher actual passenger numbers in 2011 and 2012 than previously forecast (forecast for 2012 was 35.8 million, actual 37.1 million). This, combined with more optimistic long-term GDP forecasts for Canada and the US, contribute to the higher domestic and transborder forecasts than those made in 2011.
- LBPIA forecast air traffic will increase at an average rate of 2.2% per annum between 2012 (34.9m) and 2031 (49.5m). Our new forecasts for transborder passengers are higher than the 2011 forecasts due to more optimistic GDP forecasts than previously employed. International forecasts have not seen a significant change. The domestic forecast is now lower than that of 2011 due to the rapid increase in forecast demand at Billy Bishop Airport, where the number of passengers increased by 27% in 2012 to 1.9 million. We have assumed that Billy Bishop will reach capacity of 3.5 million in 2021 and then continue operating at full capacity.

I Highway journey times

- Updated drive times were considered using Google Maps and MTO travel survey data but none of the estimates found were thought to reflect the true situation - they appear to be much shorter than reality, so no updates were made. Highway journey times from the surveys carried out in 2009 were kept in the model.

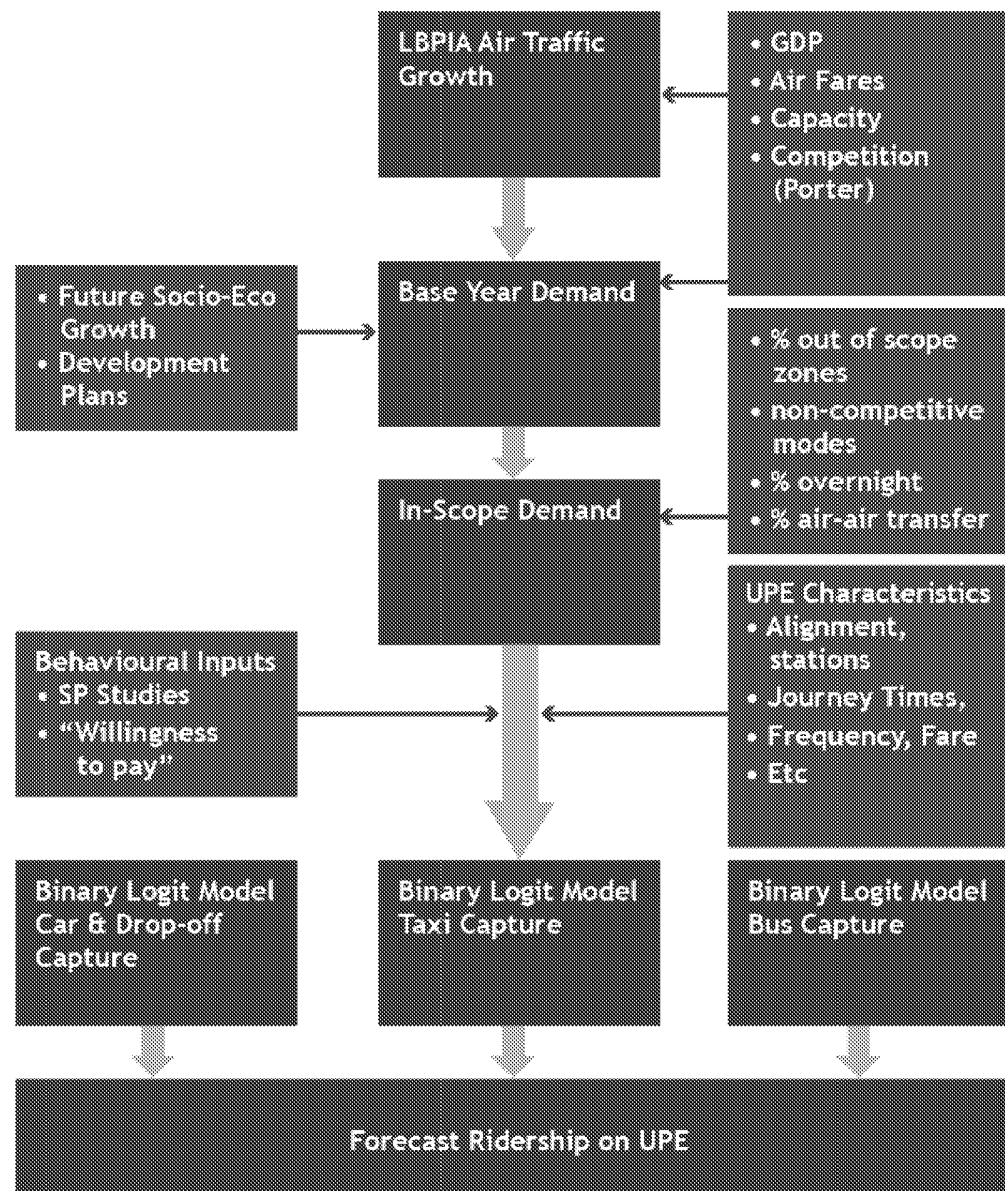
I Costs of competing modes

- Most of the costs of competing modes (bus, toll road costs and parking costs) remained constant since 2011 in nominal terms, so have fallen in real terms. This made them more attractive relative to the UPE, which lowered the capture rates. We have assumed no change to fares in real terms after 2013.
- Express bus fares have risen from \$23.95 in 2011 to \$26.95 in 2013 (one-way). This increase has made it less attractive relative to the UPE. We have assumed no change to fares in real terms after 2013.

Exclusion per Committee Direction

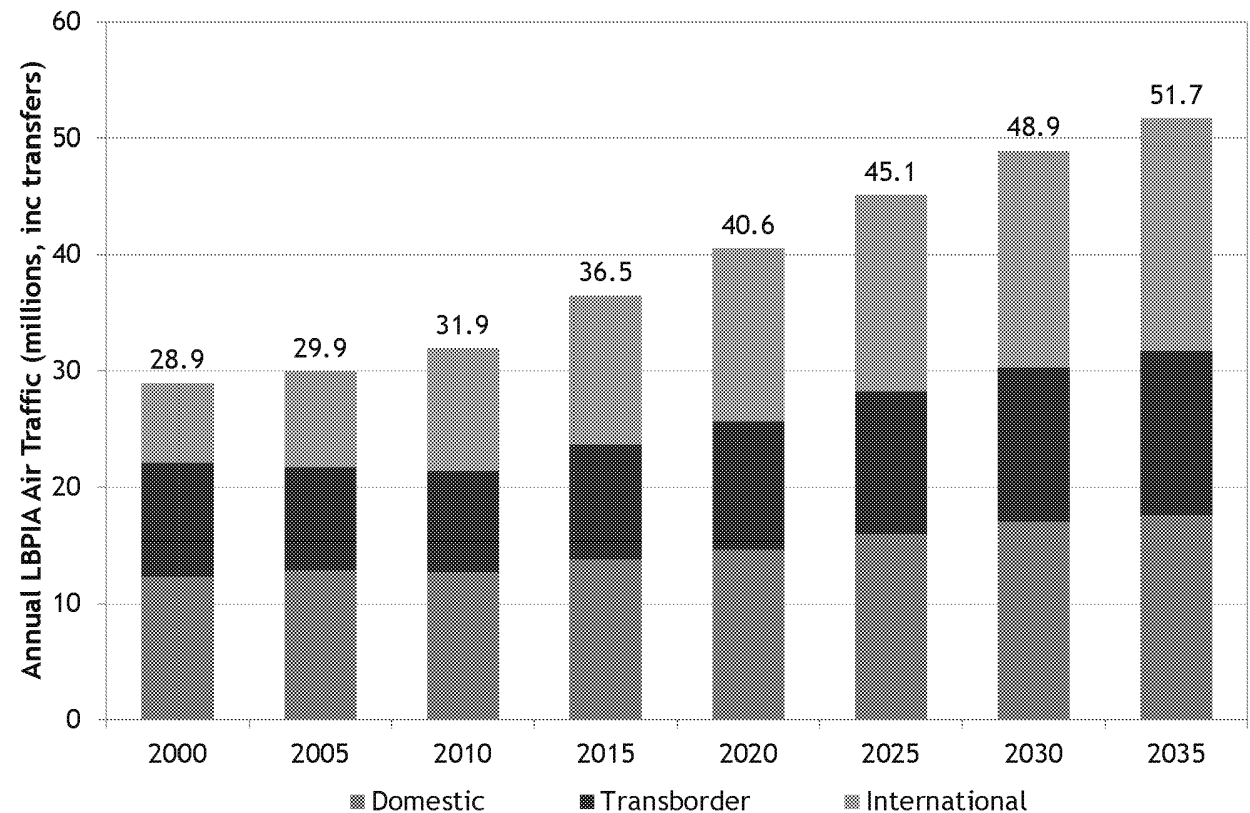
Overall Approach

- I Our forecasting approach is based on a framework widely accepted throughout the transportation industry and commonly used to estimate potential demand for toll roads, urban transit systems and rail networks.
- I It relies on answering two significant questions:
 - In-scope market: how much of the total travel between LBPIA and GTHA could reasonably be attracted to the UPE?
 - Traffic capture: how much of this in-scope travel can actually be captured?
- I In the following slides we focus on each of the key building blocks of the forecasting process, as illustrated in the figure to the right:
 - The LBPIA air traffic: volumes and trends
 - Determining the size of the in-scope demand
 - Assessing the level of capture, both for different market segments and taking into account decision drivers
 - The key characteristics and assumptions that affect the UPE service and its operations



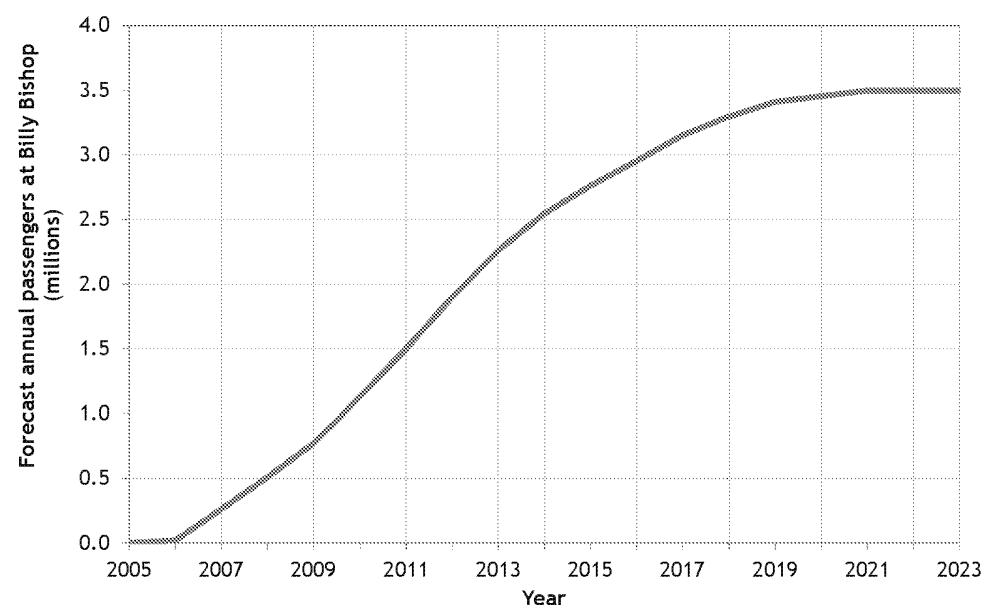
Approach: Air Traffic Forecast Update

- I Independent air traffic forecasts for LBPIA have been developed by Steer Davies Gleave by first forecasting the air traffic growth for the GTHA, and then separating out the LBPIA passengers from Billy Bishop City Airport and Hamilton Airport.
- I The forecasts have been developed using a series of drivers including:
 - Information at a flight sector level (the type of flight): transborder, domestic and international;
 - Historical trends in air traffic;
 - GDP forecasts;
 - Cost of air travel;
 - Likely changes in airline strategy, particularly reflecting the activities of Porter Airlines at Billy Bishop; and
 - Capacity constraints at each airport.
- I **LBPIA air traffic** is forecast to increase at an average rate of 1.9% per annum between 2012 and 2031. Forecast growth in transborder passengers is higher because of a more optimistic GDP forecast for Canada and the US. The domestic forecast would have also increased for the same reason but is now lower than in the forecast made in 2011, due to the forecast rapid increase in flights at Billy Bishop Airport. Assumptions on Billy Bishop Airport are set out on the next slide.



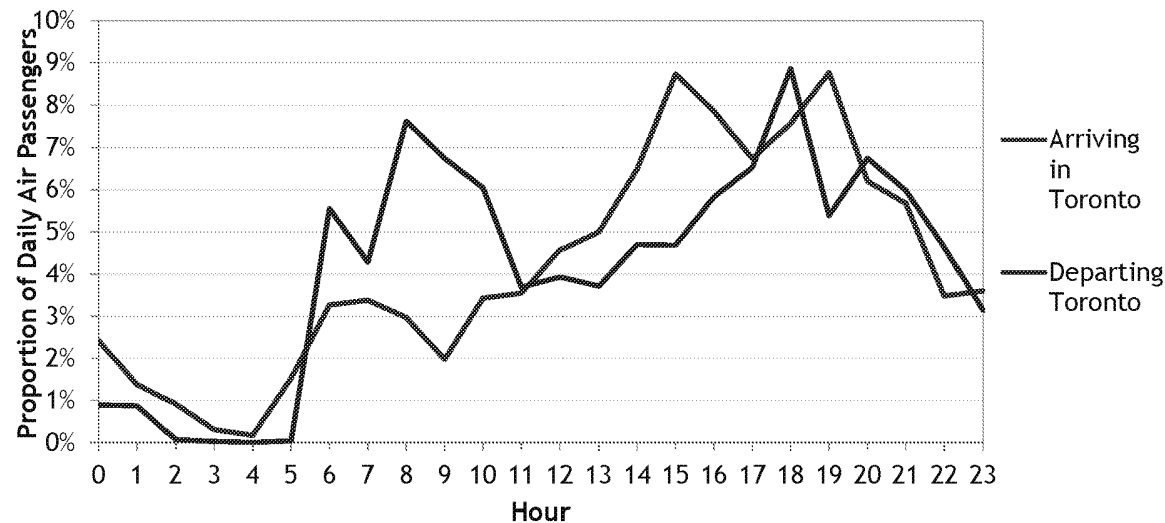
Approach: Toronto City Billy Bishop Airport Assumptions

- There has been rapid growth at Billy Bishop Airport in the past few years, with 1.5 million passengers in 2011 and a 27% increase to 1.9 million passengers in 2012.
- This has mainly been due to the rapid expansion of Porter Airlines, a regional passenger carrier in operation since late 2006. In April 2013, the airline proposed to extend the runway at Billy Bishop, in order to operate 12 new Bombardier jets, worth US\$2.29 billion.
- Based on the trend in the past few years, we have made the following assumptions on the future growth of Billy Bishop. These represent an aggressive growth profile (shown in the diagram) and hence result in a conservative forecast for LBPIA demand.
 - In 2012, 58,660 out of a maximum of 73,730 slots were used. This corresponds to 79.6% usage. We have increased this to 100% to make full use of the airport slots by 2021.
 - Load factors of aircraft - in 2011, this averaged at 41.4%; in 2012, the figure had risen to 44.4%. This is quite low and there is potential for airlines to increase the number of passengers on each flight. We have increased the load factor to 65% by 2021.
 - Although Porter Airlines wishes to extend the runways and operate larger jets, we have assumed that average jet sizes remain constant and do not grow in the next 20 years.
 - The combination of these assumptions allows the airport to carry 2.8 million passengers in 2015 and 3.5 million passengers in 2021. From then onwards, there is no more capacity to increase the number of passengers.
 - We have conservatively assumed that all of this growth at Billy Bishop is demand taken from LBPIA, rather than Billy Bishop generating new demand.



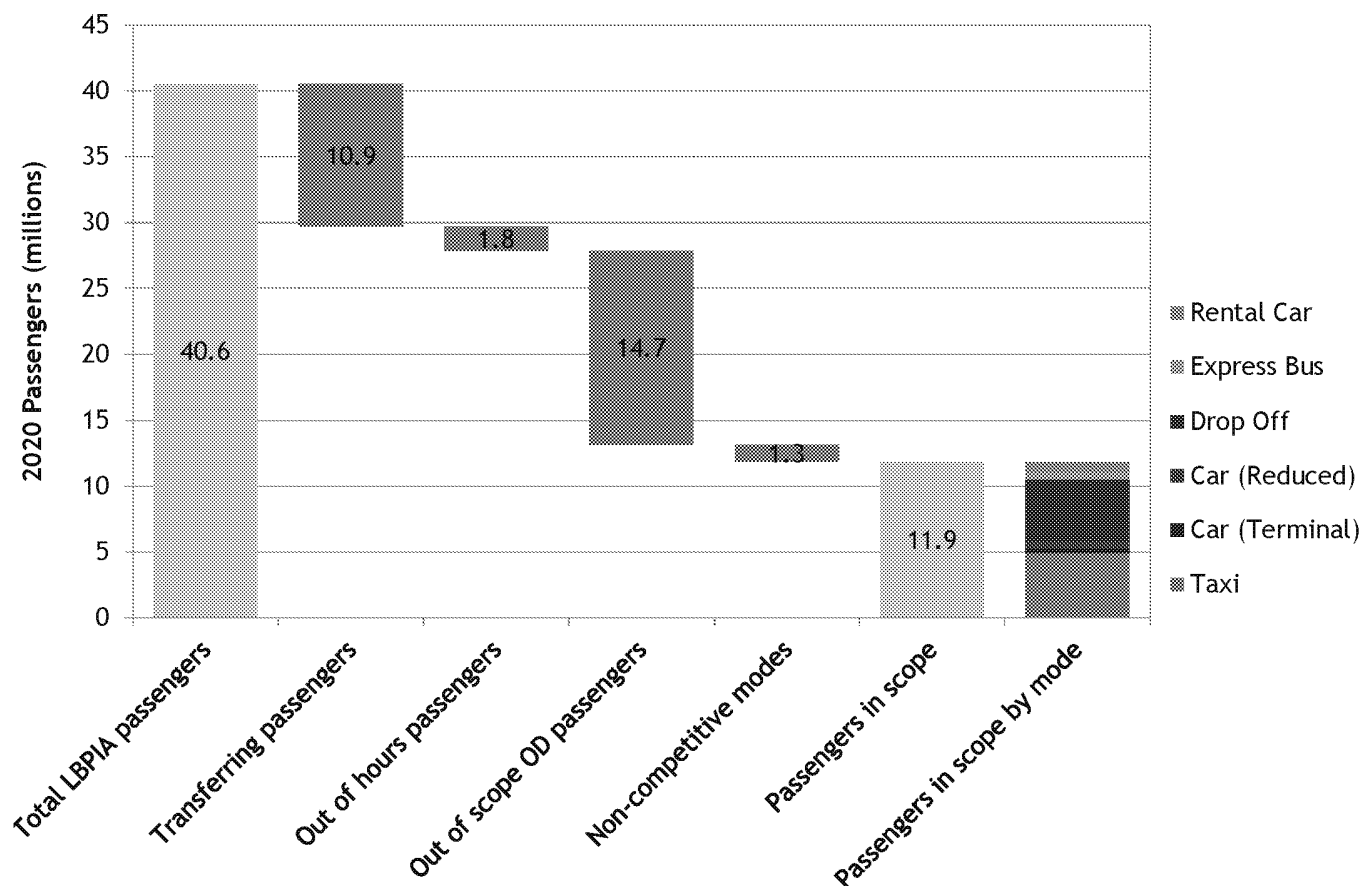
Approach: Daily Trends in Air Traffic

- The figure below illustrates the daily variation in air traffic, separately for arriving and departing passengers (excluding those transferring) for an average day (includes weekends and weekdays).
- The busiest times of day:
 - On average, arriving passengers peak in the afternoon between 15:00 and 19:00, with a small dip at 17:00. The period between 15:00 and 19:00 accounts for just under 40% of the arriving daily passengers.
 - The profile for departing passengers shows two peaks: one in the morning between 08:00 and 10:00, accounting for 20.4% of the daily departing passengers, and a second in the afternoon between 17:00 and 18:00 accounting for a further 15.4%.
- The quietest times across the day for both arriving and departing passengers occur in the early morning:
 - Between 03:00 and 04:00 for those arriving;
 - Between 02:00 and 05:00 for departures.
- Variations in air traffic across the day are an important component in determining the hours of operation for the UPE service.



Approach: In-Scope Demand in 2020

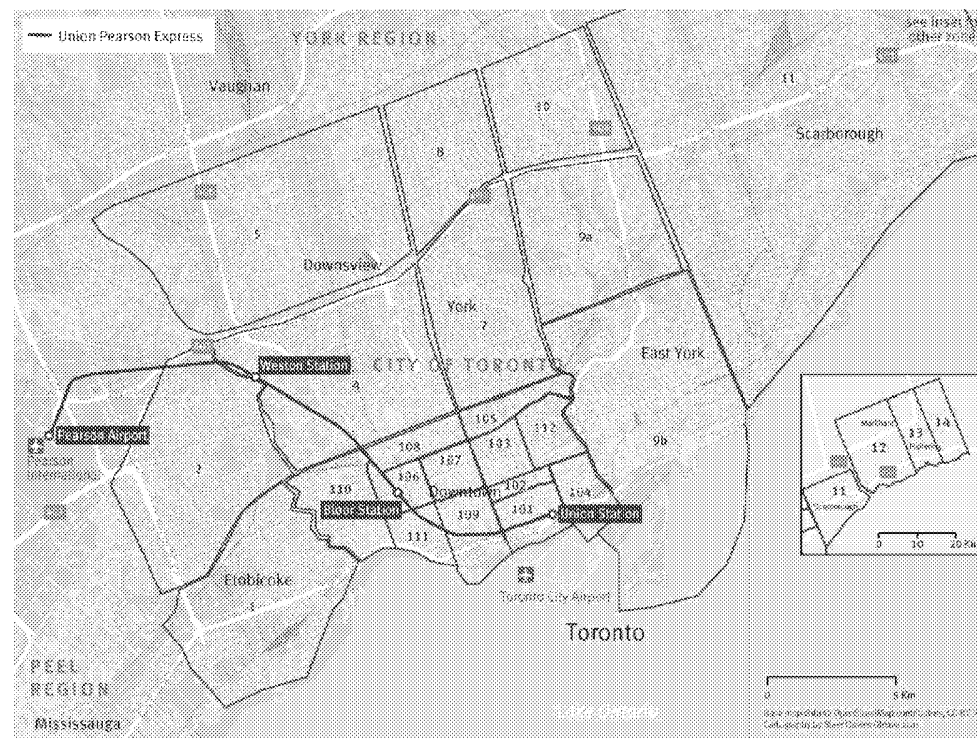
- I The size of the in-scope market has been established through examination of the air traffic at LBPIA, both in the UPE opening year and into the future.
- I Some groups of passengers are removed from the total air traffic; those remaining are termed the “in-scope demand”. Those discounted for the purposes of assessing in-scope demand are:
 - Transferring passengers who are changing planes and therefore do not leave the airport;
 - Those travelling at times outside of the proposed hours of operation for the UPE;
 - Passengers travelling currently using modes of transport from which it would not be logical to switch such as dedicated hotel shuttles or hire cars; and
 - Those travelling from areas outside of the UPE corridor such as from Mississauga or Brampton where the current mode of travel would remain advantageous.



- I The figure above illustrates this process for a single forecast year, 2020.
- I 40.55 million passengers are forecast to use LBPIA, including those transferring to other aircraft who do not have an origin or destination in the GTHA.
- I After removing those passengers who could not or logically would not use the UPE, 11.86 million passengers remain in-scope.

Approach: Traffic Capture

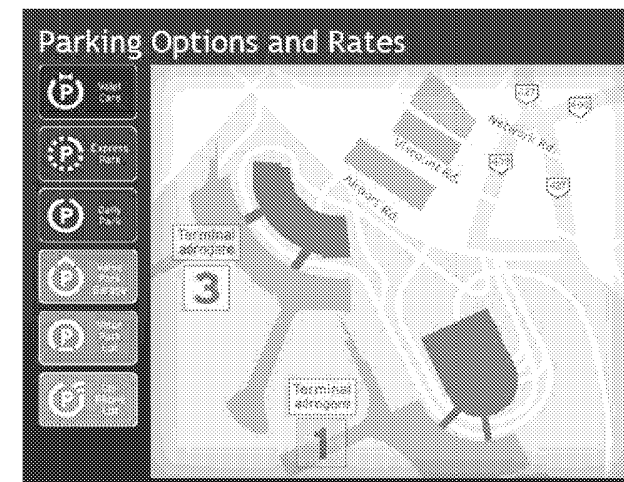
- I To address traffic capture, we have considered the following issues:
 - What are the relative costs and benefits of each mode of travel?
 - How will each traveller choose between options?
- I Capture is estimated for different mini-segments of the in-scope market. Mini-segments are defined to reflect different times and costs, and underlying behaviours and preferences across the total in-scope market. We use the following segments:
 - Current mode of travel: airport express bus, taxi, drive and park (terminal parking or remote lots), drop off
 - Residency: resident of the GTHA or not
 - Purpose of journey: travel for business or not
 - Type of flight: domestic, transborder, international
 - Time of day when travel to/from the airport would occur:
 - morning peak, afternoon peak, other off peak times
 - Travelling party: travelling alone or in a group
 - Area in GTHA travelled to/from 25 areas (termed zones) in GTHA
- I A zoning system covering 25 different areas in the GTHA has been chosen to reflect different propensities to use the UPE which will be driven by:
 - Demographics of those travelling to or from the airport, for example downtown areas logically have a higher number of business non residents
 - Times and costs on the current modes of travel
 - Access to the proposed UPE stations, in terms of times, costs and ease of interchange



Approach: Relative Costs of Travel

- I The relative cost of travel for each competing mode has been established using a combination of publically available data sources and new data collected specifically for the work carried out for SNC in 2009.
- I For each current mode of travel, and for each of the 25 areas in GTHA we established:
 - The one-way cost of travel to the airport per person, both in peak and off peak travel conditions
 - For travel by private car this includes parking charges only, fuel and tolls are not taken into account
 - The time spent in the vehicle travelling to the airport, both in peak and off peak periods
 - The time to travel from an origin in the GTHA to the main mode of travel (access time)
 - For travel by private car or taxi this is zero minutes
 - For travel by transit this is the time to the transit station or stop
 - Any time spent waiting for the current mode of travel to arrive at the station or stop (transit and taxi only)
 - Time between the drop off point at the airport and the main terminal (egress time)
 - For travel by private car this is the time between the car park and the terminal, separately for the terminal and reduced rate lots which tend to be in remote locations
 - For travel by transit or taxi this is assumed to be zero minutes
- I We have developed a set of cost assumptions for travel by UPE in a similar fashion, using:
 - Assumptions about which station passengers will use from the different areas in GTHA and how they will travel to this station
 - Run times between UPE stations and the planned number of trains that will operate each hour

Exclusion per Committee Direction



Approach: UPE Characteristics and Key Assumptions

I In developing this set of forecasts for Metrolinx we have assumed the following UPE service characteristics:

- The UPE will open for service on 5th April 2015
- Trains will run every day, 365 days a year
- Hours of operation will be from 5am to 1am the following day
- There will be four trains an hour all day in each direction
- Each service will call at Union Station, Bloor, Weston and LBPIA
- Interchanges at each station will be clearly marked and easy to navigate
- Service will have a premium “look and feel” and be clearly branded as different from other rail services operating in Toronto
- The journey time between Union Station and LBPIA will be 25 minutes, in each direction

Exclusion per Committee Direction

- Planned station improvements will be completed at Union Station and that the UPE will have its own dedicated platform both at Union and at the airport station.

I In addition we have assumed that:

- During the first three years of operation, passenger numbers will “ramp-up”:
 - Year One: 65%, Year Two: 80%, Year Three: 90%
 - The ramp-up assumptions have been estimated based on other international rail services.
- Crowding constraint will be that trains do not allow for standees except under very exceptional circumstances



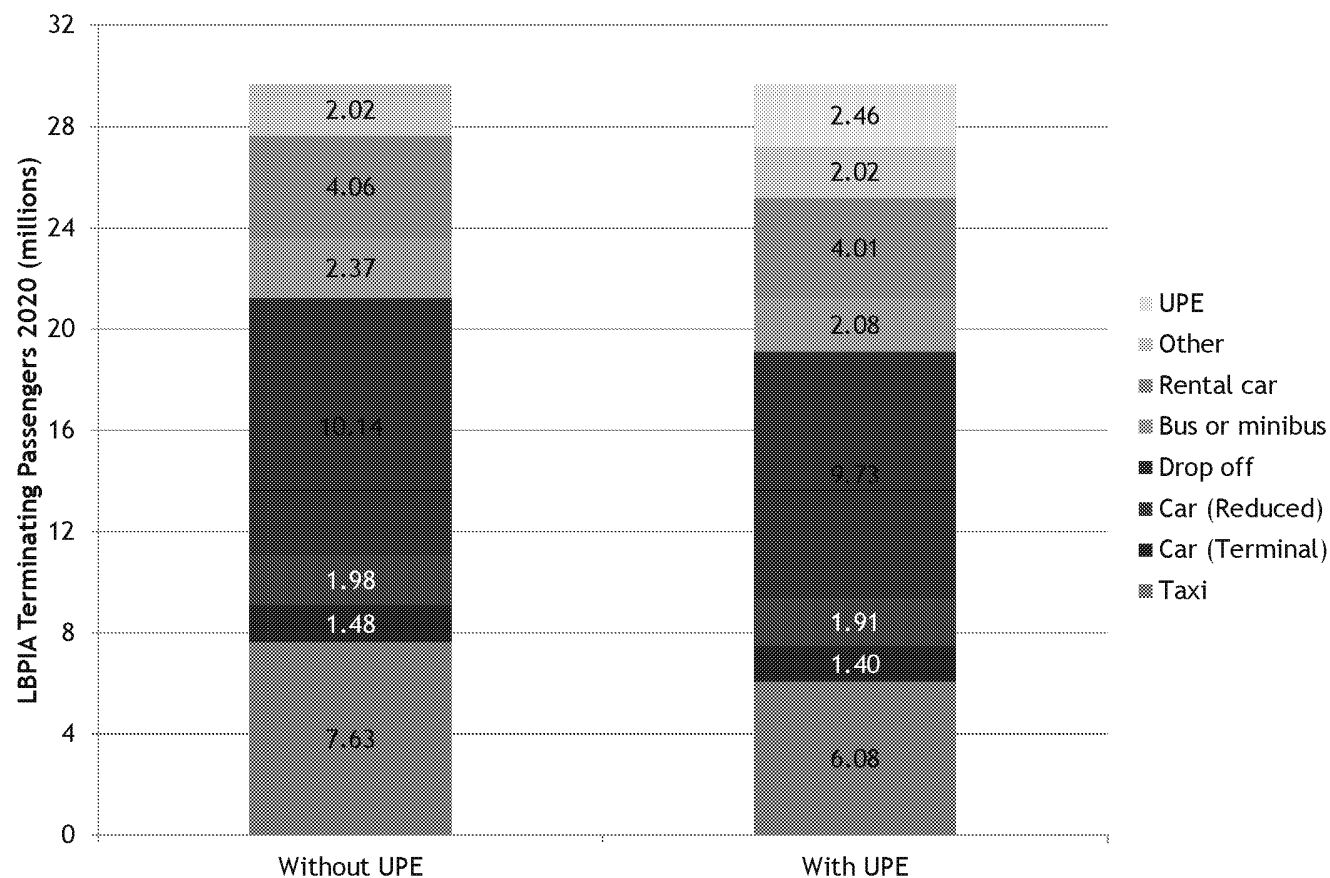
Approach: Behaviours and Decision Drivers

- Passenger behaviours and their decision drivers are a key input to the forecasting framework. They are used to reflect how the different segments of the market will react to the UPE. In simple terms we believe that all passengers will respond logically to time savings and cost differences. If one mode of travel is cheaper and faster than another, it would be perceived as more attractive.
- However there are other factors not related to time and cost which can have a bearing. These are more difficult to measure and are typically reflecting in a mode constant which reflects all other underlying preferences for one mode of travel compared to another.
- In 2009 we undertook a program of behavioural research with airport users in the terminal in order to estimate these modal preferences as well as sensitivities to time and cost. The survey was carried out as part of the wider study for SNC, with 1,260 passengers who had travelled to the airport from the in-scope area by either car, airport express bus or taxi.
- The data from this research was used to estimate behavioural choice models which allow us to quantify the modal preferences and sensitivities using a well established mathematical framework
- Please refer to the previous report from 2011.

Results

Summary in 2020

- I We have developed a base case set of forecasts for the UPE between opening year in 2015 and 2031. The forecasts suggest that the UPE will be well used with 2.46 million passengers forecast by 2020.
- I For the total market of those travelling to or from the airport by all modes, at all times and from all directions, this is equivalent to 8.3%. This corresponds well with published statistics for other air-rail links both in North America and across the world.
- I The forecast market share of those travelling to or from the airport both with and without the UPE in 2020 is shown to the right.
- I The forecasts suggest that by 2020 the market share of those passengers will change as follows:
 - Using taxis will reduce from 25.7% to 20.5%
 - Being dropped off at the airport falls from 34.1% to 32.8%
 - Travelling by any bus mode decreases from 8.0% to 7.0%
 - Parking at the airport will fall from 11.7% to 11.2%



Results

UPE Ridership and Revenue For Selected Years

- The table below shows forecast UPE ridership and revenue for the model from the opening year of 2015 and at selected intermediate years through to 2031.
- These figures include ramp-up and 2015 forecasts also account for the UPE opening date of 5 April.
- Ridership is forecast to increase in line with the growth in passengers at LBPIA, from 2.36 million in 2018 to 2.94 million in 2031.

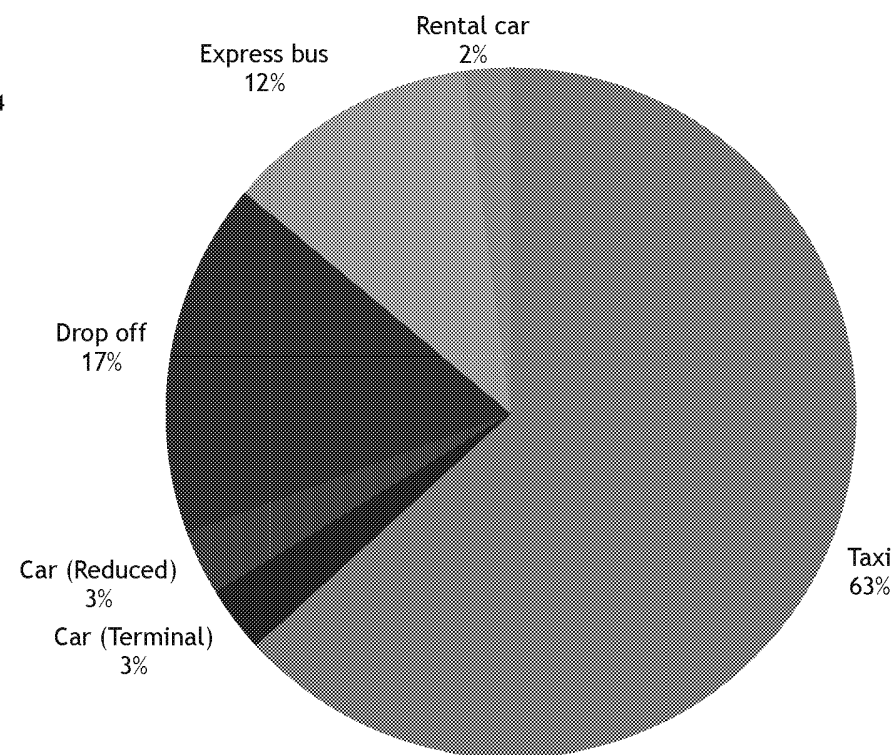
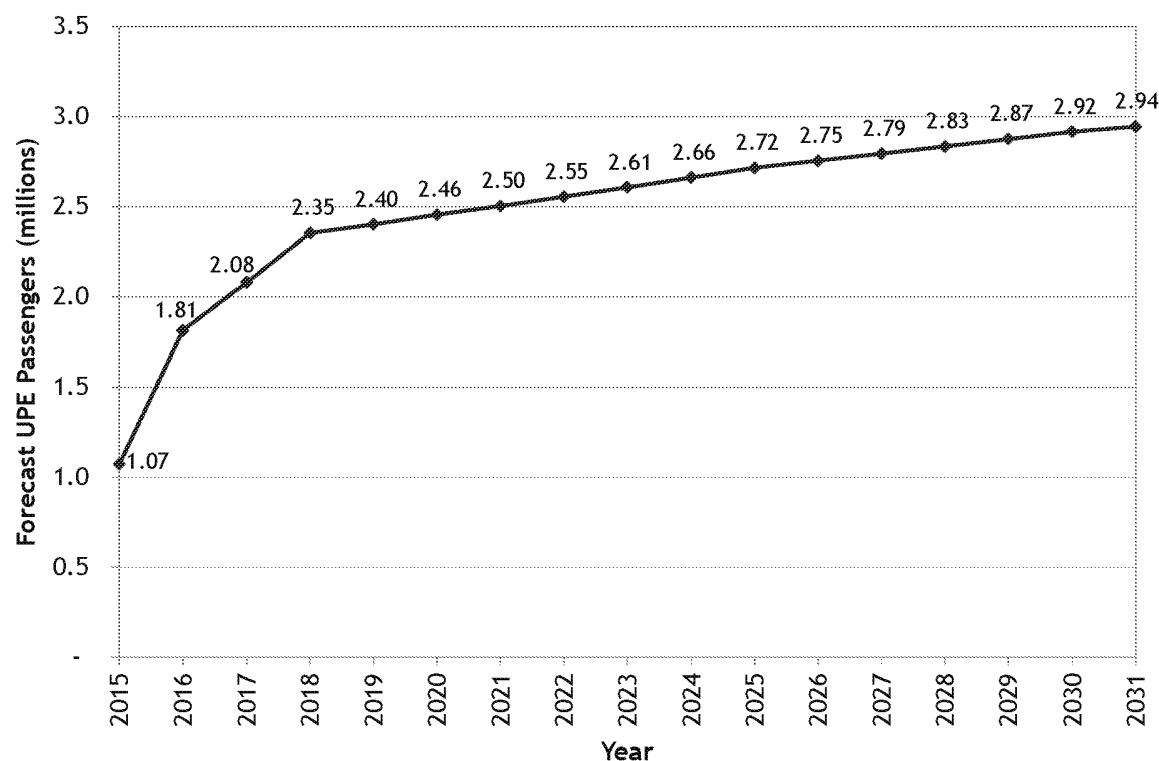
Year		2015	2016	2017	2018	2020	2025	2031
LBPIA passengers	Millions	36.5	37.3	38.0	38.8	40.6	45.1	49.5
In-scope passengers	Millions	8.0	10.9	11.1	11.4	11.9	13.1	14.2
Capture rate	%	13.5%	16.6%	18.6%	20.7%	20.7%	20.7%	20.7%
Forecast UPE ridership (one-way)	Millions	1.07	1.81	2.08	2.35	2.46	2.72	2.94

Exclusion per Committee Direction

Results

Composition of UPE Passengers and Forecast Through Time

- Exclusion per Committee Direction** annual UPE passengers are initially forecast at 1.07 million (one-way movements in either direction) in opening year (calendar year, accounting for an opening date of 5th April 2015), rising to 2.46 million in 2018 when the system reaches maturity.
- Passengers numbers are forecast to grow at an average annual rate of 1.7% per annum from 2018 until 2031 when volumes reach 2.94 million.
- In 2020, 2.46 million passengers are forecast to use the UPE. This is forecast to comprise:
 - 63% who had previously used taxis,
 - 12% who had previously used the express bus and
 - 25% who had travelled to the airport by car (either parking, rental car or being dropped off).



Results

Car Trips Taken Off the Road

- The UPE will compete with and abstract demand from existing modes of airport access and therefore remove car trips from congested roads. The table below shows the forecast number of car trips that will be removed due to air passengers choosing to travel by UPE.
- The two competitive modes that will be most significantly impacted by UPE are taxi and drop off.
- Based on assumptions around average vehicle occupancy from the 2009 SDG survey, we forecast that in 2020 1.98 million fewer car trips will be made to or from LBPIA as a result of UPE, made up of 1.47 million taxi trips and 0.51 million private car trips.

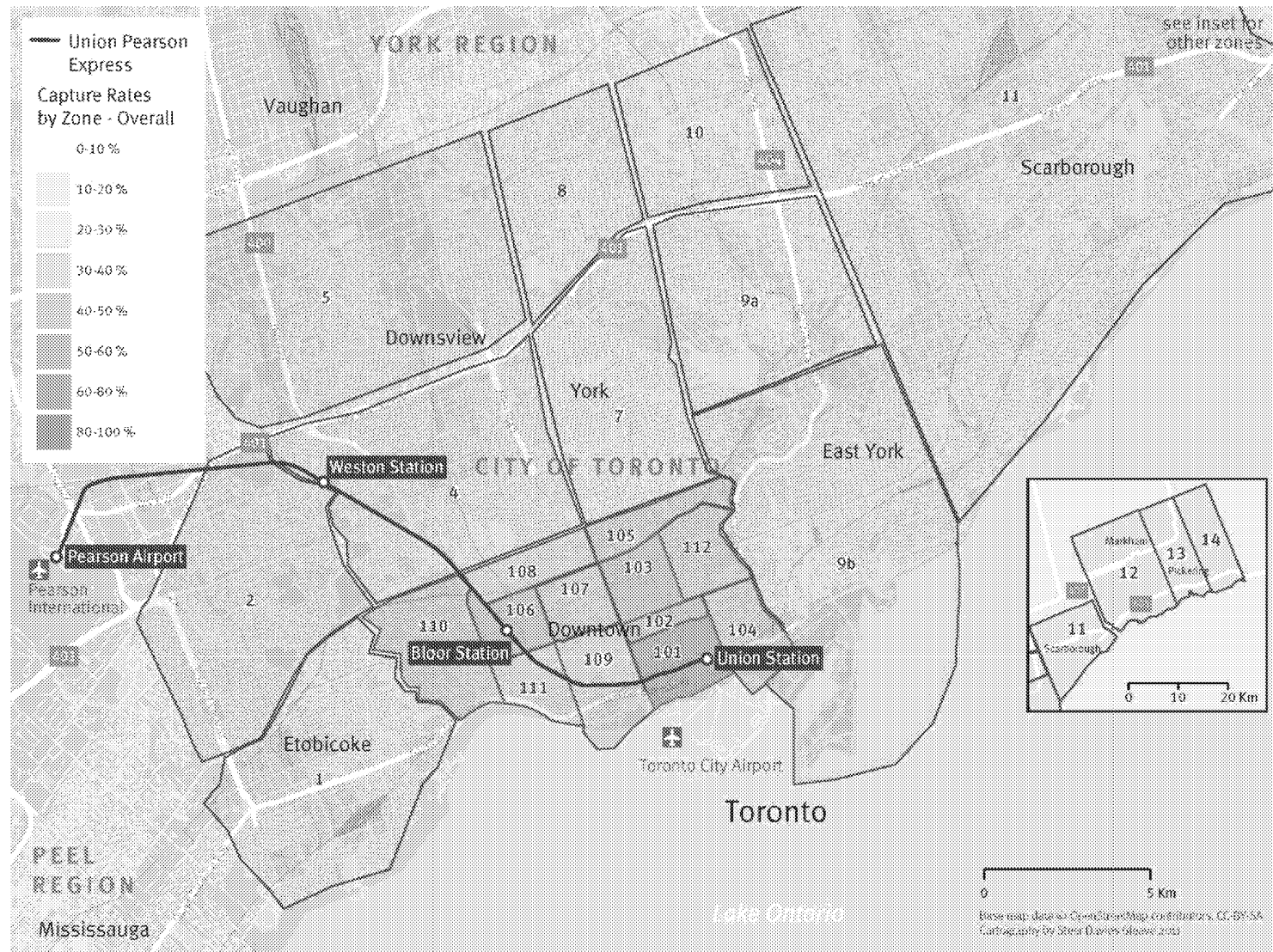
Car trips removed from road (millions)	2015*	2018	2020	2025	2031
Taxi	0.66	1.42	1.47	1.59	1.69
Car (Terminal)	0.03	0.07	0.07	0.07	0.08
Car (Reduced)	0.03	0.06	0.07	0.07	0.08
Drop off	0.13	0.31	0.33	0.39	0.46
Rental Car	0.02	0.05	0.05	0.05	0.06
Total	0.87	1.90	1.98	2.18	2.36

* 2015 figures incorporate ramp-up and 5 April opening date

Results

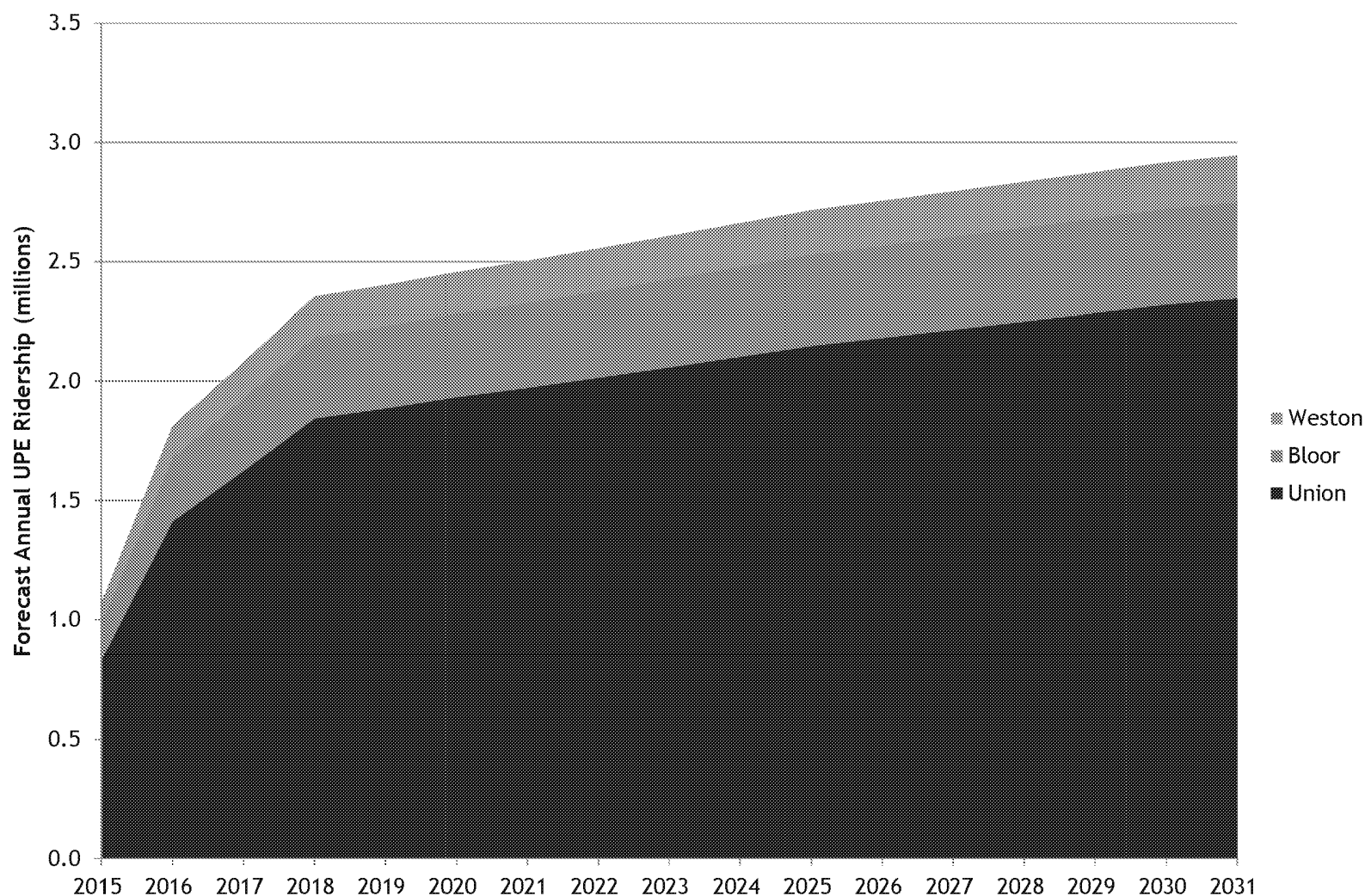
Capture Rates by Area of Toronto in 2020

- I The number of passengers attracted to the UPE varies across different areas in Toronto. The highest numbers are attracted from the downtown areas, and in particular the area closest to Union Station where the station can be accessed by foot.
- I For the area immediately around Union Station (zone 101), 60% of the overall in-scope market is captured by the UPE. The downtown area (zones 101-112) accounts for 73% of the forecast demand for the UP Express.



Forecast Ridership by Station

- The chart shows the forecast UPE ridership by station in each year.
- Since in-scope demand and capture rates are highest in the Downtown area near Union station, this station accounts for the majority of ridership (79% in 2020)
- Capture rates for Bloor zones are relatively high, but in-scope demand is lower. Bloor accounts for 14% of forecast 2020 ridership.
- The remaining 7% of UPE riders in 2020 are expected to use Weston station, where capture rates are low because of relatively short journey times to the airport by car.



Results

Forecast Ridership by Flight Sector, Residence and Purpose

I The tables to the right show the breakdown of forecast UPE ridership by flight sector, residence of GTHA and journey purpose.

I Demand by flight sector:

- International passengers make up 35% of forecast LBPIA air traffic in 2015, but only 28% of expected UPE demand. Capture rates are lower than for domestic/transborder passengers because of the higher proportion carrying luggage and hence having more inherent preference for door-to-door highway modes (modelled as a penalty to UPE against car/taxi for international passengers).
- Domestic passengers make up a smaller share of UPE ridership over time as that sector is forecast to grow at a slower rate than international passengers.

Flight Sector Split of UPE Ridership	2015	2018	2020	2025	2031
Domestic	39.7%	38.6%	38.0%	37.1%	36.2%
Transborder	32.4%	32.5%	32.5%	32.6%	32.7%
International	27.9%	29.0%	29.5%	30.3%	31.2%

I Resident and non-resident demand:

- The in-scope demand split is close to 50:50 in 2015, but capture rates are higher for non-residents of GTHA, hence we forecast over 60% of UPE riders will be visitors to Toronto.
- Capture rates are higher for non-residents due to higher values of time, meaning that the time savings offered by UPE are more highly valued.

Residence Split of UPE Ridership	2015	2018	2020	2025	2031
Resident of GTHA	37.4%	37.9%	38.3%	38.7%	39.2%
Non-Resident of GTHA	62.6%	62.1%	61.7%	61.3%	60.8%

I Journey purpose split of demand:

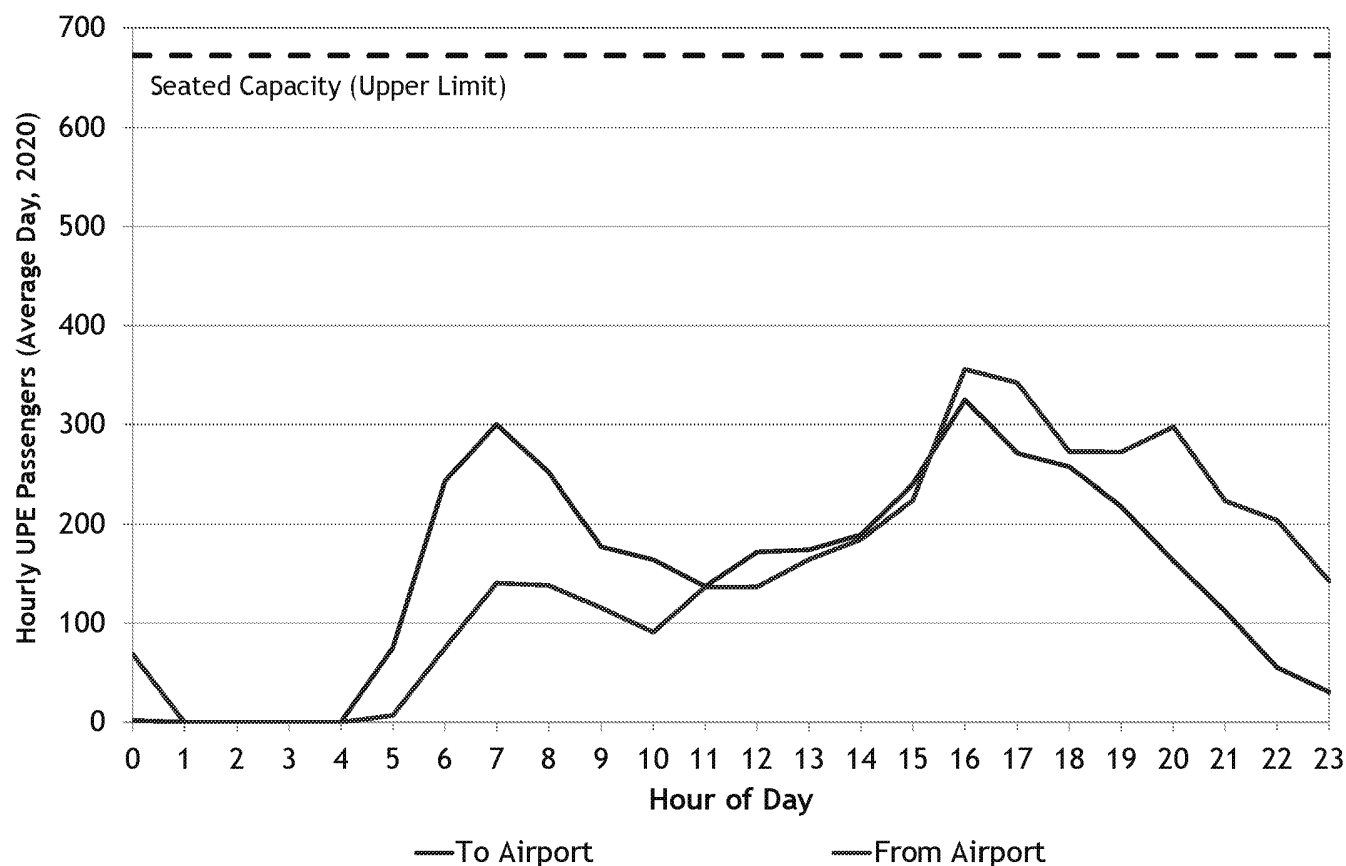
- Business users make up 40% of in-scope demand in 2015, but 55% of forecast UPE ridership, due to higher capture rates.
- Capture is higher for business passengers due to higher values of time, and account for a lower proportion on international flights.

Purpose Split of UPE Ridership	2015	2018	2020	2025	2031
Business	55.2%	54.8%	54.6%	54.0%	53.6%
Leisure	44.8%	45.2%	45.4%	46.0%	46.4%

Results

UPE Passengers by Time of Day on an Average Day in 2020

- By adopting the GTAA hour of the day passenger profiles from 2012, we have developed forecasts for each hour of UPE service. The figure below shows the likely range of passenger volumes in 2020 in both directions of travel separately.
- An allowance has been made for the amount of time that passengers typically need both to pass through the airport when:
 - arriving at LBPIA (45 minutes domestic/transborder, 60 minutes international), and
 - check-in and security checks (60/90/120 minutes for domestic, transborder and international respectively).



- In general the afternoon period is likely to be busier on the UPE compared to the morning due to the high volume of international flights taking off and landing in the afternoon.
- Forecast demand to the airport between 06:00 and 08:00 is also high.
- We have been advised by Metrolinx that the hourly seated capacity will be between 576 and 672, depending on the mix of 2 and 3-car consists. Both are well above forecast hourly demand.
- On an average day across the year, including both weekends and weekdays, we forecast that the forecast passengers can be comfortably accommodated, even in the peak period.

Results

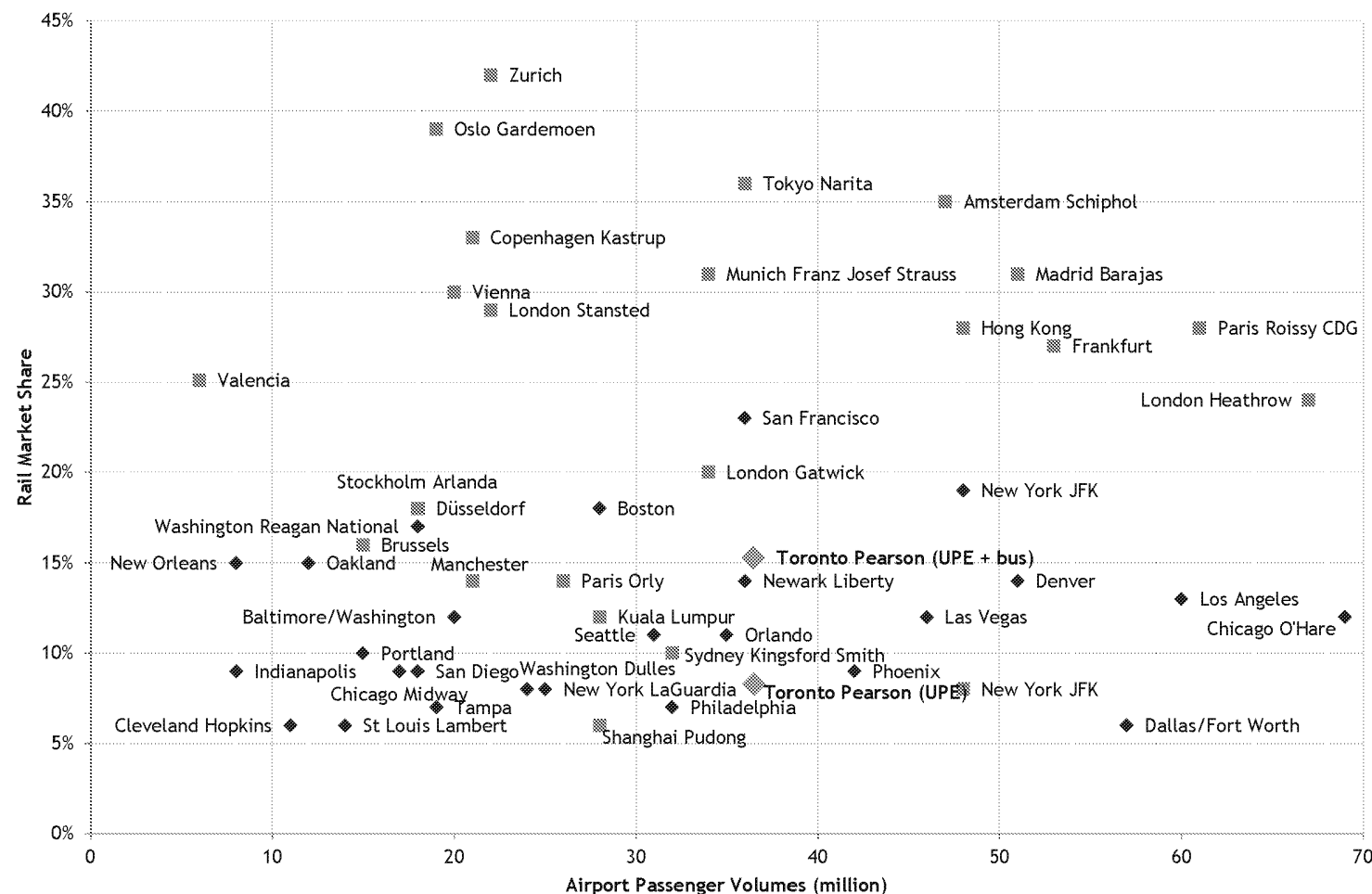
Comparison with Other International Airports

The figure shows the rail market share for access to a number of world airports against the airport passenger volumes in millions.

- For other North American airports we show total transit share (rail + bus).
- The figures are for a range of recent years, depending on available information.
- LBPIA forecasts are shown for 2020 in green, for UPE with and without bus (all bus services, including but not limited to the Airport Express).

With a forecast market share of 8.3% and passenger volumes of 2.5 million in 2020, the UPE in Toronto is comparable with other North American cities such as:

- Vancouver, served by the Canada Line rapid transit service: 10% rail market share;
- Chicago Midway, served by Chicago Transit Authority "L" trains: 6% rail and 9% transit overall;
- Seattle, served by the Link light rail service: overall transit market share of 11%; and
- Baltimore Washington, served by a large number of rail services (Amtrak, MARC and a light rail system): 12% transit market share.



Exclusion per Committee Direction

Exclusion per Committee Direction

Exclusion per Committee Direction

Exclusion per Committee Direction

Commercially Sensitive Information

Conclusion

- I 40.6 million passengers are forecast to use LBPIA in 2020. Removing those transferring between planes leaves close to 30 million surface access passengers.
 - The UPE is forecast to carry 8.3% of the surface access market. This is well within the range of other airports in the world, and in particular North American rail links such as Vancouver and Chicago.
- I In opening year we forecast that the UPE will carry 1.07 million passengers, with 2.35 million by 2018 when the system reaches maturity. This is assuming a 65% ramp-up in the first year, which may be conservative given the Pan-Am Games in July 2015, just three months after opening. By 2020 passenger numbers are forecast to reach 2.46 million with:
 - 63% who had previously used taxis,
 - 12% who had previously used the express bus and
 - 25% who had travelled to the airport by car (either parking, rental car or being dropped off).
- I Capture rates vary depending on the area of Toronto that passengers are travelling from.
 - For the area immediately around Union Station in the downtown area, 60% are captured from the overall in-scope market.
 - And the area around Bloor Station is 47%.
 - 73% of the forecast 2020 UP Express ridership are travelling to or from the Downtown area.

Exclusion per Committee Direction

Appendix A - Pan Am / Parapan Am Games, Toronto 2015

Forecasts of Additional UPE Ridership

- I Toronto is the host city for the 2015 Pan Am and Parapan Am Games, which will take place over a fortnight in July and a week in August respectively.
- I 250,000 visitors (excluding athletes and Games Family) are forecast to travel to Toronto for the two Games combined, the majority of whom will arrive and depart from LBPIA and stay in either Downtown Toronto or close to Games venues. Hence the Games can be expected to lead to significant additional demand for the UPE.
- I We forecast that the Games will lead to around 130,000 additional UPE trips, over and above the forecasts presented in this report, representing a 26% share of Games visitor journeys.
 - This is an average of around 4,000 additional passengers per day across the duration of each Games and the two days preceding/following each (8-28 July and 5-16 August)
- I The key methodology and assumptions underpinning this forecast are as follows:
 - Flight sector split of 500,000 additional trips: 40% domestic, 40% transborder, 10% international, 10% non-LBPIA (SDG assumption);
 - Proportion arriving/departing in out-of-scope hours the same as for non-Games demand;
 - 95% travelling to/from geographic locations 'in-scope' for our modelling (SDG assumption);
 - No Pan Am / Parapan Am demand expected to use modes out of scope for our modelling, e.g. TTC;
 - This leads to 405,000 journeys in scope for the UPE;
 - Geographic distribution estimated based on split for non-business, non-resident demand in capture model, but adjusted to increase proportion travelling to core Downtown area (zones 101-104) to account for many hotels in this area and also increase modelled demand to zones containing Games venues (e.g. Pam Am Park in zone 109);
 - UPE mode share of in-scope journeys sourced from capture model by zone and flight sector for non-business, non-resident passengers in 2015; and
 - No ramp-up effect assumed since the service will be well-marketed to potential riders associated with the Games, many of whom will be new to Toronto.

- I A breakdown of forecast additional ridership and revenue is shown in the table to the right.

- I It should be noted that these forecasts are an initial estimate based on SDG assumptions and judgement, and caution should be applied in their application.

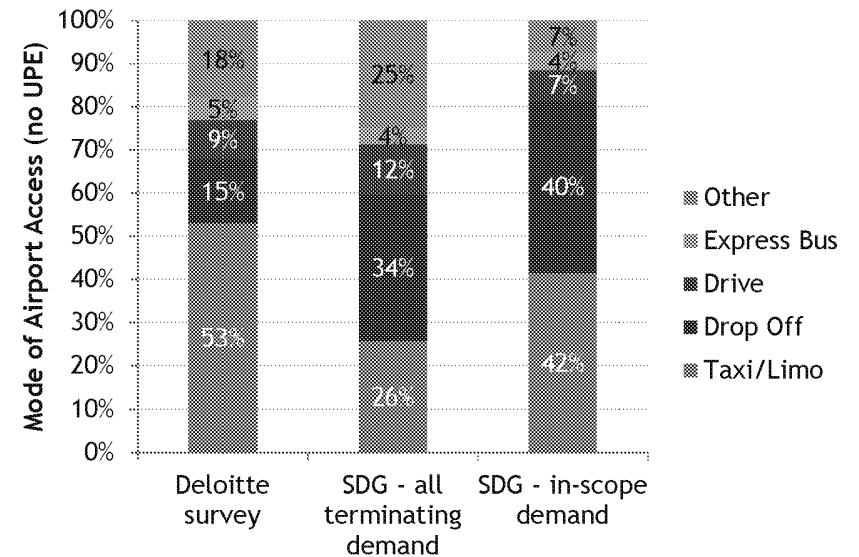
UPE Station	Ridership (000s)	Exclusion per Committee Direction
Union	121	
Bloor	7	
Weston	2	
Total	130	

Exclusion per Committee Direction

Appendix B - Review of Deloitte Survey 2012

Areas of Difference and Further Considerations

- I There appears to be some discrepancy between our modelled demand profile and the Deloitte sample in terms of current mode of airport access.
 - Deloitte sample suggests larger taxi and smaller drop-off market than implied by our demand profile.
 - Deloitte sample also includes 13% accessing the airport by public transit, whereas these passengers made up only 4% of the 2009 SDG survey.
- I In addition, there are differences in the sample compared to the SDG 2009 survey used to generate behavioural parameters, in terms of:
 - Type of trip origin (home / work / hotel / other);
 - Proportion checking in luggage;
 - Who pays for the journey; and;
 - Age profile.
- I It is difficult to draw conclusions about or attempt to account for the apparent discrepancies without further information about the Deloitte survey, such as how, when and where the sample was sourced and who was 'in-scope' for the survey.
- I In addition, we have some concerns about the weighting process adopted by Deloitte 'to ensure representation is aligned with the SDG Ridership Study':
 - Business / leisure weighting appears to be based on the purpose split in our **air traffic forecast** for 2020.
 - Weighted distribution between zones appears to be based on the zonal breakdown of the **UPE ridership** forecasts for 2020.
 - We believe it would be more appropriate for both to be weighted based on 2020 **in-scope demand**, which would provide significantly different weights (less weighting given to downtown areas and leisure passengers).
- I Despite these concerns, there may be an argument for further consideration of the mode splits assumed in our modelling
 - However it should be noted that the SDG survey and demand profile match well with other recent surveys such as that carried out by Northstar in 2011.
- I We could carry out further analysis and comparison if provided with the raw Deloitte dataset and further information about their survey and sample.



Control Sheet

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REVIEW

Originator:	Katie Tang
Other Contributors:	Sarah Berman
Review By:	Print: Jim Richards Sign:

DISTRIBUTION

Clients:	Stephan Mehr, Philip Safos, Daniel Haufschild
Steer Davies Gleave:	JXR, SEB, KVT

