

City of
Bellevue



MEMORANDUM

DATE: April 1, 2010

TO: Transportation Commission

FROM: Drew Redman, Associate Planner
Transportation Department
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SUBJECT: Citywide Transportation Demand Management (TDM) Plan Update

Purpose

On April 8, staff will present preliminary mode share targets and strategies for a Citywide Transportation Demand Management (TDM) Plan. Staff welcome Transportation Commission input about the analysis, potential strategies, and next steps.

Background

To meet current adopted mode share targets in the table below, the City has, for many years, partnered with King County Metro and TransManage to implement TDM strategies in order to mitigate congestion and observe state Commute Trip Reduction (CTR) regulations. Although these strategies were and continue to be effective, there was no short-term or long-term planning framework for TDM activities. Concurrent with a sharp increase in downtown development, the City in 2007 developed and began implementing a cohesive 4-year "Connect Downtown" TDM plan. Partially due to the successes of this Downtown plan, staff is now developing a 10-year Citywide TDM plan.

| 2005 Non-SOV Target Mode Share | |
|--------------------------------|-----|
| Downtown Bellevue | 40% |
| Bel-Red / Northup | 25% |
| Crossroads | 25% |
| Eastgate | 35% |
| Factoria | 20% |

On July 9, staff presented to the Transportation Commission a scope of work for the 10-year Citywide TDM Plan. The plan will establish 2020 mode share targets and lay out strategies to meet those targets, primarily in designated commercial Mobility Management Areas (Downtown, Bel-Red, Crossroads, Eastgate, Factoria, and Wilburton).

Discussion

The attached documents give an overview of the mode share target development and strategies to reach those targets. Attachment 1 reviews the mode share modeling results and the role of parking in developing appropriate mode share targets. As the primary focus of TDM activities, employee distributions and type of work are examined in Attachment 2. Attachment 3 outlines TDM best practices and suitable implementation strategies.

Next Steps

Staff will engage stakeholders; develop a draft plan for public comment; and follow up with the Transportation Commission. A final draft may be considered by Council, to be integrated with Comprehensive Plan amendments.

Attachments

1. Mode Share Target Analysis
2. Employment Characteristics
3. Potential Transportation Demand Management (TDM) Plan Strategies

Attachment 1: Mode Share Target Analysis

Transportation modeling allows an understanding of existing (2008) and prospective 2020 travel characteristics. The following is a summary of the model result analysis for TDM purposes.

Methodology

Transportation modeling results are based upon on a mixture of actual traffic counts and roadway infrastructure and some assumptions including land use and vehicle occupancy. Existing and permitted land uses were included.

Each trip has an origin (e.g. home) and destination (e.g. work), and purpose. There are four trip purpose categories:

- Home-Based Work (HBW) trips are commute trips from or to home.
- Home-Based Other (HBO) trips are trips to or from home such as for shopping, entertainment, or running errands.
- Non-Home Based (NHB) trips are trips from any non-home location such as work to any non-home location such as a grocery store.
- School (SCH) trips are trips to or from primary and secondary schools (i.e. not college).

Trips occur during a peak AM period (i.e. morning rush hour), a peak PM period (i.e. afternoon rush hour), or during a non-peak period.

Trips are also differentiated by mode splits such as Single-Occupant Vehicle (SOV), High-Occupant Vehicle (HOV), and Transit.

- 53% of non-transit HBO trips are assumed HOV and 47% are SOV
- 45% of non-transit NHB trips are assumed HOV and 55% are SOV
- 90% of non-transit SCH trips are assumed HOV and 10% are SOV
- Assumed HBW HOV Average Vehicle Occupancy (AVO) is 2.27
- Assumed HBO HOV AVO is 2.47
- Assumed NHB HOV AVO is 2.42
- Assumed SCH HOV AVO is 2.81

Findings

Figure 1: Commute Trips

- AM Peak Home-Based Work SOV trips represent morning commutes, mostly occurring in Downtown, Bel-Red, and Eastgate.
- When only AM Peak Home-Based Work trip *destinations* are analyzed, Wilburton is the 4th major MMA receiving trips (likely due to the medical district).

Figures 2 and 3: Peak and Non-Peak Trips

- In 2020, both peak and non-peak trips show an overall increase, though non-peak trips make up the majority of trips in 2008, and a slightly larger proportion in 2020.

Figures 4 and 5: Daily Trips

- Most trips occur in Downtown, Bel-Red, Eastgate, and East Bellevue Mobility Management Areas, representing over half of all trips in 2008 and 2020.

- Factoria, Crossroads, and Wilburton MMAs share only 4%-6% of Citywide trips, not many trips for being designated commercial areas.

Figures 6 through 11: Peak and Non-Peak Trips by Purpose

- School trips represent a small proportion of overall and peak trips.
- Home-Based Work (commute) trips represent the majority of trips during the AM peak period.
- Home-Based Other trips represent the majority of trips during the PM peak period.
- Home-Based Other trips represent the majority of trips during the Non-Peak period.
- Even though there is an overall increase in trips (except for Bridle Trails MMA), there is little to no change in the distribution of trip purposes in each MMA.

Figures 12 through 17: Peak and Non-Peak Mode Splits by Purpose

- There is a decrease in Home-Based Work SOV AM and PM Peak trips from 2008 to 2020 (i.e. reduction in drive alone commuting during AM and PM peak hours), and an increase in AM and PM Peak SOV trips for Home-Based Other, Non-Home-Based, and School purposes (i.e. more people driving alone at peak hours for non-work purposes).
- There is a decrease in Home-Based Other and School SOV Non-Peak trips from 2008 to 2020, and an increase in Non-Peak SOV trips for Home-Based Work and Non-Home-Based purposes (i.e. during the Non-Peak, there are fewer people driving alone for school and other trips, but more people driving alone for work and non-home-based trips).

Discussion

Modeling results in Figure 1 reveal the following Non-SOV commute mode shares for commercial Mobility Management Areas in 2020.

| 2020 NON-SOV MODE SHARE | |
|-------------------------|---------------|
| MMA | MODEL RESULTS |
| Downtown | 38% |
| Wilburton | 30% |
| Crossroads | 21% |
| Eastgate | 18% |
| Bel-Red | 25% |
| Factoria | 24% |

To validate these results, the table below compares the most recent available information of model results for 2008 commute trips (i.e. AM Peak Home-Based Work trip destinations in Figure 1) with commute trips measured in the 2008 Mode Share Survey (employees surveyed at Bellevue work locations).

| 2008 NON-SOV MODE SHARE | | | |
|-------------------------|---------------|---------------------------|-----|
| MMA | MODEL RESULTS | MODE SHARE SURVEY RESULTS | GAP |
| Downtown | 23% | 39% | 16% |
| Wilburton | 14% | Analysis Underway | |
| Crossroads | 15% | 15% | 0% |
| Eastgate | 12% | 27% | 15% |
| Bel-Red | 14% | 15% | 1% |
| Factoria | 11% | 31% | 20% |
| Standard Deviation | | | 9% |

The table demonstrates that the non-SOV mode shares are roughly comparable; however, there are some critical differences:

- The Mode Share Survey does not measure sole proprietors.
- The Mode Share Survey is an actual commute measurement that is statistically representative of employees in a MMA, whereas the AM Peak HBW trip destinations are estimated person trips based off of traffic counts.

Consequently, establishing 2020 mode share targets may build off of modeling results, but will require stakeholder engagement to develop feasible and acceptable targets.

While the majority of trips are non-peak, the traditional focus of TDM in the City has been peak trips because the peak commute hours are when the transportation network is the most congested and the local air quality is most impacted. With more attention being paid to transportation-related greenhouse gas emissions and degraded water quality due to stormwater runoff, non-peak trips may warrant more focus than has traditionally been the case.

The Factoria, Crossroads, and Wilburton MMAs, while designated as “commercial,” account for relatively modest amounts of trip volumes (4%-6% each). Their “commercial” designation refers more to their character and does not necessarily indicate their significance in trip generation terms. East Bellevue is not a designated commercial area, but it generates 8%-9% of peak and non-peak trips (Figure 5). This area may warrant attention for TDM efforts.

AM Peak HBW Mode Split Origins and Destinations by Mobility Management Area: 2008 and 2020

* Designated Commercial Mobility Management Area

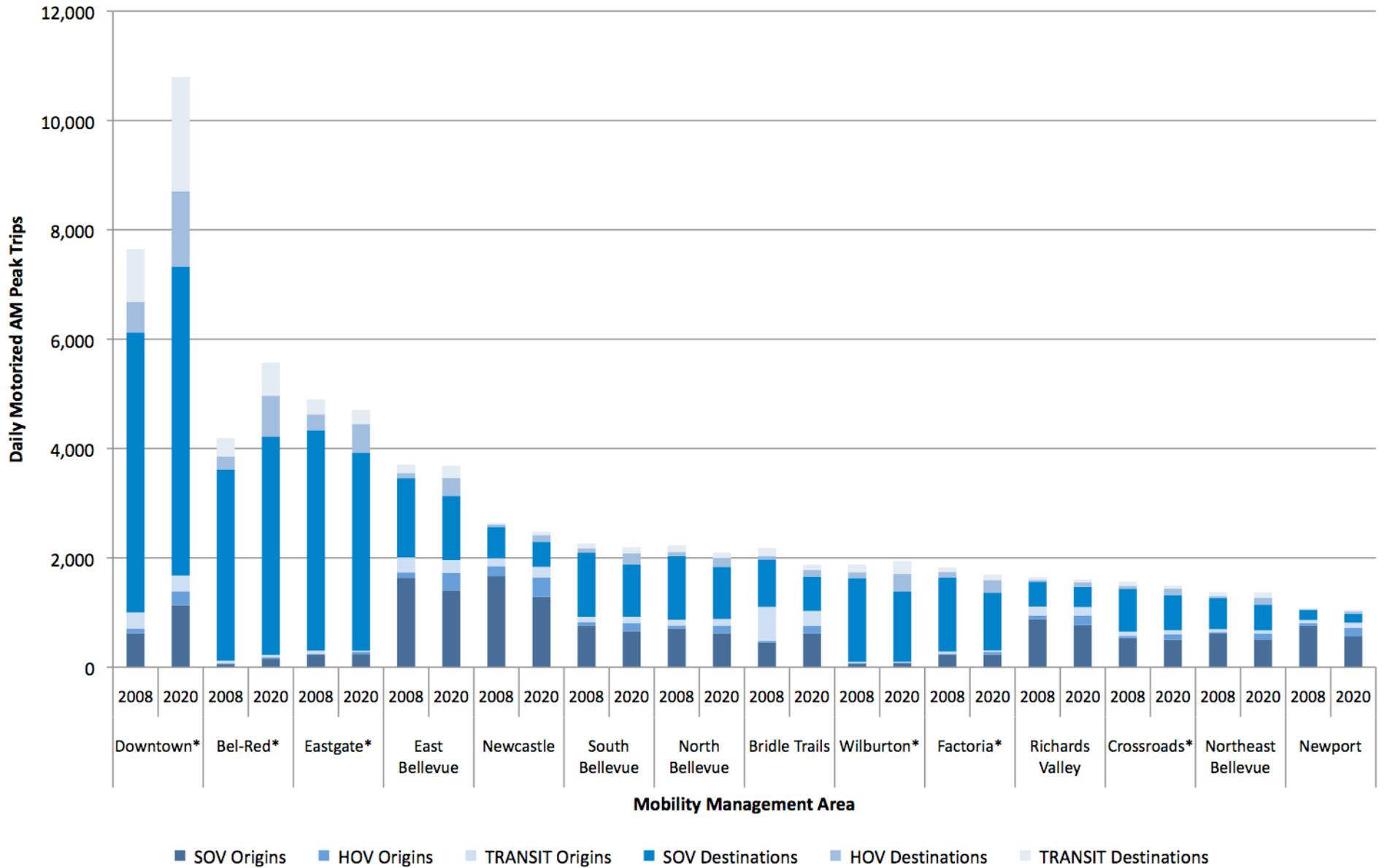


Figure 1: Commute Trips

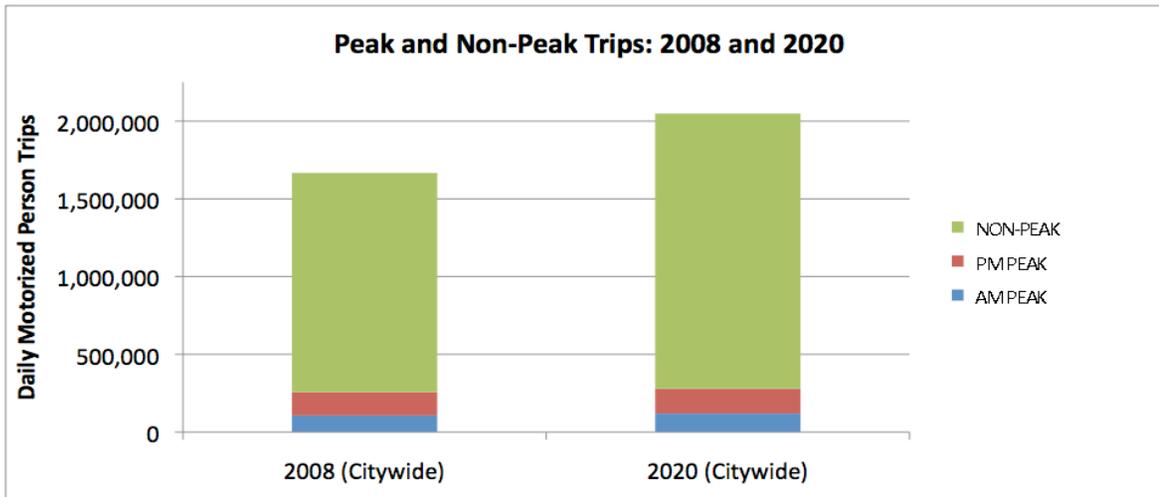


Figure 2: Peak and Non-Peak Trips

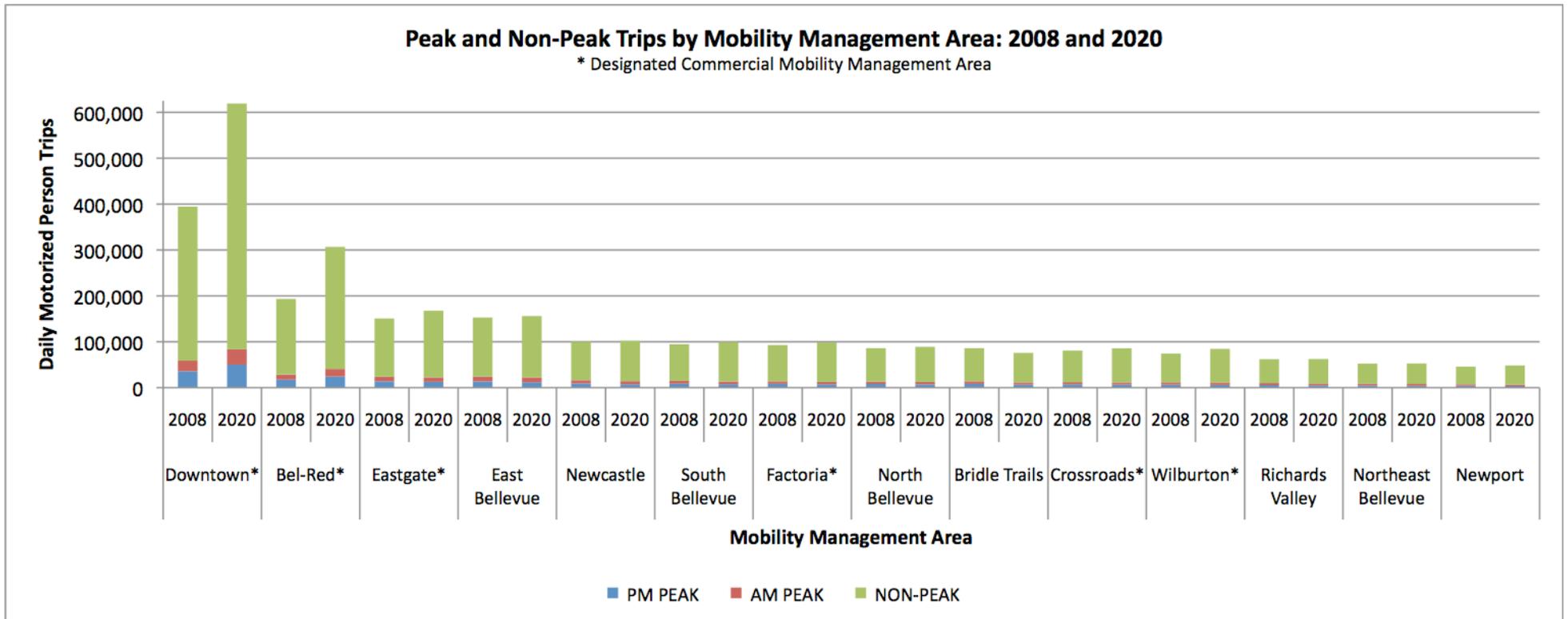


Figure 3: Peak and Non-Peak Trips

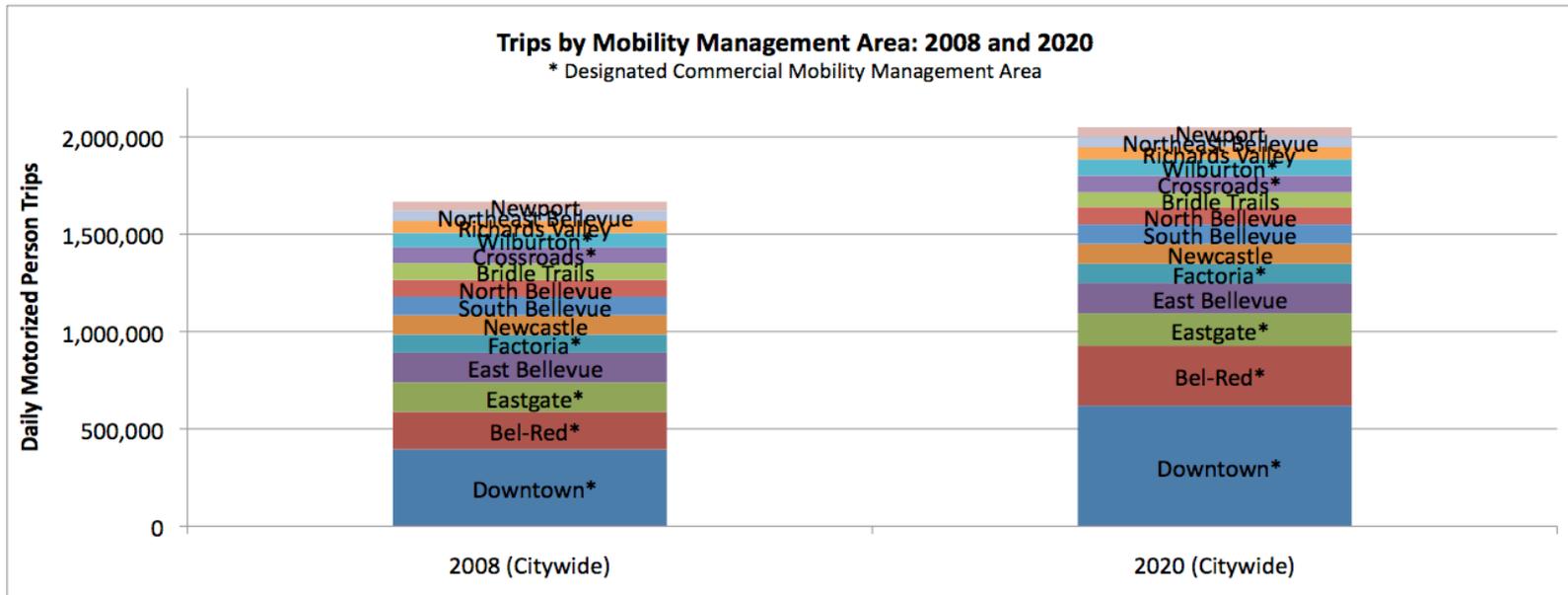


Figure 4: Daily Trips

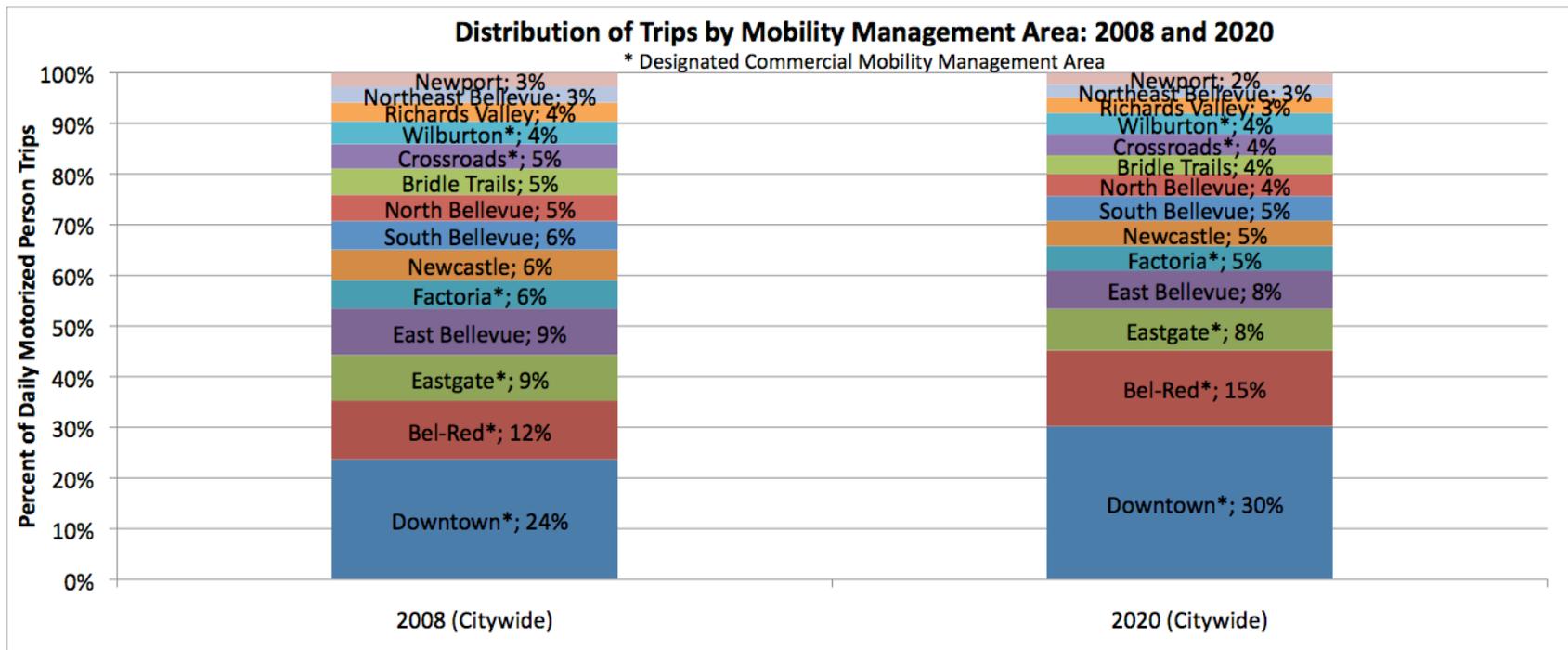


Figure 5: Daily Trips

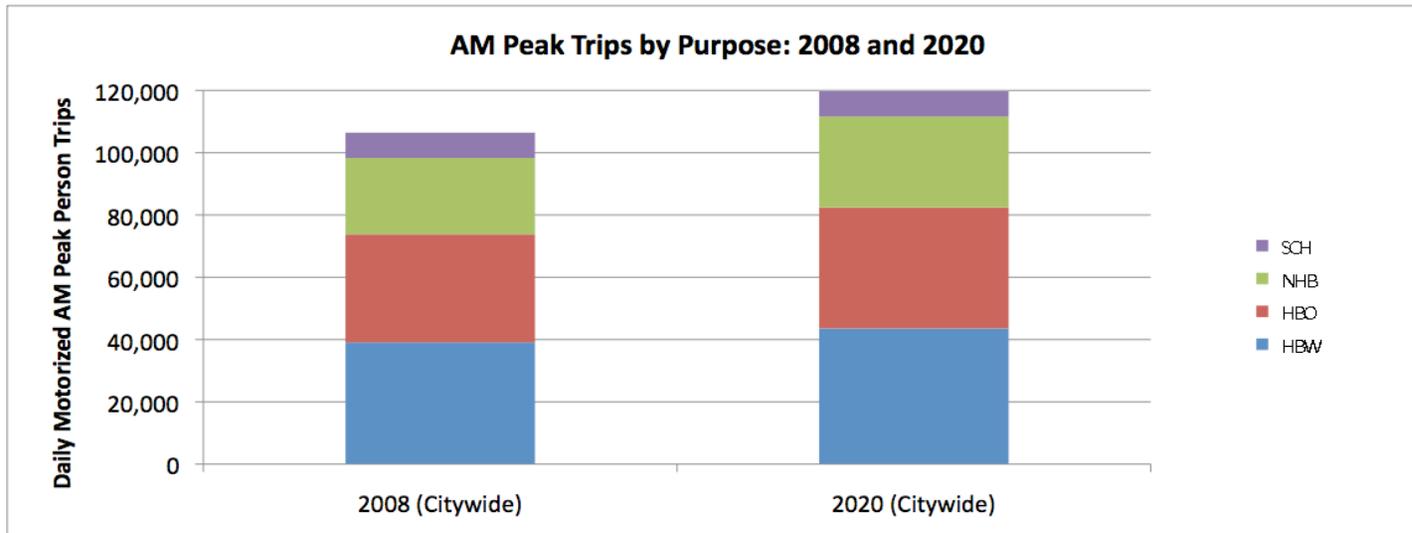


Figure 6: AM Peak Trips by Purpose

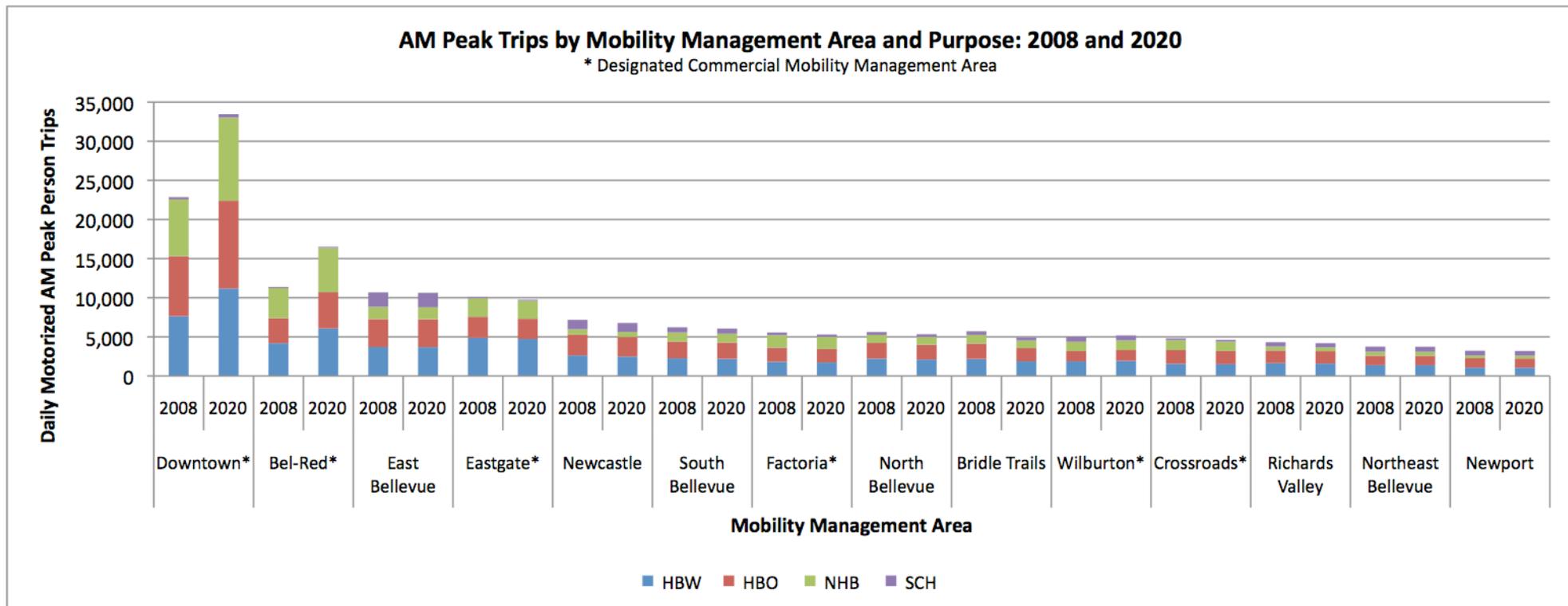


Figure 7: AM Peak Trips by Purpose

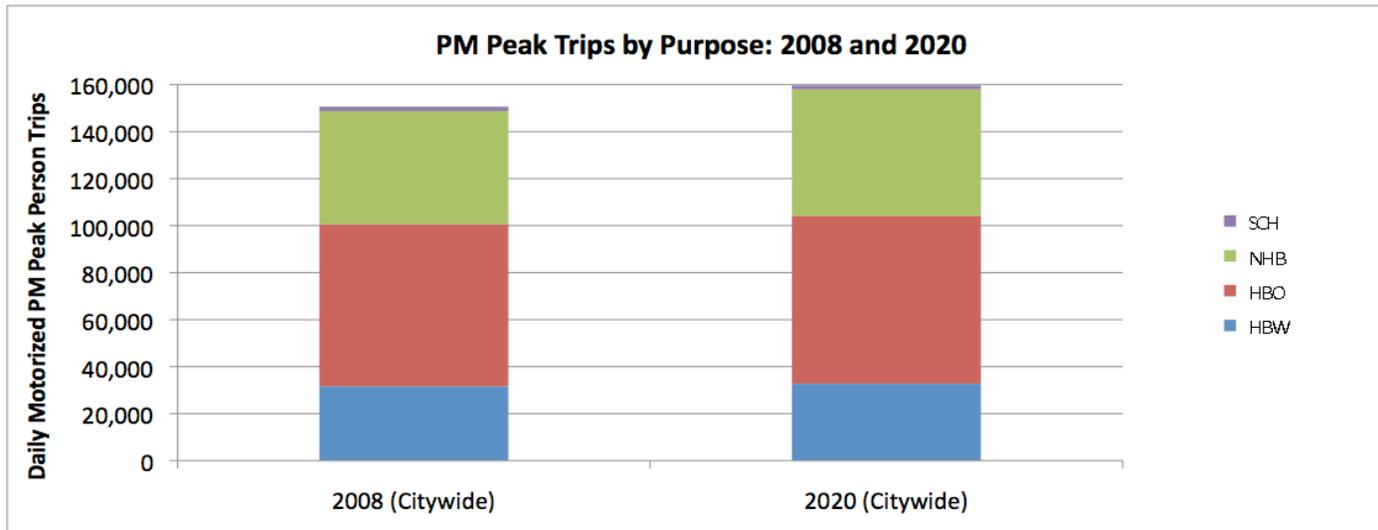


Figure 8: PM Peak Trips by Purpose

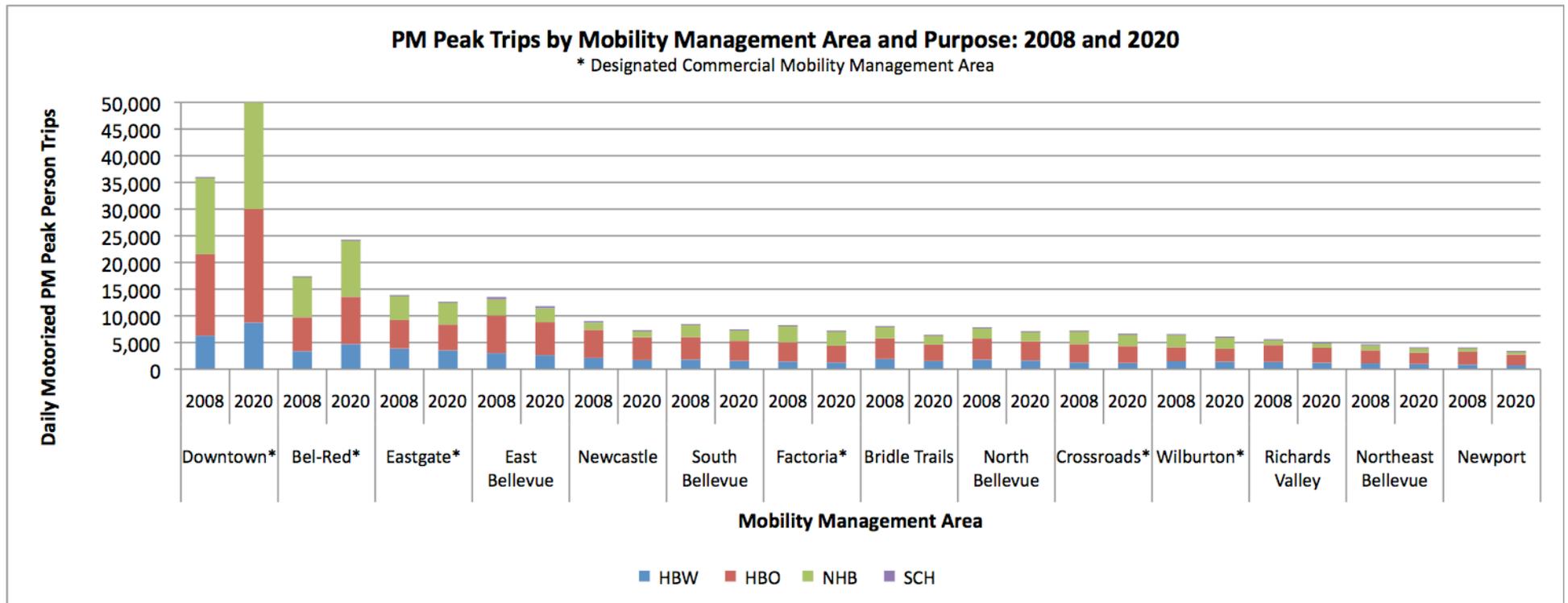


Figure 9: PM Peak Trips by Purpose

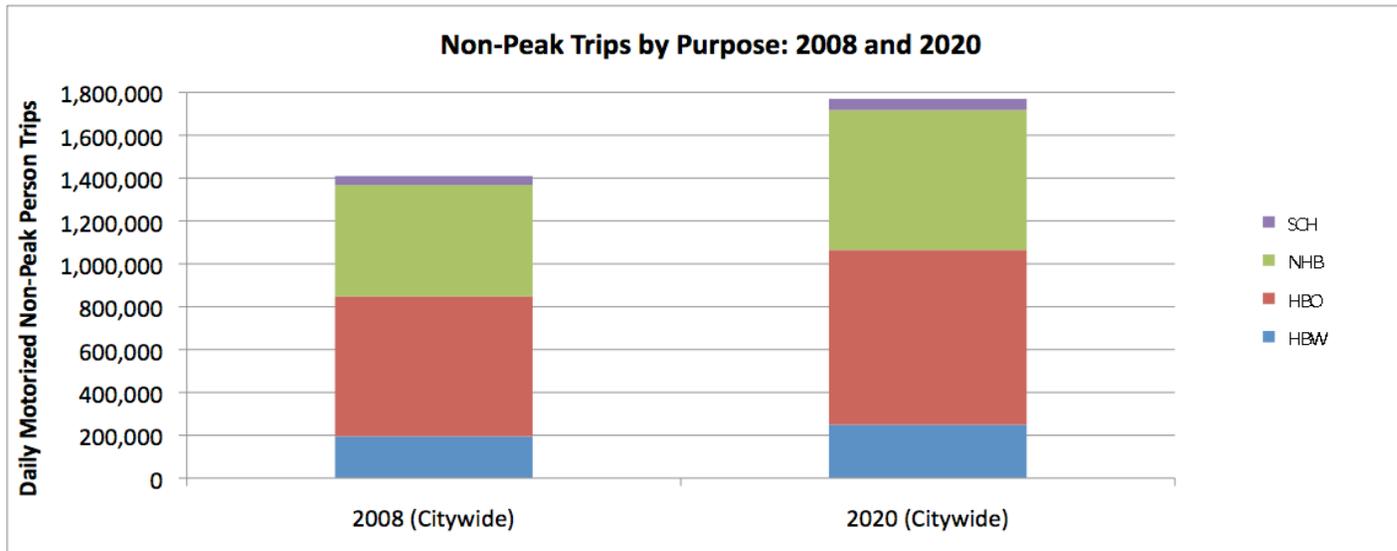


Figure 10: Non-Peak Trips by Purpose

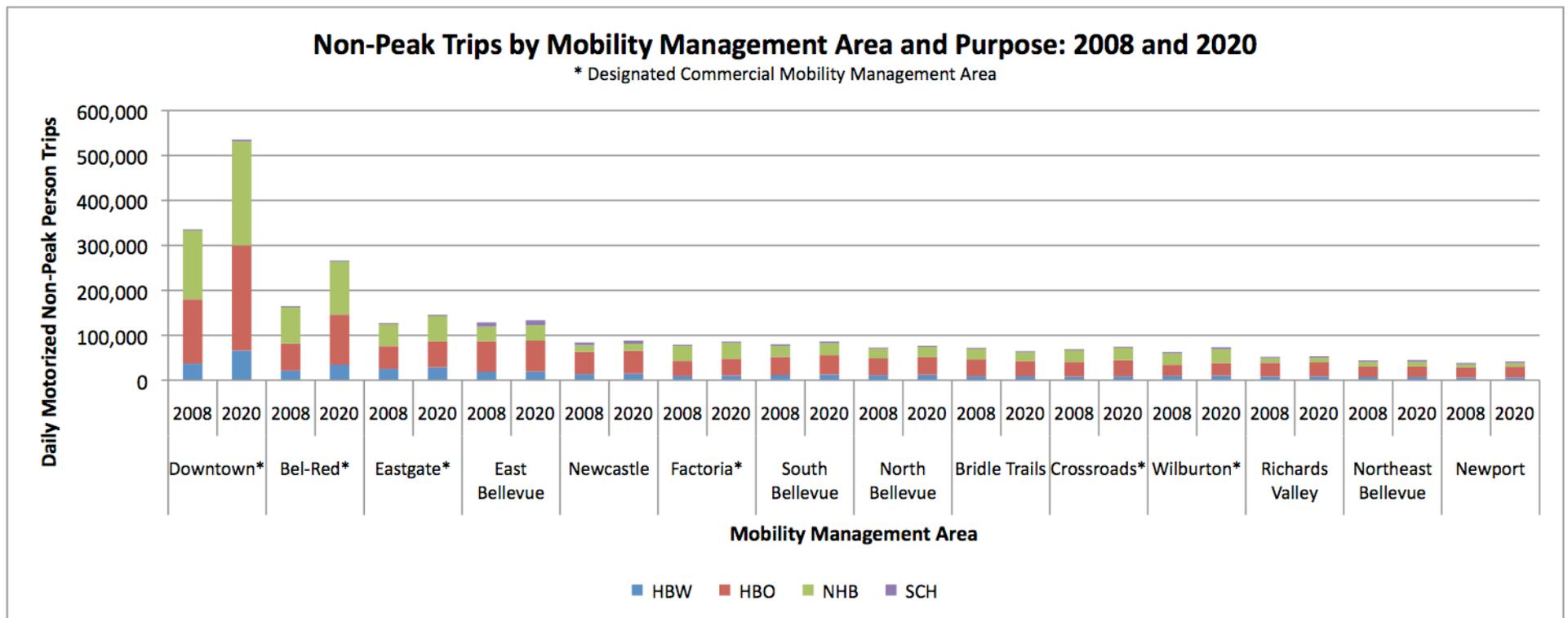


Figure 11: Non-Peak Trips by Purpose

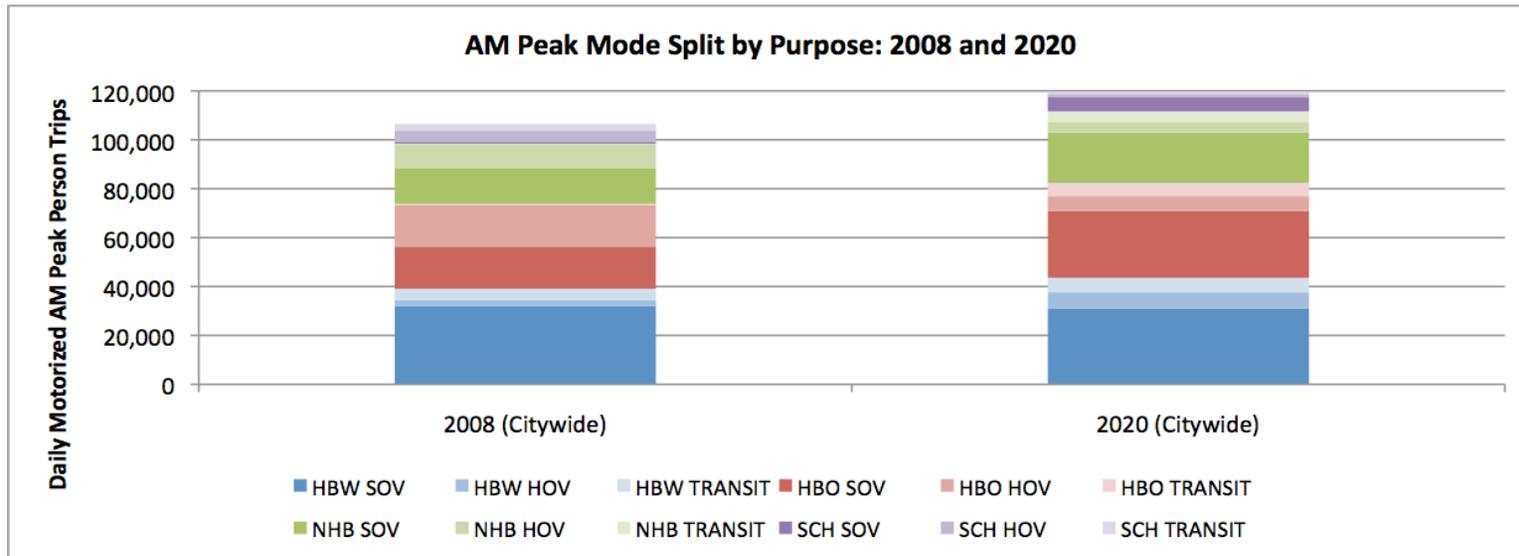


Figure 12: AM Peak Mode Split by Purpose

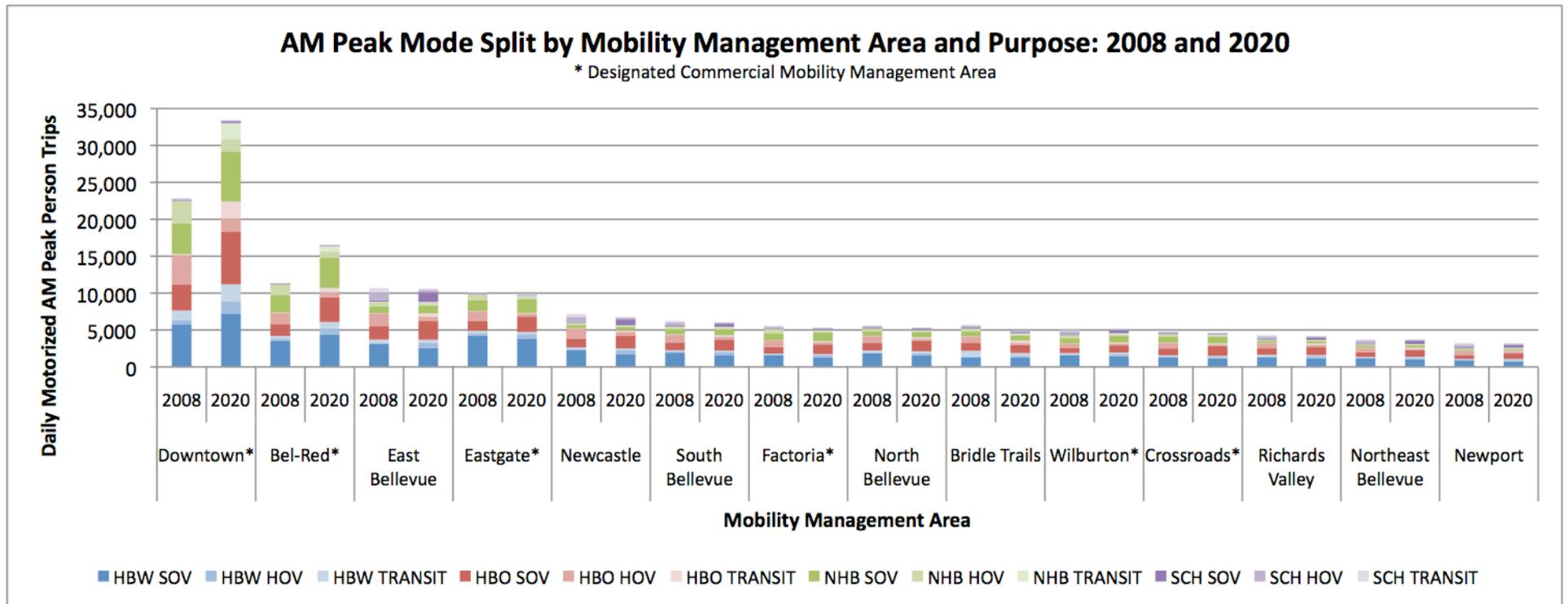


Figure 13: AM Peak Mode Split by Purpose

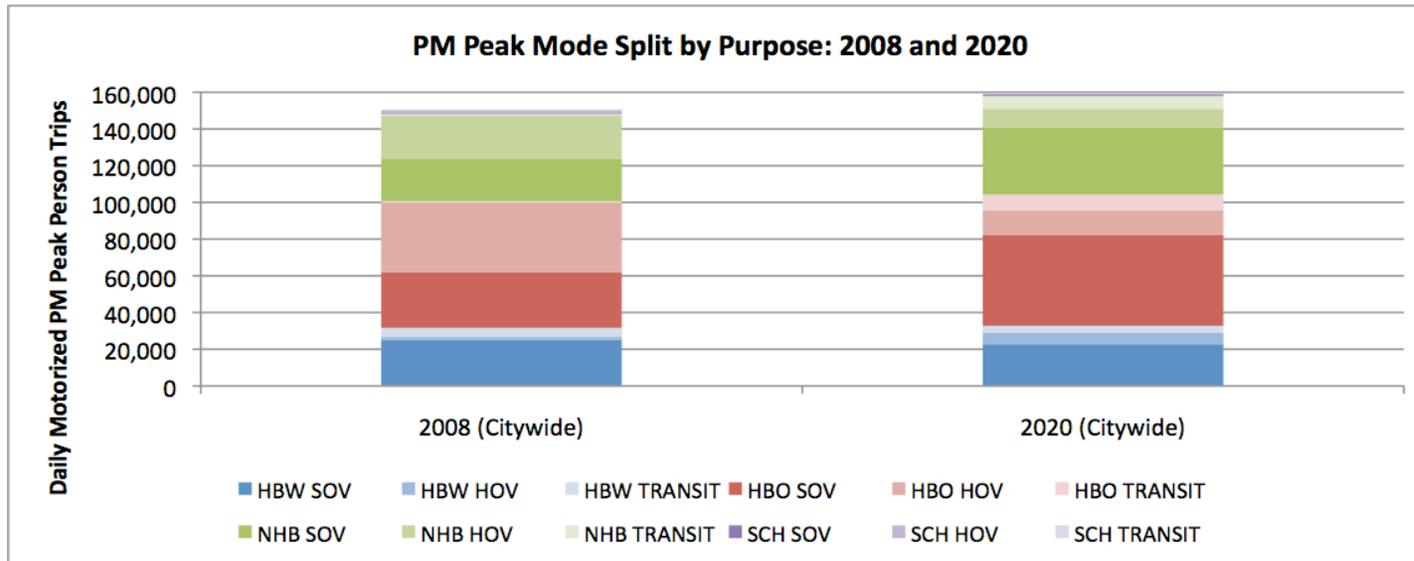


Figure 14: PM Peak Mode Split by Purpose

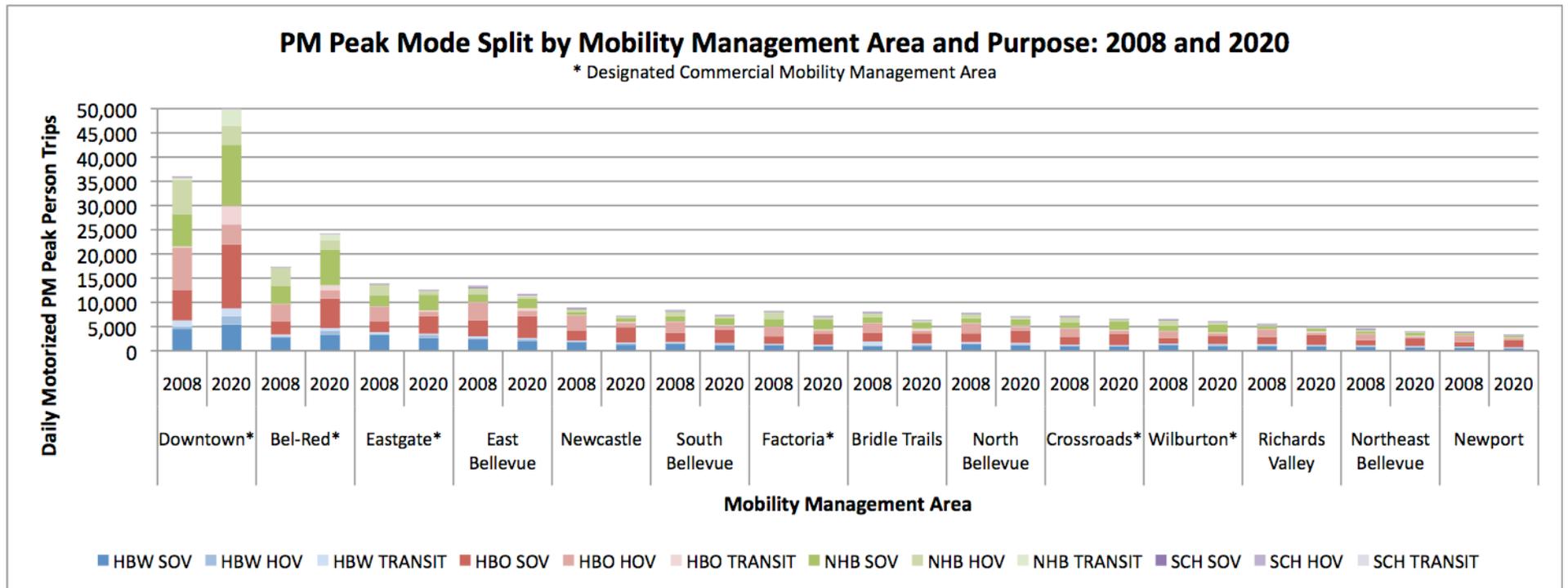


Figure 15: PM Peak Mode Split by Purpose

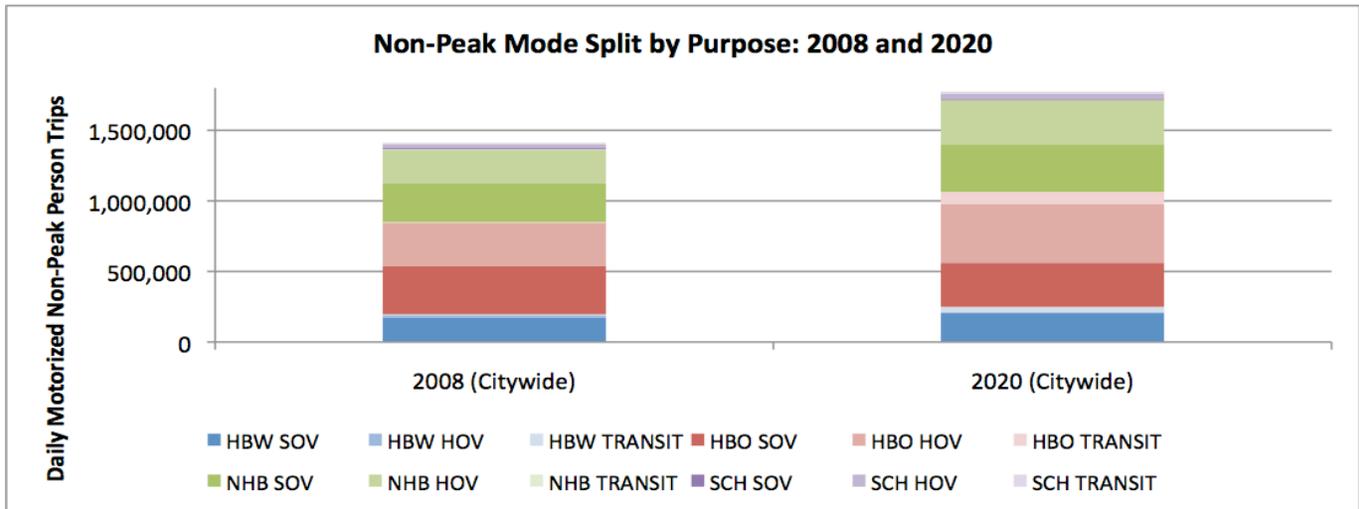


Figure 16: Non-Peak Mode Split by Purpose

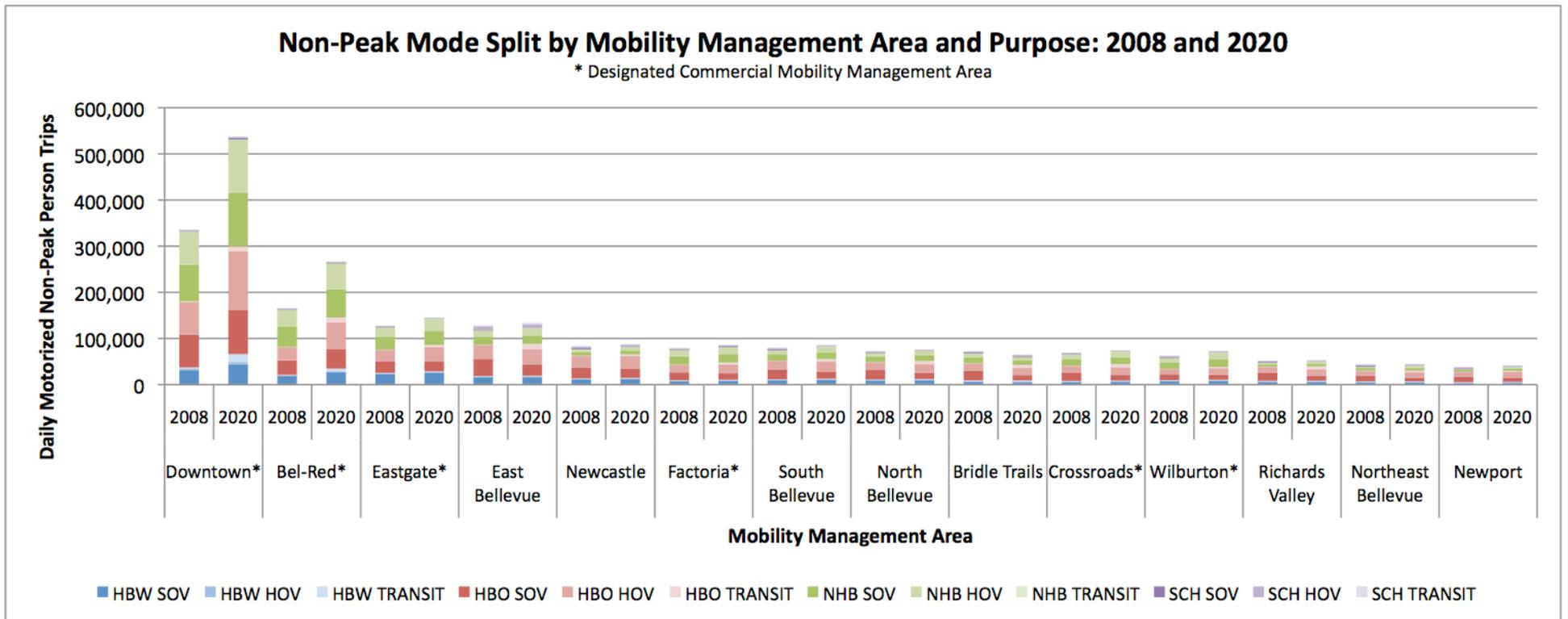


Figure 17: Non-Peak Mode Split by Purpose

Attachment 2: Employment Characteristics

Bellevue is a major regional employment destination, so Transportation Demand Management (TDM) efforts in Bellevue typically focus on employees and businesses due to the large daytime workforce population travelling to the city. Employer-based programs can be very effective in influencing employee commute behavior, depending on the location, type, and size of the business. The following employment analysis examines these characteristics for TDM purposes.

Methodology

Employment estimates for 2008 are from PSRC and are based on the Washington State Employment Security Department's (ESD) Quarterly Census of Employment and Wages (QCEW) series. This series consists of employment for those firms, organizations and individuals whose employees are covered by the Washington Unemployment Insurance Act. Covered employment excludes self-employed workers, proprietors, CEOs, etc., and other non-insured workers. Typically, covered employment has represented 85-90% of total employment. Estimates have not been scaled to incorporate temporary employees and employees from unknown employer locations. Therefore employment figures do not match exactly those given for the city as a whole on PSRC's website (128,305).

Employment estimates for 2020 were based on land use assumptions in Transportation Analysis Zones (TAZs) used in transportation modeling, resulting in forecast growth rates by sector within each MMA. 2020 workplace forecasts for different employment sectors were based on 2008 workplace to employee ratios applied to 2020 employment estimates. 2020 workplace forecasts for different workplace size categories were based on distribution of different workplace sizes in 2008 applied to 2020 workplace forecasts.

Findings

As of 2008, there were approximately 140,000 employees working in Bellevue, with 180,000 forecast in 2020.

Figures 1 and 2: Employment by Mobility Management Area

- Of the six non-residential MMAs in Bellevue, Downtown is the one with the most employment for 2008 and 2020, comprising 28% of total employment in 2008 and 34% of total employment in 2020.
- Combined, Downtown and the adjacent Wilburton area on the east side of I-405 make up 35% of the City's workforce in 2008 and 40% in 2020.
- Eastgate and Factoria make up 20% of the City's workforce in 2008, and 18% in 2020.
- Residential MMAs have 32,000 employees in 2008 and 33,000 in 2020.
- Crossroads, a designated "mixed commercial and residential area" MMA only makes up 2% of the workforce in 2008 and 2020 (less than 3,000 employees).
- The Bel-Red MMA is forecast to receive a significant increase in employment, consistent with the vision for that corridor (from 19,000 employees and 1,200 businesses in 2008 to 28,000 employees and 1,800 businesses in 2020).

Figures 3 through 6: Employment Sector Characteristics

- Finance, Investment, Real Estate, and Services (FIRES) is a dominant employment sector in all the non-residential MMAs, representing more than 50% of employment and 60% of businesses, with a significant majority in Factoria (over 80%).
- Manufacturing jobs decline Citywide (particularly in Downtown and Bel-Red), but with a fair amount remaining in Eastgate (4,500 employees).

Figures 7 through 10: Employment Size Characteristics

- Downtown and Bel-Red have the most businesses, the majority of which have small numbers of employees (over 75% of businesses in these MMAs have 19 or fewer employees).
- Large businesses (over 100 employees) make up a significant amount of the workforce in Eastgate (69%), Factoria (57%), and Wilburton (62%). In Downtown, 46% of employees work at businesses with over 100 employees.

Discussion

Residential MMAs have a surprising amount of employment (32,000 employees in 2008, 33,000 in 2020), which likely includes primarily neighborhood-oriented businesses and some offices. The percent of the workforce in these MMAs declines from 28% in 2008 to 23% in 2020, indicating that businesses will continue to concentrate in commercial MMAs. It should also be noted that residential MMAs cover a vast portion of the City, therefore any employee TDM activities would need to be widespread.

Crossroads only makes up 2% of the workforce in 2008 and 2020 (less than 3,000 employees), indicating that implementing employer-based TDM activities there will not have much overall benefit.

Downtown and Bel-Red have the most businesses (41% Citywide in 2008, and 51% Citywide in 2020), the majority of which have small numbers of employees (over 75% of businesses in these MMAs have 19 or fewer employees). The implication for TDM activities in these areas is that small employer outreach and individualized messaging to employees may have the most benefit.

Large businesses (over 100 employees) make up a significant amount of the workforce in Eastgate (69%), Factoria (57%), and Wilburton (62%), indicating that CTR-affected employers might be a major focus of TDM activities in those locations (provided that they actually qualify as CTR-affected businesses and work schedules do not preclude the status).

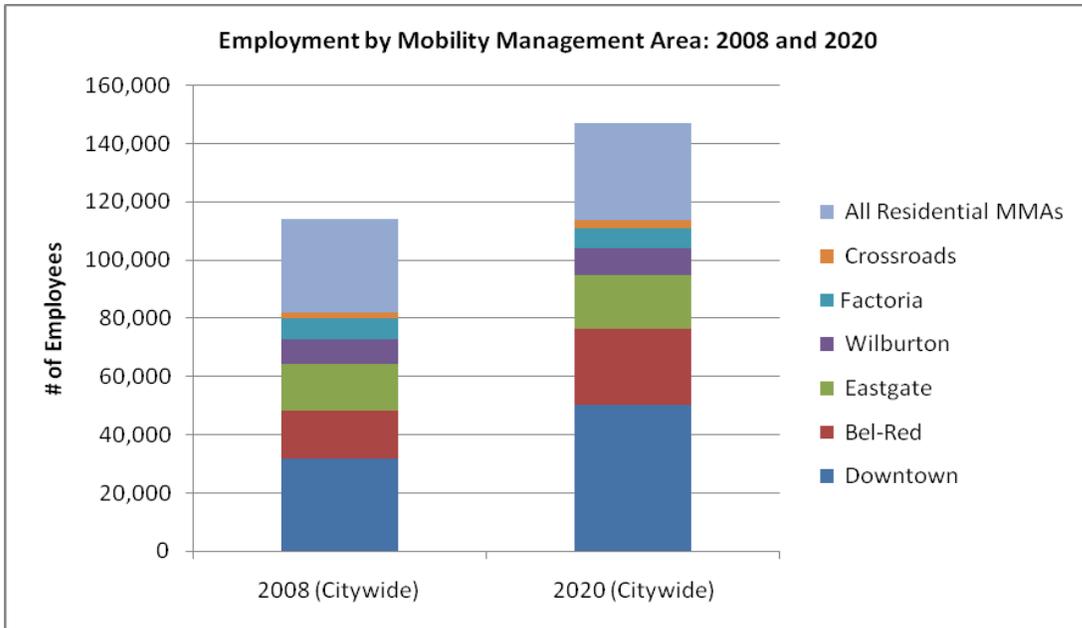


Figure 1: Employment by Mobility Management Area

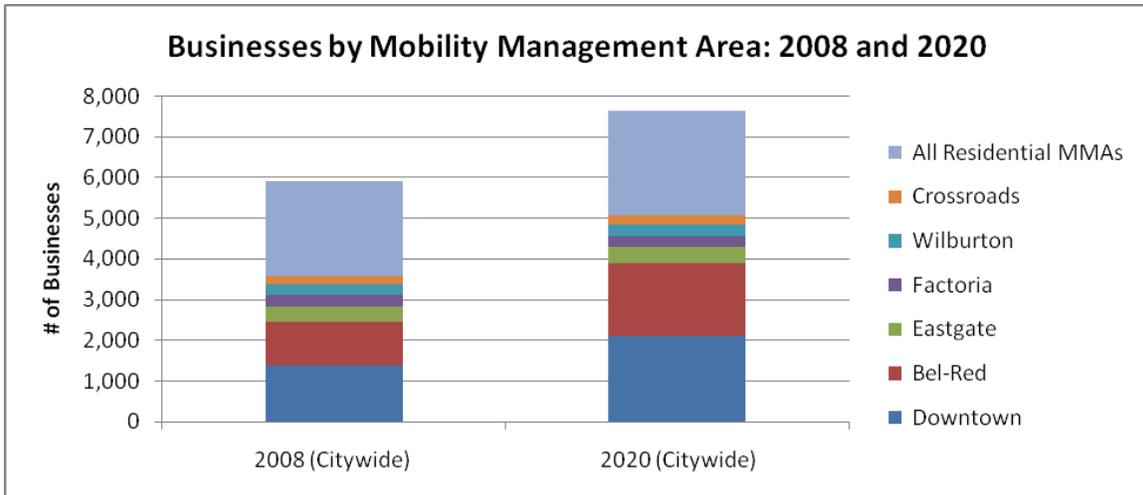


Figure 2: Businesses by Mobility Management Area

Notes

1. Employment estimates for 2008 are from Puget Sound Regional Council (PSRC), based on the Washington State Employment Security Department's Quarterly Census of Employment and Wages series. This series consists of employment for those firms, organizations and individuals whose employees are covered by the Washington Unemployment Insurance Act and excludes self-employed workers, proprietors, CEOs, etc., and other non-insured workers. Typically, covered employment has represented 85-90% of total employment. 2008 total citywide employment represented in the chart above does not exactly match PSRC's estimate for the city as a whole (128,305 employees - available at: <http://www.psrc.org/data/employment/covered-emp>) because estimates have not been scaled to incorporate temporary employees and employees from unknown employer locations. City of Bellevue estimates, including non-insured workers, reach 140,000 employees in 2008, and 180,000 in 2020.
2. Employment estimates for 2020 were based on Transportation Analysis Zone (TAZ) forecast growth rates by sector within each Mobility Management Area (MMA).
3. 2020 workplace forecasts for various employment sectors were based on 2008 workplace to employee ratios applied to 2020 employment estimates.

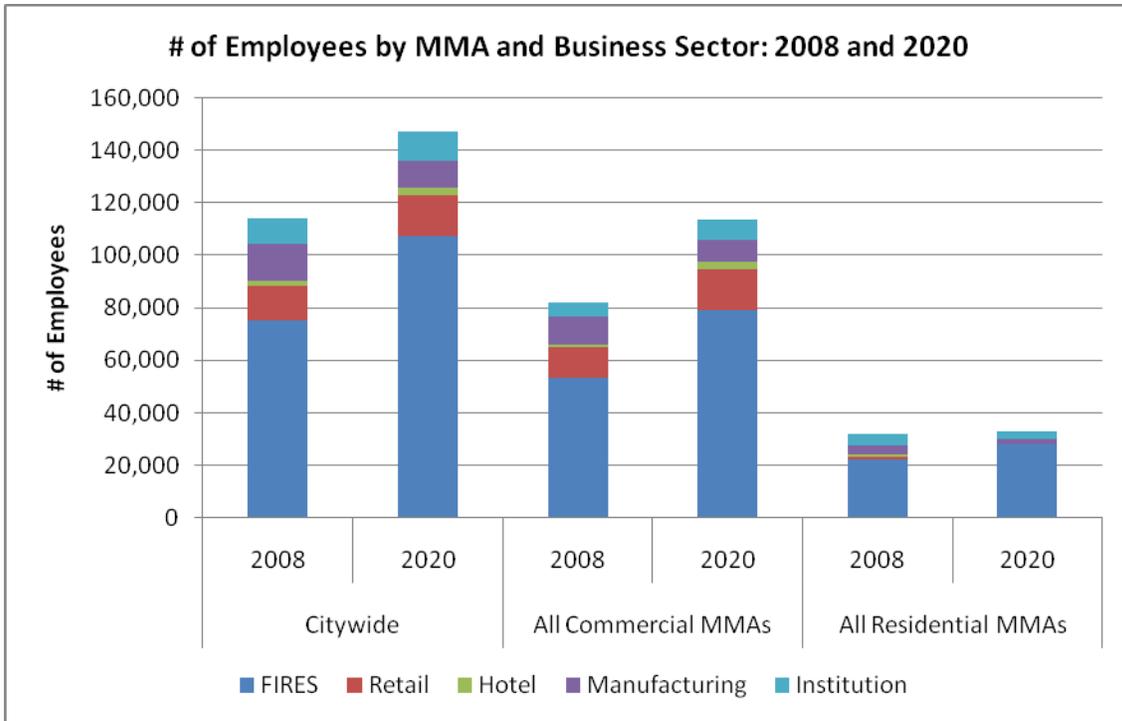


Figure 3: Employment Sector Characteristics

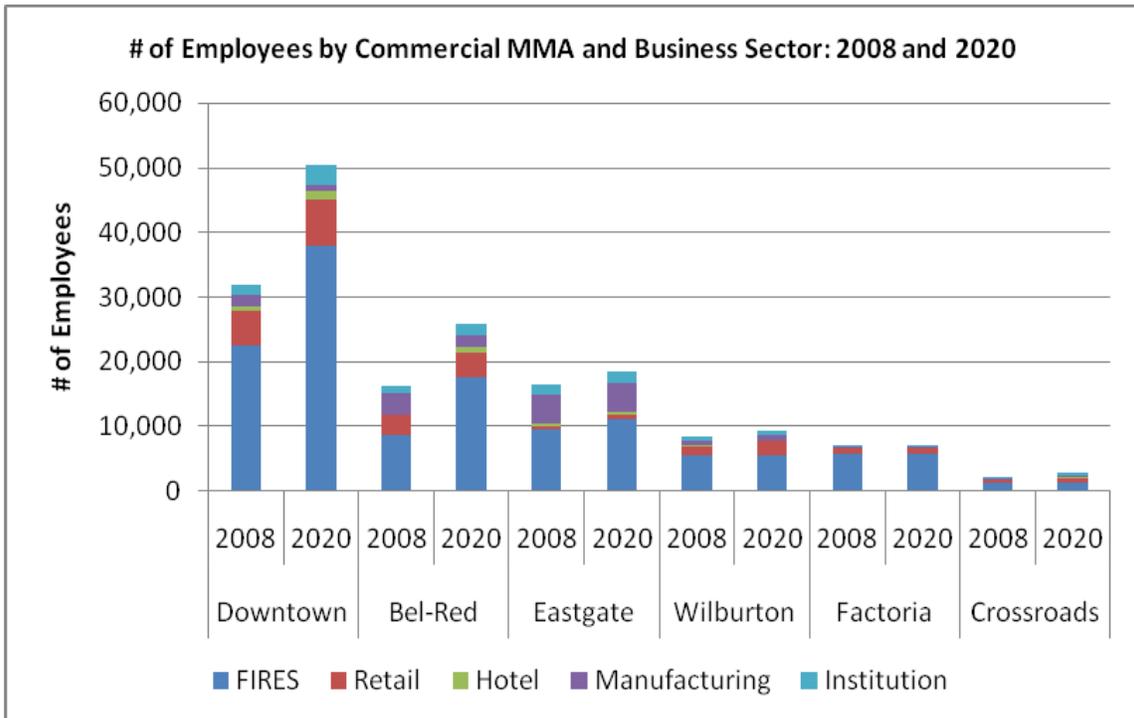


Figure 4: Employment Sector Characteristics

Notes

1. Hotel employment within the Factoria MMA was combined with Retail employment to maintain confidentiality.

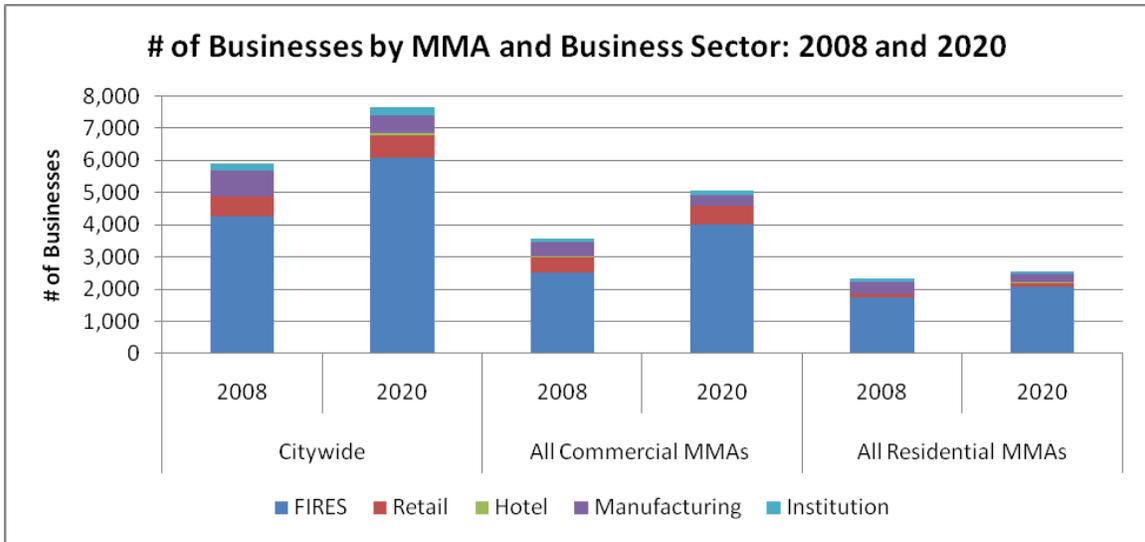


Figure 5: Business Sector Characteristics

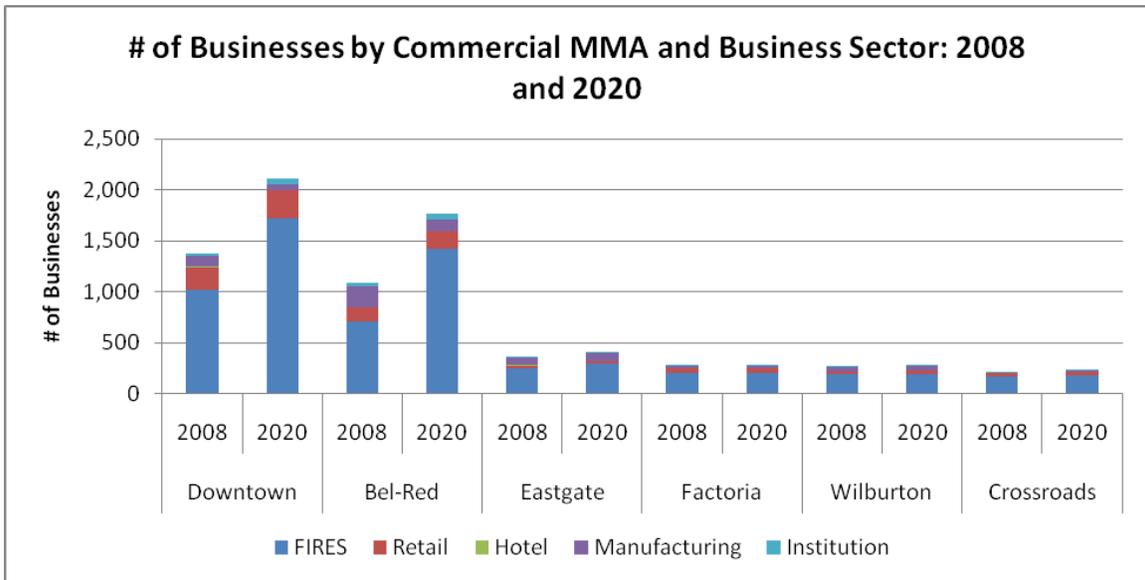


Figure 6: Business Sector Characteristics

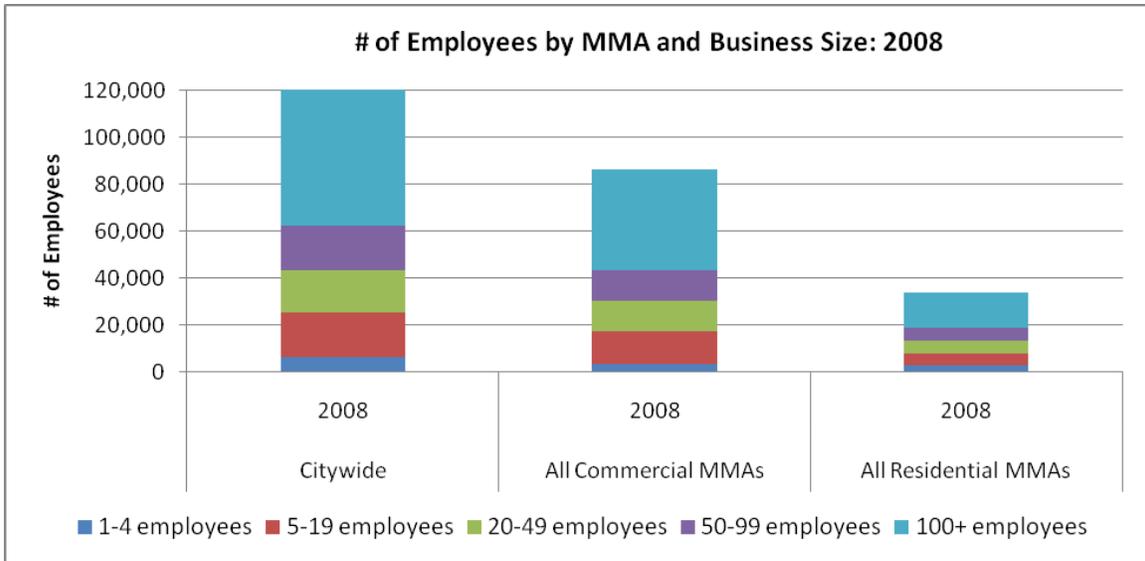


Figure 7: Employment Size Characteristics

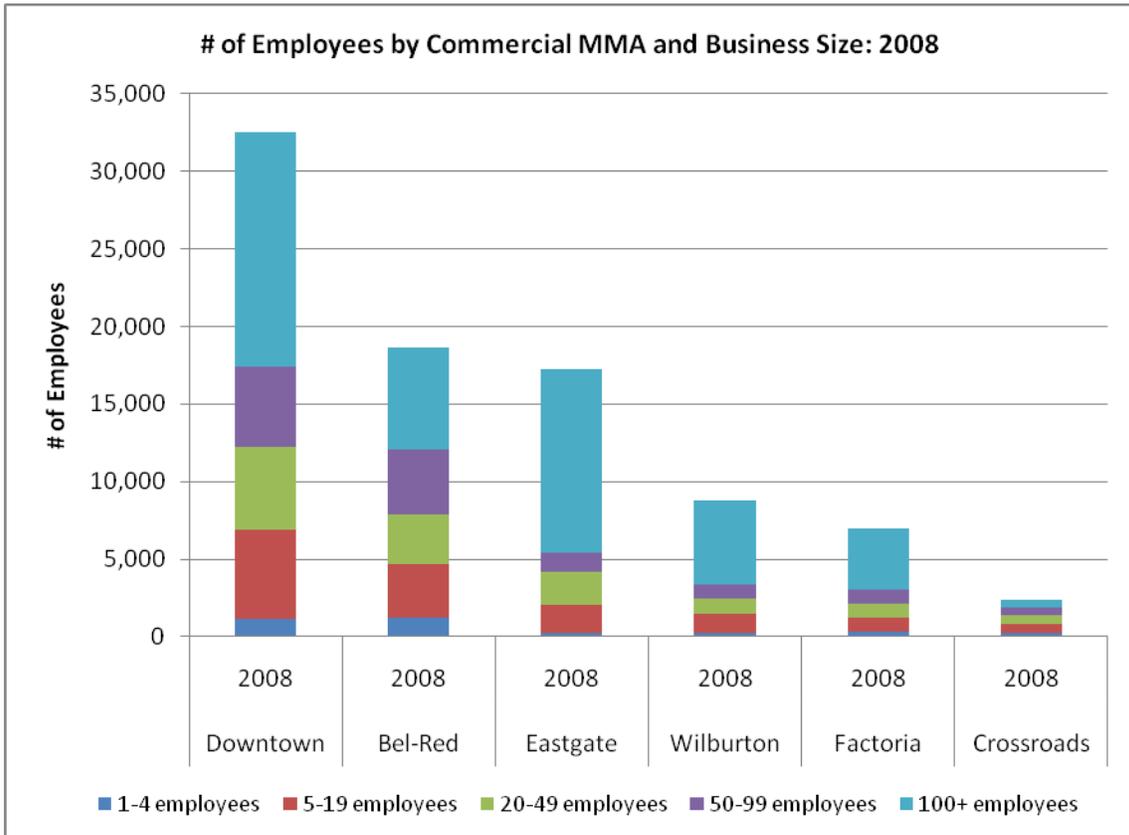


Figure 8: Employment Size Characteristics

Notes

- 2020 workplace forecasts for different workplace size categories can only be based on distribution of different workplace sizes in 2008 applied to 2020 total workplace forecasts, therefore, each category would grow at the same rate. Consequently, no 2020 forecasts were done for workplace sizes.

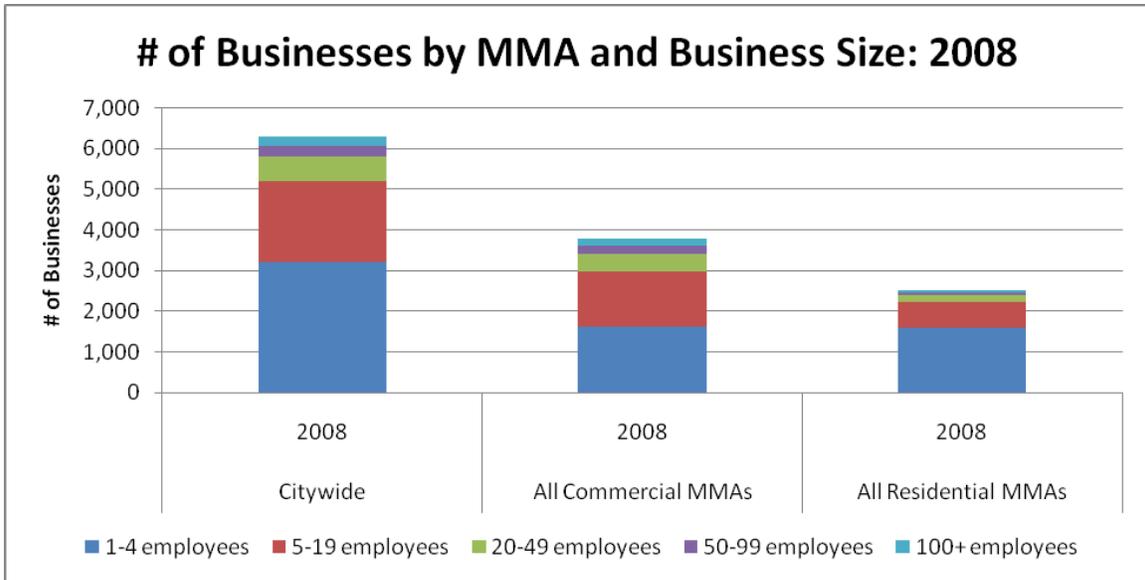


Figure 9: Business Size Characteristics

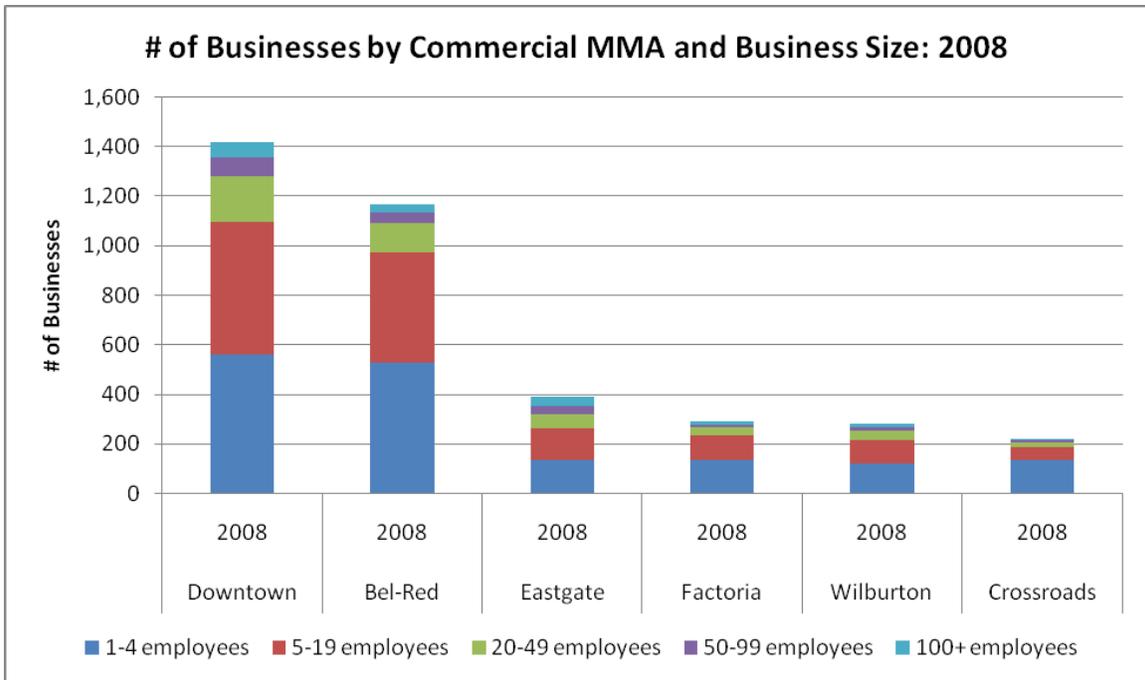


Figure 10: Business Size Characteristics

Attachment 3: Potential TDM Plan Strategies

Current Practices

There are a number of TDM activities that the City currently implements to much success. The primary guide leading these activities is the Connect Downtown plan, developed in tandem with the designation of downtown as a state Growth and Transportation Efficiency Center. The Connect Downtown plan details Employer Outreach efforts targeting large Commute Trip Reduction-affected companies as well as smaller companies under the Commute Advantage brand. Individual Marketing efforts have been implemented for downtown residents under the auspices of King County Metro’s In Motion program. Transportation Management Programs also provide the building facilities to support non-drive alone modes.

A longer range TDM plan with an expanded Citywide scope will build off these proven strategies in light of expected growth throughout the city, including Downtown, Bel-Red, Wilburton, Eastgate, Factoria, and other areas.

Best Practices

Even though current TDM practices in the City have had substantial success, there is always room for improvement and something to learn from other practices, so local, regional, national, and international practices were reviewed for best practices.

| TDM Practice | Description | Location |
|---|--|---|
| Employer Matching Program | Matching fund for employer-provided discounts/subsidies for non-drive alone modes | Hillsborough County, FL Pinellas County, FL |
| Congestion Pricing | Tolls on roads intended to discourage trips during peak congestion | London, UK |
| Parking Management Program | Business district agreement between transit provider, municipality, developers, and businesses to manage parking for “best use” | Portland, OR |
| Individual Marketing | Send marketing messages directly to residents and employees | Portland, OR |
| Partnership with adjacent municipalities | Coordination of marketing and outreach to reach regional commuters | Portland, OR and Vancouver, WA |
| Neighborhood Programs | Guided neighborhood walks and bike rides, and neighborhood guides to encourage non-motorized trips | Portland, OR |
| Transfer of Parking Rights | A developer who wants to build less parking than minimum allowable can transfer that right to another developer who wants more than maximum allowable. | Portland, OR |
| Multimodal Trip Planning | Software allowing easy transition between modes such as transit and bike | Metro (Portland, OR) |
| Sunday Parkways | Periodic road closure for non-motorized community building | Seattle, WA Portland, OR Chicago, IL New York, NY San Francisco, CA Columbia |

General Strategies

The following strategies are broad in scope, addressing a variety of audiences including employers, employees, and residents. Each program should be refined given unique characteristics of location.

- A) Provide incentives and assistance to employers and employees to encourage the use of transit, ridesharing, telecommute, walking, bicycling and other non-SOV commute modes.
- B) Conduct educational and incentive workshops for employers and employees.
- C) Consult with area employers and property managers/owners about benefits of a TDM program.
- D) Provide on-site commute planning services for employees.
- E) Condition new commercial development with Transportation Management Program requirements to provide infrastructure and incentives for employees to not drive alone.
- F) Review appropriate parking supply for new developments.
- G) Partner with transit providers to maintain and/or expand desired transit service levels.
- H) Work with major employers on an incentive-based parking program. This would include providing an incentive to employees to not use a parking stall or a disincentive for using a parking stall.
- I) Target Employer Outreach and Individual Marketing to businesses and residents:
 - 1) Within ¼ mile of intersections exceeding designated 2020 Level-of-Service standards, as identified in the Transportation Facilities Plan;

| Mobility Management Area | Intersection |
|--------------------------|---|
| North Bellevue | Bellevue Way NE - NE 24 th St |
| Bridle Trails | 140 th Ave NE – NE 24 th St 148 th Ave NE – NE 40 th St 115 th PI NE – Northup Way Northup Way – NE 24 th St 148 th Ave NE – NE 29 th PI |
| Downtown | 112 th Ave NE – NE 8 th St |
| Wilburton | 116 th Ave NE – NE 8 th St 120 th Ave NE – NE 8 th St |
| Crossroads | 156 th Ave NE – Northup Way |
| Northeast Bellevue | 164 th Ave NE – NE 8 th St |
| South Bellevue | 118 th Ave SE – SE 8 th St |
| Richards Valley | 124 th Ave NE – NE 8 th St Lake Hills Connector – SE 8 th St/7 th St |
| East Bellevue | 140 th Ave NE – NE 8 th St 148 th Ave NE – NE 8 th St 148 th Ave NE – Main St 148 th Ave SE – Lake Hills Blvd 148 th Ave SE – SE 16 th St |
| Newcastle | Coal Creek Parkway - Forest Drive Lakemont Blvd. SE- SE Newport Way |
| Bel-Red | 148th Ave. NE - Bellevue-Redmond Rd. Bellevue-Redmond Rd. - NE 24th Street 156th Ave. NE - NE 24th Street |
| Factoria | 124th Ave. SE - Coal Creek Parkway |

- 2) In Mobility Management Areas exceeding 2020 congestion allowances and/or area-wide Level-of-Service standards, as identified in the Transportation Facilities Plan;
 - a) Bridle Trails
 - b) Northeast Bellevue
 - c) East Bellevue
 - d) Newcastle
- 3) In Mobility Management Areas with a high number of commute (AM Peak Home-based Work) trips:
 - a) Downtown (workplace commute destinations)
 - b) Bel-Red (workplace commute destinations)
 - c) Eastgate (workplace commute destinations)
 - d) Wilburton (workplace commute destinations)
 - e) East Bellevue (residential commute origins)
 - f) Newcastle (residential commute origins)

Business-Specific Strategies

- A) Expand Commute Advantage program as resources are available and target high congestion areas identified above.
- B) Create and administer an Individualized Marketing program for employees, particularly in high congestion areas identified above.
- C) In conjunction with Commute Advantage recognition program, provide a best practices manual for CTR, GTEC, and Commute Advantage employers.
- D) Provide a best practices manual for TMP property managers and owners.
- E) Support expansion of existing TMA service area and/or existing local business and neighborhood organizations to provide TMA-like services.
- F) Educate businesses and property managers about GRH services provided by Metro.
- G) Continue to implement telework/flexible schedule/compressed schedule outreach and provide technical assistance.
- H) Coordinate Commute Advantage with potential green business program.

Residential-Specific Strategies

- A) Implement household marketing and incentive program targeted towards residents within 1/4 mile of park-and-ride lots, transit centers, and congestion hotspots. Target households as adjacent facilities are constructed.
- B) Support existing local neighborhood organizations to provide TMA-like services.

Non-Motorized-Specific Strategies

- A) Support Regional Wayfinding System, targeted bike parking, end-of-trip facilities such as shower facilities and lockers
- B) Support secure bike parking at transit centers and park-and-ride lots

- C) Distribute neighborhood-level pedestrian guides and bicycling guides to facilitate multi-modal links with transit.
- D) Post walk and bike wayfinding maps at transit centers and park-and-ride lots

Rideshare-Specific Strategies

- A) Study the potential for supporting vanshare vehicles at parking facilities (including private parking facilities) for last mile trips, particularly at the Downtown Bellevue Transit Center.

Parking Strategies

- A) Consider supply and demand at adjacent developments when determining parking requirements of new development.
- B) Minimize parking requirements adjacent to transit centers/stations.

Internal Operations Strategies

- A) Scale budget to account for 2020 cost of incentives for forecasted non-SOV trips.
- B) Review the need for minimum parking requirements and the appropriateness of existing maximum requirements.
- C) Encourage shared parking at mixed use developments where appropriate.
- D) Encourage employers, new development, and redevelopment to provide end of trip facilities for bicyclists (bike parking, showers, and lockers), transit users (bikeshare/carshare), and rideshares (carpool/vanpool preferential parking and loading areas).
- E) Provide pedestrian/bicycle-friendly facilities that link to transit.
- F) Explore tax or other incentives for private parking operators who incorporate vanpool/carpool/carshare stalls into facility design.
- G) Incorporate preferential carpool/vanpool parking into parking ITS implementation as feasible.
- H) Review consideration of a Complete Streets policy to support ped/bike/transit improvements in all transportation projects.