Overview of Literature on Workplace TDM Effectiveness

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Academic and professional research provides some perspective on the effectiveness of various Transportation Demand Management (TDM) strategies. This document includes excerpts from several sources that appear most relevant to the current consideration of Transportation Management Program (TMP) requirements in Bellevue. The sources draw from observations of changes implemented at workplaces by *employers* (such as with Commute Trip Reduction (CTR) program requirements). The effect of similar strategies implemented by *building managers* may be somewhat less, given the less direct relationship that workers have with the building manager. For the references listed below, the level of change associated with the various strategies is expressed in terms of "vehicle trips reduced" or "VTR". This is a slightly different measurement unit than the "drive-alone rate" that is typically used in Bellevue (and in Washington State). Each drive-alone trip constitutes one vehicle trip; where the two measures generate different values is in ridesharing; for example, if two people in a population of 100 employees shift from drive alone to carpooling, the drive-alone rate is reduced by 2%, but only one vehicle trip is reduced. Overall, measurement of mode shift will show a greater change in value than measurement of vehicle trips reduced, so the figures describing program effect below are lower than they would appear in a typical City of Bellevue or Washington State publication.

1. ***Urban Mobility Plan Briefing Book,* City of Seattle –** The *Seattle Urban Mobility Plan* (January 2008) chapter on TDM includes a concise table showing the typical impact of employer-based TDM strategies. The trip reduction values are drawn from various sources.

Impact of Selected Employer-Based TDM Strategies

Strategy	Details	Employee Vehicle Trip Reduction Impact
Parking Charges[1]	Previously Free Parking	20-30%
Information Alone[2]	Information on Available SOV-Alternatives	1.4%
Services Alone[3]	Ridematching, Shuttles, Guaranteed Ride Home	8.50%
Monetary Incentives Alone[4]	Subsidies for carpool, vanpool, transit	8-18%
Services + Monetary Incentives[5]	Example: Transit vouchers and Guaranteed Ride Home	24.50%
Cash Out[6]	Cash benefit offered in lieu of accepting free parking	17%

1 Based on research conducted by Washington State Department of Transportation.

2 Schreffler, Eric. "TDM Without the Tedium," Presentation to the Northern California Chapter of the Association for Commuter Transportation, March 20, 1990.

3 Ibid

4 Washington State Department of Transportation

5 Schreffler (1990)

6 Donald Shoup (1997), "Evaluating the Effects of California's Parking Cash-out Law: Eight Case Studies," Transport Policy, Vol. 4, No. 4, 1997, pp. 201-210. http://www.commuterchallenge.org (accessed November 2, 2007)

City of Seattle. *Urban Mobility Plan Briefing Book*, Chapter 7: Best Practices in Transportation Demand Management. City of Seattle. Jan. 2008. Available at, http://www.seattle.gov/transportation/docs/ump/07%20SEATTLE%20Best%20Practices%20in%20Transportation%20Demand%20Management.pdf, accessed 2 June 2016.

2. ***Integrating Demand Management into the Transportation Planning Process,* Federal Highway Administration –** A FHWA report, *Integrating Demand Management into the Transportation Planning Process: A Desk Reference*, includes a chapter entitled "Known Effectiveness of TDM Strategies." The following table captures the trip reduction impacts of TDM activities, as compiled by a consultant study for the Fairfax County, Virginia Department of Transportation.

Table 10.1: National Evidence on TDM Program Impacts Vehicle Trip Reduction from Background Conditions
Source: Cambridge Systematics, 2010 (Fairfax County, VA)

TDM Program or Strategy	High Transit	Moderate Transit	Low Transit
Support, Promotion, Information	3-5%	1-3%	<1%
Alternative Commute Services	5-10%	5-10%	1-3%
Financial Incentives	10-20%	5-15%	1-5%
Combined Strategies			
With Free Parking	15-20%	10-15%	3-7%
With Paid Parking	25-30%	15-20%	N/A

Conditions in Bellevue employment centers generally correspond to the Moderate Transit column; a few areas (e.g., Bellefields office park) correspond to the Low Transit column. (The High Transit condition presumes rail service.)

United States Department of Transportation, Federal Highway Administration. *Integrating Demand Management into the Transportation Planning Process: A Desk Reference*. 2012. Available at, http://www.ops.fhwa.dot.gov/publications/fhwahop12035/chap10.htm, accessed 2 June 2016.

3. ***Employer and Institutional TDM Strategies,* Transit Cooperative Research Program –** The Transit Cooperative Research Program produced a report, *Employer and Institutional TDM Strategies,* that looked at 82 cases in which "before" and "after" data is available to evaluate the impact associated with various TDM strategies or categories of strategies. Although the report dates from 2010, the employer case studies on which the analysis is based are much older, from the early 1990s. The study authors found the available data from more recent TDM programs (such as the Washington State CTR program) to be unsatisfactory for rigorous analysis of the changes associated with particular TDM strategies. (In part because available trip data is not linked closely to details of TDM program measures in place at particular worksites.) It is also noted that the 82 case studies are not a random sample and may not be representative of the broader population of worksites; some were initially captured because of the exemplary nature or impact of their programs. Those caveats aside, the overall report indicates that worksites with good transit availability realized a vehicle trip reduction (VTR) rate of 26% versus 12% at worksites without good transit.

Other comparative findings showed that:

- The existence of employer support programs (e.g., guaranteed ride home) showed VTR of 4-5%.

- The offer of alternative commuting services (e.g., shuttle bus, vanpool) showed VTR of 22% as compared to 14% among worksites that did not provide these services (i.e., a difference of 8 percentage points).
- Worksites that offered a transit subsidy had an average VTR of 21%, vs a VTR of 14% among worksites that did not provide a subsidy (i.e., a difference of 7 percentage points).
- Worksites that offered HOV parking discounts averaged 26% VTR, vs 14% for those who did not (i.e., a difference of 12 percentage points).

This document also includes a specific discussion of the case of Downtown Bellevue, "Overall TDM Program Effects over Time—Bellevue, Washington."

Transportation Research Board. *Traveler Response to Transportation System Changes Handbook, Third Edition: Chapter 19, Employer and Institutional TDM Strategies*", 2010. Available at, http://onlinepubs.trb.org/onlinepubs/tcrp/tcrp_rpt_95c19.pdf, accessed 2 June 2016.