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16. ABSTRACT

Washington has sought to reduce commute trips to the workplace in 9 of the state's most populous counties. Such a reduction is sought to ameliorate congestion on the roadway, improve air quality, conserve fossil fuels, and promote environmental quality. Legislation has been in place since 1991 requiring both private and public employers of 100+ employees in those 9 counties to formulate plans for the implementation of varied incentives to encourage alternatives to single occupancy vehicle (SOV) travel. This legislation requires the WSDOT to monitor (by means of a biennial employee survey) progress toward a quite ambitious goal of a 35% reduction in SOV travel by 2005. This goal remains quite far from being met; the most recent survey-based estimate is that a 7% reduction has been achieved thus far.

This study entails the use of a complex survey of employees in public and private sector organizations participating in this "commute trip reduction" (CRT) program. The questionnaire developed for this study is designed to gather information on the nature of "switchers" – that is, those employees who are indeed making use of alternatives to SOV travel to the workplace. What is their **profile** (if any)? What factors – *internal* to their beliefs and values and *external* in their context for making decisions about commute trip modes of travel – distinguish switchers from SOV commuters? What level of support obtains for a market approach to SOV reduction by attaching a price to the choice of SOV workplace commuting? The answers observed to these questions, and sharing the survey findings and detailed comments of employees for their own organizations with local ETCs, are the principal deliverables associated with this project.

This Final Report sets forth the results of the employee survey, set against a fairly thorough reading of the research literature in this area. Over 900 employees in 16 diverse (public and private, large and small, western, central, and eastern region) organizations participating in the program returned completed surveys. The majority of these surveys were accompanied by length comments, signifying that the survey did indeed touch the deeper roots of employee decision-making in this area of individual choice. Preliminary analysis revealed that the range of variation in organizations, in the several attitudinal scales and indices employed, and in the extent of non-SOV commuting reported would permit a fruitful analysis on the questions posed above. Of 902 respondents, 372 indicate that they are "switchers" to alternatives to SOV commuting.

A profile of the switcher does emerge from this study based on both bivariate and multivariate (multiple regression and discriminant analysis) analyses. Switchers tend to value CTR incentives, come from organizations where the CTR program is strongly supported, engage in other environment-protective activities, perceive the presence of reasonably convenient alternatives to SOV travel, and be less concerned with the "convenience and flexibility" benefits of SOV commuting than SOV commuters. While there is clearly not a majority sentiment favoring SOV pricing, there is indeed evidence that a significant minority of employees are willing to experiment with some type of market-oriented pollution/congestion costing policy directed to the urban transportation gridlock phenomenon.

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Research Report

Research Project T9902, Task 24
Commuter Costs and Benefits vis-à-vis TDM Programs

BENEFITS AND COSTS ASSOCIATED WITH THE WSDOT CTR PROGRAM

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Final Report Text

Executive Summary

Washington has sought, through specific legislation and derivative administrative action, to reduce commute trips to the workplace in 9 of the state's most populous counties. Such a reduction is sought to ameliorate congestion on the roadway, to improve air quality, to conserve fossil fuels, and to promote environmental quality in urbanized areas. Legislation has been in place since 1991 requiring both private and public employers of 100+ employees in those counties to formulate plans for implementing varied incentives encouraging alternatives to single occupancy vehicle (SOV) travel. This legislation requires the WSDOT to monitor (by means of a biennial employee survey) progress toward an ambitious goal of a 35% reduction in SOV travel by 2005. This goal remains far from being met; the most recent survey-based estimate is that a 7% reduction has been achieved thus far. This study is designed to promote the highest possible rate of non-SOV commuting by: 1) attaining a better understanding of the nature of "switchers" (non-SOV commuters who changed their mode of travel to work from driving alone to some alternative in the last six years) vis-à-vis the perceived benefits and costs of alternative modes of workplace travel; and 2) assessing employee views of the costs and benefits associated with the CTR program.

This study entails the use of a more detailed and complex survey of employees in public and private sector organizations participating in this "commute trip reduction" (CRT) program than is normally used in biennial WSDOT progress monitoring assessments. The survey questionnaire developed for this study is designed to gather information on various dimensions (situational and psychological) of switchers -- that is, those employees who are indeed making consistent use of alternatives to SOV travel to the workplace. What is their **profile** (if any)? What factors -- *internal* to their beliefs and values and *external* in their context for making decisions about commute trip modes of travel -- distinguish switchers from SOV commuters? Among SOV commuters, in turn,

what are the benefits and costs ascribed to alternatives to SOV commuting? What characteristics tend to typify SOV commuters? What level of support obtains for a market-oriented incentives approach to SOV reduction by attaching a price to the choice of SOV workplace commuting? The answers observed to these questions, and sharing the survey findings and detailed comments of employees for their own organizations with local ETCs, are the principal deliverables associated with this project.

Introduction

This Final Report sets forth the results of careful analyses of the employee survey, set against a fairly thorough reading of the research literature in this area. Over 900 employees in 16 diverse (public and private, large and small, western, central and eastern region) organizations participating in the program returned completed surveys. The majority of these surveys were accompanied by lengthy comments, signifying that the survey did indeed touch the deeper roots of employee decision-making in this apparently important area of individual choice affecting transportation public policy. Preliminary analysis of survey results revealed that the range of variation in organizations, in the several attitudinal scales and indices employed, and in the extent of non-SOV commuting reported would permit a fruitful analysis on the questions posed above. Of 902 respondents, 372 indicated that they are "switchers" to alternatives to SOV commuting. [Employees were classified as switchers if they answered this question in the affirmative: "Have you changed your normal mode of travel to work from driving alone to some alternative mode (e.g., carpool, vanpool, public transportation, telecommuting, etc.) in the past six years?]

There is a profile of the switcher which emerges from this study based on both bivariate and multivariate (Ordinary Least Squares multiple regression and discriminant analysis) analyses. Switchers tend to value CTR program incentives, come from organizations where the CTR program is strongly supported, engage in other environment-protective activities, perceive the presence of reasonably convenient alternatives to SOV travel, and be less concerned with the "convenience and

flexibility" costs and benefits of SOV commuting than SOV commuters. While there is clearly not a majority sentiment favoring SOV pricing, there is indeed evidence that a significant minority of employees are willing to experiment with some type of market-oriented pollution/congestion costing policy directed to the urban transportation gridlock phenomenon. Report authors conclude that a Transportation Demand Management effort such as the Commute Trip Reduction Program does indeed play an important role in promoting learning about, discussion of, and actual adoption of alternatives to SOV workplace commuting by a significant proportion of the state's employees living and working in areas of Washington where traffic congestion, air pollution, energy resource waste, and environmental damage are palpable problems of public concern. Some employers are indeed taking advantage of the CTR program's incentives to get the word out to their employees, and these actions are demonstrably connected to switching behavior. Even smaller employers who are not mandated to do CTR planning are formulating SOV trip reduction plans for their employees and claiming the tax credit for doing so; this fact speaks volumes for the potential value of the program as the state pursues its public media and information campaign on the CTR program and undertakes the long-term public discussion of how the people of the state are going to adjust their workplace and home lives to permit salmon recovery. The findings from the survey indicate that commuting behavior is connected to other environment-relevant attitudes and behaviors, and because this is the case it is important to maintain programs such as the CTR effort to provide support for the sustained public dialog which lies ahead for the State of Washington and its citizens.

Review of Previous Work

A total of 106 separate reports, research monographs, journal articles, news reports and official documents where reviewed in preparation for the design of the survey and the composing of this research report. Each of those reference materials is listed in the References section of this report, and each of the items listed is accompanied by an *abstract*. Reference abstracts in each case

are designed to indicate how that item in question is related to this study of the CTR program. These abstracts, taken as a whole, serve as a useful summary of research available on CTR program-relevant social science literature.

It is clear from the literature reviewed by the research team that programs such as Washington's CTR have been used elsewhere in the country, and they have met with similar rather limited results (Ferguson, 1990, 1994; GAO, 1991; Higgins, 1990; Pisarski, 1997; Wachs, 1993). Most commonly, it has been found that in the absence of a strong integration of land use planning (featuring limited parking allowances and high regard for public transit routing and scheduling) and regional multi-modal transportation planning it is impossible to raise non-SOV commuting without bringing about serious class inequities [whereby only the poorest citizens make use of mass transit while the better off continue the costly – individually and societally – use of automobiles for everyday travel] (Baldassare, 1986; Beaton, 1991; Dunn, 1998; GAO, 1989; Giuliano, 1992b; Hayward, 1998; Humphrey, 1990; Kay, 1997; Strathman and Dueker, 1996). With regard to Washington's program, it is important to note that the two Gilmore Research Group reports (1995 and 1996) indicate clearly that there is far from energetic participation on the part of private sector firms, although the public sector agencies are indeed doing their fair share to promote CTR goals. The ETCs taking part in the focus groups in 1995 were clear on the limited buy-in existing in their firms, and this same expression of low priority treatment is once more evidenced in the fieldwork conducted among ETCs for the preparation of this report. On the positive side, the Porter and Associates' (1998) analysis of participation in the CTR tax credit program revealed that while there is rather limited participation by the CTR-mandated employers, there are OTHER smaller firms who are promoting CTR goals and claiming the tax credits for having done so. This is a very significant finding, and opens the door for follow-up research which is recommended in the final section of this portion of the final report.

Research Approach and Procedures

In an effort to improve upon the outcomes associated with the Commute Trip Reduction (CTR) program of the Washington State Department of Transportation, this research project seeks to gain a better understanding of the *cognitive processes* employees use to come to a decision to switch from single occupancy vehicle (SOV) travel to the workplace to alternative forms of travel. In pursuit of this deeper understanding, a survey of employees working for organizations covered by the CTR program (employers of 100+ employees located in the nine most highly urbanized counties) was conducted by the Division of Governmental Studies and Services at Washington State University during the Fall and Winter of 1998. Of major interest were employee perceptions of the **benefits and costs** associated with alternatives to SOV commuting.

In this regard, it was necessary to gather a sufficient number of surveys from employees who had in fact "switched" during the course of the last six years when the CTR program's incentives offered to employers seeking to encourage alternatives to SOV commuting have been in effect. Accordingly, it was the goal of the research to collect systematically gathered survey data from employees in a wide range of organizations from a variety of locations. Employees from private sector and public sector organizations, personnel from large and small organizations, and employees from western, central and eastern areas of the state all had to be included in the study for the results to have maximum utility.

Survey Methodology Employed to Collect a Sufficient Number of Observations on Switchers

In order to collect survey data from a wide range of organizations a matrix of desired types of organizations was constructed reflecting three dimensions -- (1) private and public sector; (2) small and large organizations; and (3) location in western, central and eastern Washington. The staff of the Commute Trip Reduction Office assisted the Washington State University TRAC research team in identifying a target group of 18 organizations which reflected a broad range of geographic, size and economic sector characteristics. The ETCs in each organization were contacted

and asked to consider participation in the study, and all of the organizations on the final list of potential participants agreed to take part in the study.

Each ETC was offered a choice of three distinct methods of survey distribution. The first method offered entailed the provision of a computerized file of employees by the ETC from which a random sample would be selected and the Division of Governmental Studies and Services would mail surveys to the employees directly. The second method offered called for the ETC to select a random sample and distribute surveys to them, and having employees return surveys to the university research office via preaddressed, postage-prepaid envelopes. The third method offered called for the several ETCs to coordinate the selection of a random sample, the distribution of the surveys, and the collection of those surveys at a single point of on-site return. All of the ETCs selected the third method, and this procedure was the means of survey data collected decided upon.

In order to ensure that a sufficient number of switchers were included in the study, each ETC was sent 100 surveys, 25 of which were marked with a sticker indicating that the person was a known Non-SOV Commuter. [Two agencies requested a few "extra" surveys to distribute to employees who asked to take part in the survey; in every case these individuals were non-SOV commuters ("switchers") who wished to take part in the CTR program study.] Since the ETCs are knowledgeable about their respective programs and program participants, this task was reported to be an easy one for the coordinators to play in the survey process.

Outcome of the Survey Process

Of the original 18 organizations consenting to participate in the survey process, employees from 15 organizations took part in the study. Two of the organizations that agreed to take part in the study were unable to complete the process of distribution and collection (one changed ownership, and another claimed pressing business necessities precluded survey activity at the time). One agency indicated that 97 of the 100 surveys sent to it were in fact completed and sent to Washington State

University via *Priority Mail*; unfortunately, these surveys never reached their final destination in Pullman.

A total of 902 surveys were completed and coded, and a response rate of 60% was obtained on a single administration of the questionnaire. [If the 97 missing surveys had arrived, the response rate would have been 67%!] The organizations that participated in the study reflect a wide variety of settings; they vary in size, their locations are throughout the state, and they constitute both private sector (profit and non-profit) and public sector employers. It should be noted that participation in the study was far easier to secure from public and non-profit sector organizations and agencies than it was for private sector corporations. Most importantly, perhaps, a total of 372 employees indicated that they had switched from SOV commuting to some alternative form of transportation to the workplace over the course of the past six years. The organizations which took part in the study were as follows:

City of Tacoma Public Utilities (Tacoma) [n=45]
Good Samaritan Community Health Care and Hospital (Puyallup) [n=102]
Hexcel Corp. (Kent) [n=41]
Intercity Transit (Olympia) [n=44]
Maritime Contractors (Bellingham) [n=1]
Providence St. Peter Hospital (Olympia) [n=66]
Regence Blue Shield (Tacoma) [n=71]
Spokane County (Spokane) [n=109]
Washington State DSHS (Olympia) [n=67]
Washington State Dept. of Transportation (Vancouver) [n=89]
Washington State Dept. of Transportation (Yakima) [n=13]
Washington State Dept. of Revenue (Olympia) [n=83]
Washington State DSHS (SVCS) (Yakima) [n=47]
Whatcom Transportation Authority (Bellingham) [n=41]
The Vancouver Clinic (Vancouver) [n=43]
Toppenish Clinic (Yakima Valley Farmworkers Clinic) (Yakima) [n=31]

Unknown Agency/Corporation [n=9]

In preliminary assessments of the survey data collected, fortunately, it was clear that sufficient range in scores was present on measures of perceptions of benefits and costs associated with alternatives to SOV commuting, in external conditions of choice relating to family setting (e.g., households of single, unmarried persons, married with working spouse and children in the home, etc.), relating to traffic conditions during their commute, and relating to access and convenience of public transportation. Similarly, ample range was also in evidence with respect to environmental beliefs (e.g., the state of the ecology is fragile and in danger), environmental attitudes (e.g., provide support to environmental groups and candidates for public office who advocate environmental protection), and environment-regarding personal behaviors (e.g., recycling, energy conservation, watershed protective measures, etc.).

Findings

A Profile of Switchers

A multivariate analysis of questionnaire item Q8H, inquiring whether people have switched from driving alone to some other mode over the course of the past six years, was performed in order to determine if a definable profile could be drawn of the "switcher." The multivariate statistical technique known as *Discriminant Analysis* was used because the dependent variable is dichotomous -- featuring a Yes or No response to questionnaire item Q8H.

The results of the discriminant analysis (reported in Table 1) indicate that the **single strongest predictor** of switching behavior is extent of exposure to the CTR program: survey respondents reporting greater exposure to the CTR program by their employers are more likely to switch from driving alone to some other mode than are SOV commuters. Table 1 indicates the wide range of conditions obtaining in Washington in this regard; some organizations are doing a great deal to promote CTR goals in the workplace, while others are scarcely making an effort (as the Gilmore Research Group also noted in its 1995 study).

TABLE 1

EXPOSURE TO THE CTR PROGRAM BY EMPLOYER

Question: How much have you heard about the CTR Program?

Employer	Nothing	A Little	A Moderate Amount	A Great Deal
A	0%	11%	0%	89%
B	0	6	16	79
C	1	8	16	76
D	3	8	23	67
E	11	9	26	54
F	2	8	38	52
G	11	14	29	46
H	13	17	30	40
I	8	32	21	39
J	12	12	38	38
K	13	23	31	33
L	0	21	48	31
M	33	31	24	12
N	44	34	16	6
O	47	32	15	6
P	79	15	6	0

This finding on the importance of the employer's role in effective CTR programs corresponds to results reported in other studies as well (Edson, 1989; Gilmore Research Group, 1995; Orski, 1990; Porter and Associates, 1998). In addition, switchers tend to attach more importance to cost savings, and attach less importance to family time than do SOV commuters. Switchers tend to have more pro-environmental attitudes and are likely to live farther from work than SOV commuters; the latter finding may reflect the added effort and expense that driving longer distances alone entails. With regard to distance from work, the WSDOT biennial employee survey consistently indicates that people who commute by vanpools have significantly longer average commutes than those using SOV or other modes of transportation to work. The same differences in commute distance (% checking 10+ miles) is evident in this survey, with employees who report that they occasionally or always "carpool or vanpool" reporting longer distances from the workplace than other employees using

other forms of transportation to work. Finally, it is noteworthy that switchers are inclined to attach somewhat less importance to privacy and are somewhat more likely to be male than nonswitchers, although these last two tendencies are not particularly strong. Overall, the discriminant analysis is able to correctly classify just over 66% of the cases.

TABLE 2

DISCRIMINANT ANALYSIS OF WHETHER RESPONDENT HAS CHANGED NORMAL MODE OF TRAVEL FROM DRIVING ALONE TO SOME OTHER MODE IN THE LAST SIX YEARS (1 = NO; 2 = YES)

	Standardized Canonical Discriminant Function Coefficients
Scale of Pro-Environmental Attitudes	.37
Importance of privacy to you (Q2A1)	-.26
Importance of cost savings to you (Q2D1)	.49
Importance of family time to you (Q2Q1)	-.43
Gender (1=female; 2=male)	.24
Distance from home to work	.34
Heard about the CTR Program	.69

Canonical correlation = .42
Wilks' lambda = .82
Chi-square = 83.01
Group centroids:
group 1 -.39
group 2 .56
Percentage of cases correctly classified = 66.12%

The open-ended comments regarding why people changed their mode of travel to and from their worksite would seem to parallel the multivariate analysis of fixed response items and attitude scales, with some noteworthy exceptions. Many of the comments -- (303 of the 372 switchers recorded comments on the reason(s) for switching -- recorded exclusively highlight *convenience* (nearly a third of all commens), *environmental concerns*, or *cost savings*; nearly 4-in-10 offered a set of mixed reasons for having switched. The pattern of reasons recorded for switching are reported in Table 3. It should be noted that a significant proportion of employees (13.2%) recorded reasons

for switching AWAY FROM non-SOV travel and resuming SOV commuting; most of these survey respondents indicated that the loss of an opportunity to rideshare conveniently, disadvantageous changes in their work schedules, or a change in work location or residence accounted for their having resumed SOV commuting.

TABLE 3

COMMENTS RECORDED IN RESPONSE TO A REQUEST FOR REASONS FOR HAVING SWITCHED TO NON-SOV COMMUTING IN THE LAST SIX YEARS

Type of Reason Given	Number	Percentage of all Comments
Protect Environment	6	2%
Protect Environment + one more reason	24	7.9%
Mixed Reasons (48% mention environmental protection)	112	37.0%
Convenience	95	31.4%
Save Money	26	8.6%
Reversal – Returned to SOV Commuting	40	13.2%

Many respondents who appear committed to driving alone mentioned, largely in response to two other open-ended questions provided in the survey, that alternatives to driving alone were either nonexistent or quite inadequate to meet their particular needs. A number of respondents mentioned work schedules that made carpooling or use of public transit exceedingly difficult (for example, people whose shifts began quite early or ended quite late, and people whose work schedules varied from day to day or varied unpredictably). A considerable number of respondents felt that they needed to have their own individual cars to handle family responsibilities or personal tasks on the way to and from work -- although at least one respondent suggested that this difficulty might be

reduced if employers had some company cars available for employees to use in the event of family emergencies, pressing medical appointments, and other such appropriate occasional uses.

The Perception of Costs and Benefits of Non-SOV Alternatives

Ordinary Least Squares multivariate analyses and the open-ended comments both indicate that **a number** of benefit/cost considerations appear to be relevant in explaining commuters' workplace transportation mode choices. Many of those considerations involve the related issues of *convenience*, *flexibility*, and *time*. Drive-alone commuters attach relatively high importance to flexibility and convenience, and carpoolers/vanpoolers attach relatively low importance to flexibility and convenience. Bus and public transit users tend to regard public transportation as relatively convenient; a number of open-ended comments emphasized the need for convenient public transportation and/or its lack of suitability in meeting respondents' commuting needs.

In a related vein, regular users of bus and public transit are inclined to attach less importance to having an independent schedule, and tend to believe that other people attach considerable importance to having an independent schedule. Many of the open-ended comments emphasized respondents' needs to have their own cars to handle family responsibilities, including emergencies, and/or to cope with irregular, unusual, or unpredictable work schedules. Commuters who walk or bicycle regularly believe that other people attach considerable importance to time savings, a finding that suggests that walkers and bicyclers attach relatively less importance to time savings. All of these findings point to the importance of convenience and scheduling considerations in shaping workplace-related personal transportation decisions. By implication, efforts to reduce SOV commuting will probably encounter considerable resistance unless the gap between the convenience and flexibility of SOV commuting and its reasonable alternatives can be narrowed by making non-SOV commuting more convenient and flexible.

As noted earlier, environmental attitudes and behavior are also relevant to transportation decisions. Commuters with more pro-environmental attitudes or behaviors are less likely to drive alone and more likely to carpool or vanpool, use public transportation, bicycle, walk, or change from driving alone to some other transportation mode. In addition, many respondents mentioned environmental concerns in accounting for their commuting decisions. One-in-ten mentioned environmental protection as either an exclusive reason or a reason combined with one other, and nearly half of the persons who gave "mixed" reasons for their switching included concern for the environment in their list of three or more reasons for having switched away from SOV commuting.

Cost considerations are relevant to a number of transportation behaviors. SOV commuters tend to attach less importance to cost considerations, while commuters who attach considerable importance to cost concerns are more likely to carpool/vanpool, use public transportation, or switch from driving alone to using other modes. In addition, a considerable number of open-ended responses mention cost concerns as a significant factor in commuting decisions (8.6%). Distance factors also help to account for some transportation behaviors. Commuters who live farther from work are more likely to carpool/vanpool and switch from driving alone to some other mode. Conversely, commuters who live closer to their places of work are more likely to walk or bicycle.

In a related vein, the difficulty of driving alone shapes some transportation decisions, though perhaps not as many as transportation planners might like. Commuters who do not believe that traffic congestion is very bad are more likely to drive alone, as are commuters who believe that parking is relatively easy to find. Exercise and health considerations and privacy concerns play a modest role in accounting for commuter workplace travel decisions. Commuters who attach greater importance to exercise and to health concerns are more likely to bicycle to and from work; bicycle commuters also believe that other people attach relatively little importance either to exercise or to health. (As noted elsewhere in this report, the findings for perceptions of other people's attitudes generally suggest that those perceptions appear to be virtual reverse measures of the respondents'

own feelings). SOV commuters believe that other people attach considerable importance to exercise and health concerns. Commuters who have switched from the driving alone practice to other modes of workplace transportation tend to attach relatively little importance to privacy, and walkers believe that other people attach considerable importance to privacy. A scattering of open-ended comments point to the benefit of time spent with one or more other people as a positive feature of carpooling/vanpooling or using public transportation.

Overall, these 1998 CTR survey findings appear largely consistent with recurrent themes found in the transportation literature, with commuting trip decisions being substantially influenced by considerations regarding scheduling flexibility, convenience, and diverse travel times, as well as financial costs. Environmental protection considerations are also relevant to a variety of transportation decisions for CTR-mandated organization employees. The results of the OLS multivariate analysis are reported in Table 4.

TABLE 4

MULTIVARIATE ANALYSIS OF FREQUENCY OF DRIVING ALONE TO WORK (LOWEST SCORE DENOTES "ALWAYS" AND HIGHEST SCORE DENOTES "NEVER")

	Beta
Importance to you of flexibility and convenience (Q2B1)	-.33
Importance to others of flexibility and convenience (Q2B2)	.18
Importance to you of cost savings (Q2D1)	.19
Importance to others of exercise and health (Q2M2)	-.12
Importance to others of the tax advantages of a home office (Q2S2)	-.17
Importance of employers showing concern for the environment (Q4)	.16
Availability of parking (Q8D)	-.11
Traffic congestion (Q8F)	-.12
Heard about CTR Program (Q8G)	.10

R Square = .23

Note: Predictors are all significant at the .05 level. This same predictor list is used for all analyses of transportation mode uses and the analysis of switchers. Stepwise regression was used to develop the models. All regression models are weighted, with switchers weighted .3 and SOV commuters weighted 1.12 (because the sample over-represents switchers).

The Ubiquitous Effect of Environmental Values on CTR Behavior

There is considerable disagreement among social scientists as to the relative importance of the advent of "environmentalism" among the American public. Riley Dunlap (1992) and others (e.g., Kanagy et al., 1994; Kempton et al., 1995; Milbrath, 1996) have documented the rise of environmentalism among Americans in recent decades. However, while Dunlap believes that most Americans now refer to their own beliefs as being "pro-environmental" he feels that such beliefs and sentiments are not strongly connected to environment-regarding **behavior.** Other social scientists, however, report evidence of a strong connection between environmental attitudes and environment-regarding behavior in a number of areas of concern to public policy. For example, DeYoung (1985, 1993) reports such a connection in the area of energy use and Steel (1996) finds evidence of such a connection in the area of water conservation and recycling.

What can be said of CTR behaviors and environmentalism? Do measures of environmentalist attitudes and beliefs lead to environmental-regarding behavior with respect to travel to one's workplace? If so, then the steady movement of the American public toward sharing an environmentalist consensus would provide a congenial environment for continuing the WSDOT CTR program.

A summary of multivariate findings regarding the empirical relationship between environmental attitudes and environment-regarding activities, on the one hand, and transportation attitudes and decisions on the other indicate a number of statistically significant relationships (though all are weak in magnitude). These observations can be derived from the CTR program study:

- People are more likely to drive alone often if they do not believe that it is important for employers to show environmental concern.

- People are more likely to carpool/vanpool often if they engage in more pro-environmental activities and, ironically, if they attach less importance to being outdoors. [It should be noted that the reference to "outdoors" my not carry a "wilderness" connotation for many survey respondents.]
- People are more likely to use the bus or other public transportation often if they perform more environmental activities.
- People are more likely to bicycle to work often if they perform more environmental activities.
- People are more likely to walk to work often if they perform more environmental activities.
- People are more likely to switch from driving alone to work to another mode of transportation if they have more pro-environmental attitudes.
- People are more likely to oppose a modest drive-alone surcharge (Q7a) if they perform fewer environmental activities, have less pro-environmental attitudes, and do not think that it is important for employers to show environmental concern. [However, in parallel with the findings for carpooling/vanpooling, people are more likely to oppose a modest drive-alone surcharge if they attach considerable importance to being outdoors.]
- People are more likely to favor a substantial drive alone surcharge (Q7B recoded so that high values indicate support for a higher surcharge and 0=no fee would be fair) if they perform more pro-environmental activities, they think that it is important to set a good environmental example (the single strongest predictor), and they think that other people do not attach much importance to setting a good environmental example. [The multivariate findings regarding perceptions of other people's attitudes suggest that those perceptions often function as an indirect measure of the respondent's own views, e. g., respondents who believe that other people do not attach much importance to setting a good environmental example appear to attach greater importance to it themselves, apart from the direct report of their own values.]

Overall, environmental attitudes and/or activities are related to the likelihood of driving alone, carpooling or vanpooling, using bus or other public transportation, bicycling, walking, and switching from driving alone to using some other transportation mode. In addition, environmental attitudes and activities are related to attitudes regarding a drive-alone surcharge. All of the relationships investigated associate more pro-environmental attitudes and activities with more environmentally responsible transportation choices and more support for a drive-alone surcharge. However, it is important to note that a variety of other considerations (the value of flexibility and convenience, the value of an independent schedule, and perceptions of traffic congestion and public transportation, for example) also contribute strongly to an explanation of transportation choices and attitudes regarding SOV surcharges. Environmental considerations are a significant part of the picture, but only a part.

As indicated above, there has been considerable debate within the area of environmental attitudes versus behavior research over the connection, real or perceived, between pro-environmental attitudes and environmentally protective behavior. Do attitudes favoring environmental protection translate into pro-environmental behavior (e.g., environmental actions such as recycling, energy conservation, or political activism)? Dunlap (1991) finds that pro-environmental attitudes do not necessarily correspond with pro-environmental behavior. In fact, Dunlap argues that the lack of connection between attitudes and action demonstrates that the strength of support for environmentalism (stronger laws, more spending to protect nature, etc.) in the U.S. is weaker than many think. From this perspective, public opinion polls, which regularly demonstrate strong *attitudinal* support for environmentalism, overstate actual support for environmental protection since support stops short of actually doing anything to protect the environment unless it is convenient. It also suggests that research illustrating a strong consensus in support of environmental protection (e.g., Kempton et al., 1995) misses the point since it is not clear the consensus will translate into meaningful behavior, at least from the perspective of public policy makers and planners. Steel (1996), on the other hand, using data from a 1992 national study of environmental attitudes and

behavior, reports that attitude intensity *is* positively correlated with self-reported environmental behavior and political activism. "Respondents with environmentally protective attitudes report they are indeed *thinking globally and acting locally*" (27).

The survey design explores this specific broad debate within the context of the Washington CTR program. Are people who recycle and conserve energy more likely to make use of alternatives to SOV commuting? Are people who are very concerned (attitudes) for the state of the ecology more likely to make use of alternatives to SOV commuting? Moreover, are people who are active in environmental politics more likely to make use of alternatives to SOV commuting? The data from our survey support Steel's (1996) conclusions. The answer in all three cases is yes. There is a strong connection between those commuters who "practice" environmentalism through behaviors such as recycling, composting of yard wastes, minimal use of aerosol products, and energy conservation and a willingness to switch to modes of commuting other than SOV. The relationship is strongest in the areas of public transportation, biking to work, and walking. At the same time, people are more likely to switch out of SOV commuting to alternative modes of transportation if they have more pro-environmental attitudes

Finally, what is interesting about the survey responses reviewed here is the disconnect between the broad support for alternative commute modes and a market-oriented surcharge by those registering "high" on the three environmental scales and the unwillingness (or less of a likelihood) to support alternatives to SOV and/or surcharges by those who *treasure* (i.e., attach considerable importance to) *being outdoors.* This may well indicate support for the existence and/or emergence of a new kind of *high-tech environmentalist* (what David Brooks [1998] labels "cell-phone naturalists") who, contrary to those who typically claim the environmentalist or conservationist label, is not averse to machines, technology, and economic growth per se. In this sense, the survey may well be picking up a distinction between urban-situated, "indoors" environmentalists who are likely to show strong support for CTR/TDM type programs, and active (outdoors), high-tech

environmentalists heretofore unrecognized in the literature on environmental attitudes, much less transportation policy making and planning.

The problem for transportation planners is that the large and growing influx of mobile, high income, knowledge workers moving to the Western U.S., in large part because of the natural landscapes and the relative convenience of a broad variety of nature-based amenities and activities, may well be more likely to fit into the *cell-phone naturalist* category. This is problematic because while they may be more than willing to recycle and voice support for environmental protection measures, the one area that may be immune to appeals to "environmentalism" are efforts to move them out of their high-tech machines (automobiles) which are more and more directly associated with experiencing and enjoying nature (i.e., the outdoors). In short, unlike traditional environmentalists, they do not make the distinction between technology/economic growth (evil or problematic) and preserving/ protecting nature (good or non-problematic). For high-tech environmentalists, sport utility vehicles (SUVs) are a necessary evil that allow them to bridge the gap between a dysfunctional, hectic, unwholesome society and **nature**--a more wholesome, healthier social setting.

Support for a Market-Oriented Approach to the Pricing of SOV Commuting

Cities across the globe are overtaking their environmental limits. The problems of urban sprawl, pollution, and traffic congestion pose severe threats both to environmental quality and the quality of life enjoyed by urban and suburban residents (Kay 1997; Pezzoli 1998). The field of transportation planning and management has long recognized and wrestled with a core element of the larger urban conundrum -- how to move people efficiently from point-to-point within cities using traditional approaches to the problem such as more roads, more mass transit, and expanded public transit capacity. Unfortunately, however, traditional approaches have met with limited success in achieving their objectives (Caro 1975; Downs 1992; Humphrey 1990: 221; Strathman and Dueker 1996: 13). In response, transportation policymakers shifted focus from the supply to the demand

side of the transportation equation and began to reframe the problem of transportation to include environmental (pollution and energy usage) concerns and close consideration of land use policies. Transportation demand management (TDM) programs seek "to reduce peak automobile trips by encouraging the use of high occupancy modes" (Higgins, 1990, 94) or other alternative modes (e.g., bicycling, walking, etc.). But there are problems here too. Alternative TDM policies have met with "only mixed success in reducing solo-driving" (Giuliano, 1992a, 338; Strathman and Dueker 1996) and, consequently, limited success in reducing traffic congestion, air pollution, and fuel (energy) consumption, either making no dent in the targeted problems or providing for only modest improvements at the margins (Giuliano 1992b; Pisarki 1997; Wachs 1993).

The bleakness of the transportation policy landscape is such that Humphrey (1990) concludes "it is likely congestion will worsen unless new and innovative responses are planned, designed, and implemented within the near future" (221). There is indeed an innovative policy mechanism -- a market-based approach to solving the transportation conundrum of congestion, pollution, and energy consumption -- that has received significant attention and growing application in a variety of public policy arenas, especially pollution control, but has been largely ignored in the transportation policy literature. Market-based regulatory mechanisms, or government-imposed markets, are touted as a new, more effective way to get at the increasing complexity underlying new or "next generation" public policy problems (Hahn and Stavins 1991; Chertow and Esty 1997). Government-Imposed Markets [GIMs] promise a more efficient distribution of cleanup/congestion costs to those individuals actually responsible for the policy problem (externality) in question; they occasion compliance cost savings, promote innovation, offer regulated entities the flexibility and freedom of choice to decide how best to achieve public objectives (as opposed to being commanded to do it the "best" way as determined by regulators), and constitute a system which forces the polluter to pay (Rhoads 1985; Weber 1998). GIMs are heralded as being particularly well-suited for policy problems with these characteristics--a regional problem involving dispersed sources (the

location of needed reductions is not place-specific, overlaps jurisdictions), a fixed public target can be set (such as a percentage reduction in SOV trips from a baseline), thousands of sources of the externality (which pose monitoring and enforcement problems for traditional command-and-control regulation), and non-standardized regulated entities (i.e., diversity of situations and preferences) (Levin and Elman 1990; Levin, Elman, and Kuusinen 1988; Stavins 1991).

A market-based approach to commute trip reduction thus is likely to offer another potentially effective tool for combating the trio of problems--traffic congestion, air pollution, energy consumption--providing the rationale for TDM commute trip reduction (CTR) programs. Government-imposed markets would create a direct connection between the source of the "problem"--the individual commuter--and its solution by creating incentives for non-SOV commuting choices, while simultaneously providing disincentives for choosing SOV commuting. In other words, markets would allocate costs among the commuting public by creating a direct relationship between an individual's choice of commute mode and the consequent contribution to the three targeted policy problems. For example, SOV commuter would necessarily pay more for the privilege of that choice than individuals opting for public transit, bicycling, or carpooling alternatives to SOV travel.

What makes the lack of discussion on markets in the transportation field all the more interesting is that transportation policy research over the past ten years implicitly suggests that market-based mechanisms for CTR might be useful and feasible. Downs (1992) finds that traffic congestion problems derive from the complex collective action problem rooted in private choices made by a multitude of individuals with a variety of self-interests and motivations--precisely the kind of dynamic a market mechanism is designed to accommodate. There is considerable evidence that *disincentives* are likely to be more effective than the traditional approach of awarding subsidies for preferred behavior, whether in terms of restrictive parking policies (i.e., parking fees, limited number of spaces) [see Beaton, 1991 and GAO, 1991] or disincentives targeting the auto (Cervero 1990). Baldassare's (1991, 219) finding that the general public's "fundamental distrust of government"

command-and-control-oriented transportation policies "requir[ing] financial and lifestyle sacrifices to reduce traffic congestion" (219) suggests that a regulatory measure grounded in markets and individual choice might elicit a more positive response.

However, Giuliano (1992a) notes that there is a great deal of "public skepticism" and "lack [of] broad-based political support" for congestion pricing (335-36), a mechanism promoted as perhaps the most direct, effective method for combating congestion and recapturing the full social costs of SOV-based commuting patterns (see Evans, 1992; Higgins 1997; Wachs, 1993, 344-45). An example of a successful (i.e., supported by the public) congestion pricing mechanism can be pointed to in California where new toll roads feature HOV lanes which can be used by SOV drivers for a fee. A market mechanism that is still direct but is less visible to the commuter (where they would not have to stop at a toll booth on their way to and from work) might also gain public support. Advances in information technology such as "smart cards" using microchip technology (which can assess fees based on mode of commute, trip length, and time of day, etc.) (Wachs 1993: 352), "automatic passenger counters" (APCs) (Baltes and Rey 1999), or intelligent transportation systems (ITS), more generally, when combined with earlier examinations of pollution-based markets by Levin and Elman (1990), among others, suggests that smart cards, computers, global positioning systems (GPS), and electronic monitoring/measuring devices might facilitate the implementation of government-imposed markets in the area of transportation systems management..

Given the heavy regulatory focus on individuals as the source of undesirable externalities, the structure and success of a market-based CTR program necessarily requires the active support, or at least the permissive acquiescence, of substantial numbers of individual commuters. The question for decisionmakers and transportation system researchers alike is: *How receptive are commuters to a market-based approach to CTR, and what are the limits, if any, of such an approach as perceived by individual commuters?* Related to this core question are several derivative questions as well, such as: Who are the supporters and who are the opponents (or "rejecters") of this approach

to the traffic congestion dilemma facing commuters in these nine highly urbanized counties od Washington? Is there a typical profile for each type of citizen -- that is, the prototypical supporter and his/her counterpart opponent? For those who are not receptive to the idea of a surcharge dedicated to expanding options of travel for non-SOV commuters, why do they reject markets as a program for reducing the number of SOV commute trips?

In order to formulate some reasonably well informed impressions concerning these important questions, survey respondents were presented with the following information as part of the larger survey on the CTR program. The survey instrument, constructed in conjunction with a variety of researchers active in this area of study and agency decisionmakers dealing with the CTR program, sought to explore the issue of "costing" or "pricing" SOV travel in way that approximates the controvercial *contingent valuation* studies (see: Fischoff, 1991; Kahneman and Ritov, 1994).

The following questions deal with a *market-oriented approach* to increasing the percentage of non-single occupancy vehicle workplace commuters. The idea behind this approach is that people should remain *free to choose* whether they drive their own car to work or adopt an alternative to that practice. However, advocates of this idea say that if a person decides to drive to work alone they should pay a modest amount for that privilege to recoup the costs of pollution and traffic congestion. All such payments would go to a fund used by the employer to pay a bonus to those employees who choose to adopt an alternative mode of transportation.

Please indicate how you feel about this idea, and what level of payment you think would be fair to assess for the privilege of driving one's car to work alone.

Overall, this approach:

Is a very *good idea*
Might be a good idea to *try as an experiment*
Is *not a good idea*

If this approach were adopted, what would be a fair payment to assess for driving one's own car alone to work? [Circle one option]

\$5/week \$10/week \$15/week \$20/week \$25/week

More than \$25/week No fee would be fair

Employee support for a market-oriented commute trip reduction program compares favorably with support for congestion pricing, another incentive/disincentive style program. Congestion pricing enjoys a basic level of support that ranges anywhere from 4 to about 30 percent (see Higgins 1997). In our total sample (which included an over sampling of commuters who have switched from SOV to non-SOV commuting), 12% found the market-based approach to be a "very good idea" and another 31.4% support the market idea as an experiment, while fully 56.6% think market-oriented incentives are not a good idea. With respect to a willingness to pay a fee for driving alone to work, slightly more than one-third of the respondents in the total sample think it is fair to charge a fee for SOV commuting, with most agreeing on a $5/ week surcharge (21% of total sample) and the rest choosing a fee level of $10/ week or more. [It must be recalled that the survey population for this study includes daily commuters; this is NOT equivalent to the general population as used in the Higgins studies.]

Removing the over sampling of "switchers" from the sample leads to less robust support for the market-oriented CTR concept, as expected (see Table 5). Since switchers are carrying the costs (whatever they may be in their own circumstances) while SOV commuters are passing on externalities to them under current arrangements, the prospect of having SOV commuters pay for those externalities and provide benefit to persons who switch away from driving alone definitely appeals to switchers. After weighting the survey responses to account for the over-sampling of switchers the respondents agreeing with the statement that markets are a "very good idea" declined from 12 to 9.7%, while those interested in experimenting with markets registered only a 27.4% level of support, almost 4 points less than the switcher-over-represented sample. Perhaps the best measure of overall support for the market concept, however, is the total number of people who either think it is a good idea or worth experimenting with *and* are willing to support a fee-based program

targeting SOV drivers in support of the concept. Almost one-third (30.2%) of all respondents fall into this category.

Table 5

Levels of Support for a Market-Oriented CTR Program

n = 695	IT IS A VERY GOOD IDEA	MIGHT BE A GOOD IDEA TO TRY AS AN EXPERIMENT	IT IS NOT A GOOD IDEA
$10+	5.2%	6.3%	.3%
$5	3.6%	15.1%	1.0%
No fee	.9%	6.0%	61.6%

What Helps to Account for the Levels of Support?

Education: There is a clear relationship between the level of education and support for the market-oriented incentives concept. While only 4.1% of those commuters with high school (or GED) thought a market-oriented approach was a very good idea, 12.8% of those with college degrees thought it was a good idea, and 21.9% of those with advanced degrees liked markets. When partial supporters -- those who are willing to experiment with the market approach to CTR -- are added to the equation, the importance of education again matters, with a 33% level of support in the high school degree category, 44.1% of commuters with a B.A., and 63% of those with advanced degrees.

Income: Baldassare (1992: 220), in his study of Orange County (California) finds that income is "the best predictor" of opposition to new transportation policies seeking to combat congestion and air pollution. However, in our study of counties involved in the state's CTR program, we find the opposite. As income rises, support for the market-based solution to the CTR conundrum increases as well. No one in the under $25,000 income category supports markets as a good idea, yet fully

19.3% of all commuters making over $91,000 per year think markets are a good idea. Moreover, when the partial supporters are added into the analysis, we find no noticeable trend in levels of support among commuters making under $ 50,000 (weighted average of approximately 34% total support), yet an average level of support in the $ 50,000+ income category of approximately 47%.

Convenience of public transit: Conventional wisdom suggests that if public transit is convenient, both in terms of its location (pick-up and drop-off points) to home residences and time, more people will forego SOV commuting for public transit ridership. Rather than ask the traditional "within 1/4 mile of your house" approach to get at this, we asked survey respondents to do a self-assessment of how convenient public transportation is for them to take to work. The multivariate analysis of switching behavior showed that there is a connection between perceived convenience and that behavior, and it follows that acceptance of a market-based program be may similarly affected by convenience issues because many commuters may be unwilling to support a new TDM CTR program designed to get them out of their cars without viable, convenient commute options.

This is exactly what the data show. While only 8.2% of commuters who perceive public transportation as "very inconvenient" think markets are a very good idea, support rises to 14.1% when public transportation is "somewhat inconvenient," and to 26% among those who find public transportation "convenient." Adding partial supporters of markets to the mix leads to majority support for markets as either a good idea or worth an experiment in both the "somewhat inconvenient" and "convenient" categories of commuters, with 53.9% and 64% levels of support, respectively. What these findings suggest is that while expanding public transit programs and/or reconfiguring them to make them more convenient alone might not make much difference in transit ridership, combining such initiatives with an innovative incentive/disincentive combination market-based program might lead to significant increases in public transit usage during peak commuting times.

Gender: Gender is not a significant factor in understanding support for government-imposed markets in CTR programs. Identical percentages of men and women (57.9%) reject the markets concept, with small differences in the distribution of support across the "good idea" and "experiment" categories of responses.

Perception of traffic congestion: Strathman and Dueker (1996) and Baldassare (1992) show that higher levels of congestion are largely unrelated to individual mode choice decisions. Might commuters' perception of the degree of congestion in their typical work commute affect their willingness to accept a market-based strategy for reducing congestion and air pollution? Contrary to expectations, the perception of traffic congestion proves not to be determinative with respect to the acceptance of market-oriented CTR programs. Roughly equivalent percentages of commuters (44 %) who view their daily commute as "highly" congested or "moderately" congested support markets, while somewhat less support (39.1%) is found in the "little" traffic congestion category.

Preferred/typical mode of commute: Not surprisingly, hard-core opponents to government-imposed markets and, perhaps, any CTR program designed to get commuters out of their SOV habits, come from the ranks of committed SOV commuters. The largest group of commuters in the survey (n = 544) are citizens who choose to "always drive alone." They oppose the market-oriented incentives concept by an almost 2-to-1 margin, with 65.3% registering their outright disapproval ("not a good idea") and only 6.7% believing the market concept to be "a very good idea." This is the only one of the several mutually exclusive commute mode groups, however, registering more than a majority *against* the market-based CTR program concept. While no group of commuters had greater than 45 % favoring market-oriented incentives as "a very good idea," when the "partial supporters" are factored in, support for the government-imposed market concept ranged from 53.5 % for commuters who "occasionally" drive alone to 68.8% for those who prefer some form of public transit, and over 70% for walkers. In fact, the weighted averages of all commuter groups (n = 408), except those who "always" drive alone, show a level of support for markets as "a very good idea" at

more than three times that of the "always" drive alone crowd (21.2% as compared to 6.7%). Finally, fully 57.8% of commuters who do something other than always drive alone either think the government-imposed markets concept is a good idea or are willing to experiment with a market-oriented incentives CTR program.

Table 6

Support for Market-Oriented Incentives by Current Commuting Modes

	good idea	experiment	not a good idea
Always drive alone	6.7% (37)	26.4 % (146)	65.3 % (361)
Occasionally drive alone	17.5% (37)	36% (76)	46% (97)
Carpool/vanpool	21.9% (25)	35.1% (40)	42.1% (48)
Bus, ferry, public transit	27.1% (13)	41.7% (20)	31.3% (15)
Bicycle riders	45% (9)	25% (5)	30% (6)
Walkers	23.5% (4)	47.1% (8)	29.4% (5)

Environmentalists -- Conventional wisdom suggests that environmentalists are either highly skeptical of market-oriented regulatory mechanisms, or in outright, often vociferous opposition to them. In fact, throughout the 1970s and 1980s, support for market-oriented incentives in the pollution control arena was limited to a "few economists" and some industry lobbyists (Eads and Fix 1984, 103). From the environmentalists' perspective, the efficacy of market-based pollution control mechanisms is dubious given that market failure and the unwillingness of industry to clean up are the reasons regulation is necessary in the first place. In addition, environmentalists' (and others) have struggled with the overall legitimacy of using markets for regulatory purposes because they create licenses to pollute, create additional opportunities for shirking, and undermine the moral basis of society's fight against pollution (Kelman 1981; Rhoads 1986). And although there have been some notable GIMs endorsed by key environmentalists (e.g., the 1990 CAAA acid rain emissions trading program), skepticism and resistance to their use is still considered a litmus test for "true" environmentalists.

We tested the proposition that environmentalists are decidedly against market-based mechanisms using three scales to measure environmentalism among the commuting public: (1) a scale for support of environmental groups and public figures who advocate for environmental causes; (2) Ellis and Thompson's (1997) 5-item scale of environmental concern; and (3) a scale of environmental behavior, or actions taken on behalf of environmental protection, modeled after earlier work by Steel (1996). Contrary to our expectations, *each* scale predicts support for market-oriented incentives as a CTR regulatory tool. In each case, commuters with the highest scores -- i.e., those with the highest levels of environmental activism, those with the highest intensity of concern for the environment, and those who actively "practice" environmentalism through recycling, composting, the purchase of energy efficient vehicles, etc.-- thought that the GIM idea was a good one.

Written comments related to the market-oriented approach were reviewed to help gain a better understanding of the reasons why those commuters who rejected markets did so. A total of 399 survey participants (44.2% of all respondents) offered written responses in this regard. The comments were of a high enough quality that a content analysis was conducted, and five major rationales for rejecting markets emerged from the analysis. The five major rationales included:

- External constraints condition choice of commute mode
- Freedom is at issue; driving is a right
- Likely ineffectiveness of a market-oriented program
- Equity and fairness concerns
- Citizens/commuters already pay enough

External constraints condition choice of commute mode. The largest category of "rejecters" (33.4%) were those commuters who feel that choice of commute mode is not entirely up to the individual commuter. Common reasons within the larger category of external constraints include employer-controlled work schedules, availability of and access to public transportation, the fact that their vehicle was required at work (by employer; nature of job responsibilities) during the day, or

given children and other family responsibilities, there is the need to run errands during the day as well as on the way to and from work (e.g., dropping children off at day care facilities). In a small handful of cases (fewer than five), survey participants noted their need to care for a handicapped or chronically ill person, which required the flexibility afforded by having a personal vehicle at work. It is likely that few if any CTR incentives could be effective at inducing behavior change among this group of commuters.

Likely ineffectiveness of market-oriented program. Many commuters (17%) are concerned about the overall effectiveness of a market-based CTR program. The fear is that most people will not respond to such incentive for non-SOV behavior, that disincentives ("punishment") are not a good motivator relative to positive incentives (subsidies), or that the complexity of the program will obviate against success, especially in the areas of monitoring and enforcement. Others in the survey took the opportunity to offer what they saw as more effective solutions such as a gasoline tax (such responses were coded as "ineffective" because it was clear that respondents viewed markets as less effective, or ineffective relative to their proposed alternative). Some respondents also mentioned non-commuters as part of the congestion/pollution problem (e.g., students driving to/from school, trucks on delivery, etc.) which would not be affected by workplace commuter-focused programs.

Freedom is at issue; driving is a right. A good-sized segment (13.3%) of those writing comments worded their opposition to a market-based program in the language of freedom and rights, some going so far as to equate the proposed market-oriented incentive with communism. Sample responses include "This proposal infringes on people's right to drive a vehicle they pay for. This is an individual freedom" (#15017) and "All should be free to choose how they get to work and not be penalized in any way" (#10094). It is clear that for this group of commuters the right to drive whenever and however they choose trumps all other considerations.

Equity and fairness concerns. A smaller proportion of the comments (6%) rejected markets because of likely inequity effects. Of primary concern here were the unfairness of such a program for single

parents, poor people, and for poorly-paid workers -- those for whom an added small cost to driving alone would effectively take away this choice on how to get to work. Others expressed concern that citizens living in rural areas would have to shoulder a disproportionate share of the burden.

Citizens/commuters already pay enough. A small number (4%) of respondents are convinced that they already pay enough, either in terms of an overall tax burden or, more specifically, to own and drive their own cars and/or to alleviate the public policy problems at issue. Typical responses state "I already pay a lot of money for the privilege. I will NOT pay more for driving my own car" or "I already pay taxes to be able to drive my car" or "Give me a break. I'm already taxed for kids I don't have and never will have, and for hundreds of programs I will never use."

Conclusions

The policymakers of Washington are inclined to "shoot high" in the setting of goals, particularly in the area of public policies that affect the quality of the environment. For example, in 1989 a statute was adopted setting a goal of 50% recycling of all solid waste produced by households and businesses by the year 1995. The rate of recyling attained in 1998 is just under 33% (and declining) (Ammons, 1998). Similarly, in the CTR program an ambitious goal was set (and readjusted) aiming at a 35% reduction in SOV commuting by 2005; the current rate of attainment is only 7%.

While the setting of high goals is essential to progress, failure to achieve such goals can sometimes lead to premature abandonment of effort in areas where continued work is indeed timely and appropriate. According to the findings of the 1998 CTR program employee survey this danger must be avoided in the case of the CTR program. Because of the CTR program the number of vehicle miles traveled to and from work has been lowered by more than 320,000 miles per day, and employers have started 3,800 car pools and 100 van pools for their employees (Cruz, 1999). For many "switchers" the CTR program is very important, and for many employers -- including many

who are not mandated to plan under the CTR program -- it is important to provide the CTR tax credit to support non-SOV travel options. Evidence abounds that our citizens are becoming increasingly sentitive to environmental quality issues, and that these sensitivities lead *in time* to environment-regarding behavior -- including non-SOV commuting. Where employers are actively promoting the program, employees are inclined to adopt non-SOV modes of travel. If anything, our efforts in this area need to be strengthened all the lines recommended by the GAO (1991).

Recommendations for Public Policy

We would urge policymakers in Washington to avoid frustration over the nonattainment of high goals set in the CTR program and not follow the lead of California authorities. We agree with Hirten and Beroldo (1997) that Caltrans' decision to discontinue its 20-year ridesharing CTR program (a part of the Regulation XV scheme) is bad public policy. With regard to our own state program, we agree with Poulenez-Donovan and Ulberg (1995) that: "It may be that TDM programs have not caused people to change their mode choices as much as they have provided the support needed for non-SOV drivers to successfully utilize their preferred modes." All indications are present that the absolute numbers of employers and employees across the whole state who prefer non-SOV modes are growing, and that CTR efforts will indeed find an increasingly receptive audience in the years ahead.

The recent decision to undertake a media campaign to promote non-SOV travel more broadly, beyond the limits of the 9 most urbanized counties and the larger employers, would seem to us to constitute timely and appropriate public policy. But even more could be done. Given the critical relationship between communicating the nature of the CTR program and increased employee participation in the program, we need to find out what *successful communicative organizations* are doning right. How exactly do their efforts differ from those organizations that have been less successful in communicating CTR objectives to employees?

Similarly, the fact that 126 of the 204 employers taking advantage of CTR tax credits between 1995 and 1997 are not mandated to plan for CTR goals provides another indication of the need to move beyond the current program to a broader CTR effort. If more tax credits were available, there is a strong likelihood that even more smaller organizations would be enticed to join in the CTR effort. Combining the findings from the Gilmore Research Group and our own reported here, we need to document what smaller employers (i.e., those **not** subject to CTR planning requirements, yet which are going after B & O tax credits) and public sector agencies are doing right to gain CTR participation. These reinforcing findings suggest that there well may be an *organizational culture* within these numerous organizations which facilitate CTR program success. It would be very useful to TDM efforts to learn much more about the leadership and organizational dynamics present in these organizations.

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Baldassare, M. (1986) *Trouble in Paradise: The Suburban Transformation of America.* New York: Columbia University Press.

Author describes how the transfer of middle class population to suburban areas and away from central cities has led to a concentration of poverty, a weakening of public education, and dramatic worsening of transportation (and air quality) problems.

Baltes, Michael R., and Joel R. Rey (1999). "The 'ins and outs' of APCs: An Overview of Automatic Passenger Counters." *Journal of Public Transportation* 2: 47-64.

A fair assessment of the technology available to produce accurate counts of passangers per automobile ratios.

Bauman, Y. (1998) *Tax Shift: How to Help the Economy, Improve the Environment, and Get the Tax Man Off Our Backs.* Seattle, WA: Northwest Environment Watch.

Author makes argument for the taxation of "bads" rather than "goods" (commodities); in this regard, argues for pollution taxes associated with automobile use.

Beaton, W.P. (1991) *Transportation Control Measures: Commuting Behavior and the Clean Air Act.* Piscataway, NJ: Center for Urban Policy Research, Putgers University.

From a survey of over 1,900 employees of the Matsushita Electric Corporation of America indicated that few employee were interested in ridesharing programs. With a combination of a parking fee ($1.00/day), rideshare coordination by the employer, guaranteed ride home, access to a company car for emergencies, and $1.00/day incentive for every non-SOV commute a 25% improvement in AVO was theoretically achievable. [It should be noted that few if any CTR program employers offer this range of incentives (and discentives vis-a-vis parking) in Washington.]

Brooks, D. (1998). "Cell Phone Naturalists." *The Weekly Standard.* (October 26): 20-25.

Brooks notes that the normal battlelines drawn in American environmental politics is that between technology and nature, with the advocates of technological expansion and sophistication facing off against the forces of nature preservation. The author notes, however, that there are growing numbers of "cell phone naturalists." He notes that cell phone naturalists are "technologists, capitalists, and environmentalists all at once." With respect to Washington, Brooks writes the following perceptive comments: "Back at REI...the culture war between the party of the machine and the party of nature is obsolete. REI is the home of the Cell Phone Naturalists. These people are simultaneously pro-technology and pro-nature. Seattle is one of the most technologically advanced cities in America and also one of the most environmentally aware. No matter how conservative or libertarian the people in suburban Seattle may be on economic matters, they are environmentalists through and through.

Button, K.J. and E.T. Verhoef (eds.) (1998) *Road Pricing, Traffic Congestion and the Environment.* Northhampton, MA: Edward Elgar Publishing, Inc.

This book examines Pigouvian taxes, the most popular policy prescription among economists, as well as considering a variety of other policies which may be more politically and socially acceptable. The contributors discuss alternatives to Pigouvian taxes, as well as congestion and urban development, congestion pricing and road infrastructure investment, and road pricing and urban sustainability.

Cameron, L.D., P.M. Brown and J.G. Chapman (1998) "Social Value Orientations and Decisions to Take Proenvironmental Action." *Journal of Applied Social Psychology* 28: 675-697.

Study assessed whether social value orientations influence decisions to actively support a proposal for a transportation pollution reduction program. One hundred and thirty-five undergraduate college students were tested to determine their *prosocial* and *proself* orientations, and were given the opportunity to send letters to the program director for an Employee Trip Reduction program. The program was explained to the students, and sample pro and con letters were made available. Proself students were more likely to send opposing letters, and prosocial students were disproportionately likely to send letters of support.

Cameron, M.R. (1991) *Transportation Efficiency: Tackling Southern California's Air Pollution and Congestion.* Los Angeles and Washington, D.C.: Environmental Defense Fund and the Regional Institute of Southern California.

Advocacy of a substantial increase in the cost of gasoline as a method of both financing alternatives to automobile dependency and raising the costs of automobile use.

Caplice, C. and H.S. Mahmassani (1992) "Aspects of Commuting Behavior: Preferred Arrival Time, Use of Information and Switching Propensity." *Transportation Research* 26: 409-418.

On the basis of a survey of commuters in Austin, Texas in 1989, authors document the importance of individual characteristics in the willingness of employees to alter their arrival time at work to alleviate traffic congestion. Single persons were more likely to switch times of arrival than married persons. These findings replicated an earlier study done in Seattle [Mannering, 1989].

Caro, R.A. (1975) *The Power Broker: Robert Moses and the Fall of New York.* New York: Vintage Books.

Classic study on building of great political power from the base of an administrative agency, in this case the New York transit system. Study also shows the problems associated with the suboptimization of public policy which occurs when a public agency develops disproportionate political power.

Cervero, R. (1986) *Suburban Gridlock.* New Brunswick: Rutgers Univ. Center for Urban Policy Research.

Good historical account of the growth of the problem of traffic congestion in US urban areas.

Cervero, R. (1990) "Transit Pricing: A Review and Synthesis." *Transportation* 17: 117-139.

Good review of literature (up to late 1980s) on transit pricing (price to ridership/revenue tradeoffs)

Chertow, M.R. and D.C. Esty (1997) *Thinking Ecologically: The Next Generation of Environmental Policy.* New Haven, CT: Yale University Press.

Authors argue that the first generation of environmental policy dealt with the need to regulate major industries by means of appropriate legal mechanisms and administrative regulatory structures. The next generation of environmental policy, however, will need to address the need to *change individual behavior* on the part of millions of citizens. The authors suggest some creative ideas in this regard. The CTR program fits well into this new generation of environmental policy.

Colgan, C.S. and G. Quinlin (1997) "The Catch-22 of Congestion Pricing." *Transportation Quarterly* 51: 117-133.

Authors use an example of a peak-hours congestion pricing experiment in Maine to illustrate why congestion pricing – which is oft-proposed – is seldom found to be politically feasible.

Commute Trip Reduction Office (1997) *Commute Trip Reduction Task Force Guidelines.* Olympia: Public Transportation and Rail Division, Washington State Department of Transportation.

Basic document on the operation of Washington's CRT program.

Cruz, L.M. (1999) "Officials Drive to Ease Commuting." Associated Press feature on January 15, 1999. *The Spokesman-Review,* January 15, 199, p. B4.

State officials launched a media campaign on the 14th to increase workers' awareness of alternatives to commuting alone. Vanpooling, carpooling, transit passes, compressed work weeks and telecommuting will be featured in the media campaign. The campaign slogan is: "Relax: There's more than one way to get there." State transportation marketing specialist Sharon Rice is heading up the media campaign effort, and plans exist to use radio, print, billboards, transit ads, and TV public service announcements to promote the CTR program and collectively desirable behavior. The media campaign reflects the fact that the 1991 CTR law has not resulted in the achievement of the 35% reduction in SOV commuting hoped for in the legislation. The actual reduction has been just above 9%.

Daly, H. and J. Cobb (1994) *For the Common Good: Redirecting the Economy Toward Community, the Environment, and a Sustainable Future, 2nd Ed.* Boston: Beacon Press.

Authors argue for a communitarian approach to promoting sustainable economic growth in local areas, focusing on "human scale" in the structuring of economic enterprises.

DeYoung, R. (1985) "Encouraging Environmentally Appropriate Behavior: The Role of Intrinsic Motivation." *Journal of Environmental Systems* 15: 281-292.

Importance of "values" in the promotion of environmentally appropriate behavior.

DeYoung, R. (1993) "Changing Behavior and Making it Stick: The Conceptualization and Management of Conservation Behavior." *Environment and Behavior* 25: 485-505.

Change in intrinsic motivations through information processing and internalization of values leads to lasting behavioral change.

Dodds, D. and G. McCoy (1995) *Initial Impacts, Benefits, and Costs of Washington's Commute Trip Reduction Program*. Olympia: Washington State Energy Office.

Report sets forth the results of the first two years of operation of the CTR program. Findings reported for each county and for each of 26 transportation zones. While reductions in SOV travel were recorded in 23 of the 26 transportation zones, the reductions witnessed were small and not on a pace to accomplish a 35% reduction by Jan. 1999.

Downs, A. (1992) *Stuck in Traffic: Coping with Peak Hour Traffic Congestion*. Washington, D.C.: The Brookings Institution.

Application of rational choice analysis to driving behavior reveals a deep problem for effective collective action. The more options which are developed for alternatives to automobile use, the stronger the incentive for free riding by car owners. The "vicious cycle" is an inevitable outcome of the "free choice" we promote as a fundamental value of American society.

Dunlap, R.E. (1991) "Public Opinion in the 1980s: Clear Consensus, Ambiguous Commitment." *Environment* 33: 9-37.

Riley Dunlap documents the change toward greater environmental awareness and concern among the American citizenry. However, the connection between these attitudes and environmentally regarding behaviors are not strong. Dunlap concludes his analysis with these prophetic words: "How well environmentalists and policymakers are able to mobilize this pro-environment sentiment and channel it into concrete actions will be a major factor determining whether the 1990s prove to be a decade of the environment or an era of unprecedented ecological deterioration."

Dunn, J.A. (1998) *Driving Forces: The Automobile, Its Enemies, and the Politics of Mobility*. Washington, D.C.: The Brookings Institution.

This book represents a fair assessment of the efforts of the automobile's critics and why their efforts to address the problems associated with dependency upon the automobile have been of such limited success.

Eads, G.C. and M. Fix (1984). *Relief or Reform: Reagan's Regulatory Dilemma*. Washington, D.C.: The Urban Institute Press.

Good overview on President Reagan's efforts to promote "deregulation" of the US economy.

Edson, G.W. (1989) *Employer Involvement in Commuter Transportation*. Ph.D. Dissertation, Claremont Graduate School.

A study of 106 Orange County (California) employers shows great variation across firms with respect to ridesharing and flextime adoption. Key factors were the attitudes and behaviors of corporate leaders and CTR program managers (ETCs).

Elgin, D. (1993) *Awakening Earth: Exploring the Evolution of Human Culture and Consciousness*. New York: William Morrow Publishers.

Author argues that contemporary culture is moving from "dynamic consciousness" to "reflective consciousness" in thinking about how humans occupy their ecological space.

Ellis, R.J. and F. Thompson (1997) "Culture and the Environment in the Pacific Northwest." American Political Science Review 91: 885-897.

Authors report evidence that the Douglas and Wildavsky argument that environmental activism is rooted in a deeper egalitarian cultural orientation.

Evans, A.W. (1992) "Road Congestion Pricing: When is it Good Policy?" *Journal of Transport Economics and Policy*. 26: 213-44.

Author makes the case for a wider application of road congestion pricing as a good alternative to structural enhancements.

Ferguson, E. (1990) "An Evaluation of Employer Ride-Sharing Programs in Southern California." *Transportation Research Record* 1280: 59-72.

Authors report only limited success of employer ride-sharing programs required under Regulation XV.

Ferguson, E. (1994) *Recent Declines in Carpooling: NTPS Special Subjects Reports, 1990*. Washington, D.C.: Office of Highway Information Management, Federal Highway Administration, U.S. Department of Transportation.

National survey documents the decline in carpooling over the period 1980 to 1990.

Fischhoff, B. (1991) "Value Elicitation: Is There Anything There?" *American Psychologist* 46: 835-847.

A critical assessment of contingent valuation studies.

General Accounting Office (1989) *Traffic Congestion: Federal Government Efforts to Improve Mobility*. Washington, D. C.: General Accounting Office (PEMD-90-2).

An overview of federal efforts to reduce traffic congestion. Comments from the U. S. Department of Transportation include a judgment that improved mass transit, by itself, is unlikely to reduce congestion, but may slow its growth. It is suggested that substantial improvements in congestion most likely will require a combination of both considerably improved mass transit **and** increases in the cost and/or inconvenience of driving alone (higher parking charges, tolls, higher fuel prices, reduced parking availability (p. 83).

General Accounting Office (1991) *Traffic Management: Federal Policies to Encourage Low-Cost Approaches Need to be Strengthened*. Washington, D. C.: General Accounting Office (PEMD-91-26BR).

An overview of federal efforts to support low-cost remedies for congestion. The report notes that these efforts were a very small proportion of total federal highway funding during the 1980s (about 1.6 billion dollars compared to about 88 billion for highway construction and related activities. Moreover, only 127 million of the congestion funding was devoted to demand management strategies, such as carpool facilities or vanpools (pp. 14-15). A survey of metropolitan planning organizations found a fair amount of use (over 20% of respondents) of ridersharing programs, park and ride, and transit incentives, some use (10% to 20% of respondents) of flextime, high occupancy vehicle lanes, and parking management, and limited use (less than 10% of respondents) of trip reductions ordinances, auto-restricted zones, and congestion pricing (the latter very rarely used: p. 23). Higher parking charges have some value as a congestion remedy, but have major problems with political and public acceptability (p. 30).

General Accounting Office (1997) *Federal Workforce: Agencies' Policies and Views on Flexiplace in the Federal Government. Report to the Ranking Minority Member, Subcommittee on Civil Service, Committee on Government Reform and Oversight, U.S. House of Representatives*. Washington, D.C.: General Accounting Office. [July]

Excellent overview on policies put in place to promote telecommuting and the use of telecenters in larger agencies.

Gilmore Research Group (1995) *Commute Trip Reduction Focus Groups: Overall Summary.* [Report Prepared for the Washington State Energy Office] Seattle, WA: The Gilmore Research Group.

Documentation of the limited degree of buy-in present among private sector firms for the goals and objectives of the CTR program. ETCs are critical of the low level of support received from CEOs and managers. Employers offer few incentives, even though vanpools and ridesharing are the most likely programs to receive employee attention. Most ETCs are given the responsibility as opposed to self-selected, and there is a great deal of turnover in that key position resulting in a serious lack of continuity in program activities. Many firms consider this a "nuisance" program (one of many) which they must maintain as an "over-regulated" business.

Gilmore Research Group (1996) *Public Awareness Campaign Research Results* [Report prepared for the Washington State Department of Transportation] Seattle, WA: The Gilmore Research Group.

A set of three focus groups held for commuters in the CTR counties led to the preparation of a survey (telephone) conducted among 400 adults in the same counties (1996). The problem of traffic congestion was cited as a serious concern for 68% of the respondents, and 72% indicated that world oil supplies were a serious concern for them as well. Air pollution was a concern of only 45% of the respondents. Almost two out of three respondents said they have already done something about these problems; 64% indicated that they have chosen to "drive less" as a consequence. As for SOV issues, citizens favor carpooling, HOV lanes, more buses, and greater use of walking and bicycling and the use of a media campaign to promote these activities. Unfortunately, the citizens who are the most concerned about air pollution, congestion or energy supplies are already the most likely to be using non-SOV modes of travel to the workplace.

Importantly, when asked about the most credible and effective groups to head up a favored public information campaign, respondents were most likely to recommend **environmental groups**. This finding provides an important justification for the focus on environmental group phenomena in the current study of SOV switchers reported on here.

Giuliano, G. (1992a). "An Assessment of the Political Acceptability of Congestion Pricing." *Transportation.* 19 (4): 335-58.

Author details the dynamics underlying the unpopularity of congestion pricing.

Giuliano, G. (1992b) "Transportation Demand Management and Urban Traffic Congestion: Promise or Panacea?" *Journal of the American Planning Association.* 58 (3): 327-35.

Author provides a realistic assessment of the potential for a "planning" solution to urban traffic congestion.

Giuliano, G. and K. Hwang (1993) "Employee Trip Reduction in Southern California: First Year Results." *Transportation Research* 27A: 125-137.

A report on the first year of operation of commute trip reduction programs under Regulation XV in the Los Angeles metropolitan area. Preliminary evidence of only limited success in gaining participation, but no sign of effect on the broader problems of air pollution and traffic congestion.

Goddard, Stephen. 1994. *Getting There.* New York: Basic Books.

An overview of the development of the U. S. surface transportation system during the twentieth century. The author estimates that the total annual cost of road and highway transportation (including tax subsidies, law enforcement, interest, revenue losses from free parking, half of the cost of the U. S. military presence in the Persian Gulf, traffic congestion, health, and pollution, at approximately 293 billion dollars (p. 255).

Goldsmith, S.A. (1992) "Case Study No. 1: Reasons Why Bicycling and Walking are not Being Used More Extensively as Travel Modes." In U.S. Department of Transportation, *Federal Highway Administration National Bicycling and Walking Study*. Washington, D.C.: U.S. Government Printing Office.

Author makes case for the alteration of car-centered transportation planning into a broader view of transportation system channels facilitating the use of bicycles and walking.

Hahn, R.W. and R.N. Stavins (1991) "Incentives-based Environmental Regulation: A New Era from an Old Idea?" *Ecology Law Quarterly*: 1-42.

An excellent discussion of the "old wine in new bottles" aspects of market incentive-oriented environmental regulation strategies.

Hands, J. and T. Lomax (1991) "Roadway Congestion in Major Urban Areas: 1982-1988." *Transportation Research Record* 1305: 177-189.

Authors document the growing severity of traffic congestion problems in US urban areas.

Hanson, S. and P. Hanson (1981) "The Impact of Married Women's Employment on Household Travel Patterns: A Swedish Example." *Transportation* 10: 165-183.

Authors document the severe limitations on commute travel decision-making faced by married women, particularly those with school-aged children.

Hayward, S. (1998) "Legends of the Sprawl: Liberals Have a New Scapegoat for Their Urban Failures -- Suburban Growth." *Policy Review* (September/October): 26-32.

Author provides an analysis of the consequences of conventional land use planning practices for the automobile-centered transportation system developed in most U.S. urbanized areas. Author notes that the advocates of the "new urbanism" aattribute to suburbanization a full range of adverse consequences for the quality of life in the US, with transportation issues being among the most serious effected long term outcomes of urban sprawl. Hayward notes that the federal government fully supports regionalism and "smart growth" through the "stealth mechanism" of ISTEA. He notes that ISTEA mandates regional transportation planning on behalf of goals that serve as the opening wedge for the agendas of environmentalists and new urbanists.

Higgins, T.J. (1990) "Demand Management in Suburban Settings: Effectiveness and Policy Considerations." *Transportation* 17: 93-116.

Review of 26 employer programs in Washington, California, Maryland, Colorado, Kansas, New Jersey, and Minnesota. Argues that demand management programs can be effective if there is a coordinated plan linking incentives, transportation options, and parking management (high pricing). Guaranteed ride home services receive favorable review. Author maintains that state statutes and local ordinances need to focus on plans rather than particular strategies because local conditions differ widely from place to place.

Higgins, T.J. (1997) "Congestion Pricing: Public Polling Perspective." *Transportation Quarterly* 51: 97-104.

Author documents low level of support in 13 years of research on pollution/congestion pricing ideas put before citizens in Southern California, Portland, San Francisco, Minnesota and London. Road tolls and gasoline tax options receive more support than congestion pricing.

Higgins, T.J. (1990) "Demand Management." *Transportation* 17: 93-116.

Author sets forth a variety of methods available for the management of demand for access to automobile-based modes of transportation in urban area. Higgins places special attention on pollution/congestion pricing.

Hirten, J. and S. Beroldo (1997) "Ridesharing Programs Cost Little, Do a Lot." *Transportation Quarterly* 51: 9-13.

Authors decry the decision of Caltrans to discontinue a 20-year program of support for ridesharing, and the decision of the State of California to discontinue the employer commuter trip reduction program which had been part of the Regulation XV scheme.

Humphrey, T.F. (1990) "Suburban Congestion: Recommendations for Transportation and Land Use Responses." *Transportation.* 16: 221-40.

Author advocates a regional approach to transportation system development, with associated land use policies supportive of transportation plan goals and objectives.

Inglehart, R. (1977) *The Silent Revolution: Changing Values and Political Styles Among Western Publics.* Princeton, NJ: Princeton Univ. Press.

Widely read study on evidence that post-industrial societies are witnessing a change in value orientations such that "materialistic" older generations are being replaced with "postmaterialistic" younger generations, and postmaterialists favor pro-environmental and pro-equity public policies. Author cites evidence from public surveys conducted over a decade in eight countries.

Inglehart, R. (1990). *Culture Shift in Advanced Industrial Society.* Princeton, NJ: Princeton Univ. Press.

Continuation of previous study, making use of longer periods and data from over 20 countries of varying levels of industrial development. Similar patterns of movement from materialistic to post-materialistic values is documented.

Kahneman, D. and I. Ritov (1994) "Determinants of Stated Willingness to Pay for Public Goods: A Study in the Headline Method." *Journal of Risk and Uncertainty* 9: 1-38.

Authors argue that contingent valuation methods are overly costly and of insufficient reliability to permit their widespread use. They apply their "headline" method and derive estimates of public willingness to pay for environmental objectives.

Kain, J. (1994) "Impacts of Congestion Pricing on Transit and Carpool Demand and Supply." In Transportation Research Board, *Curbing Gridlock, Vol. 2* Washington, D.C.: National Research Council, National Academy Press.

Author argues that the use of parking fees is a much more effective policy lever than is a congestion pricing approach. This same theme is argued by Downs (1992)

Kanagy, C.L., C.R. Humphrey and G. Firebaugh (1994) "Surging Environmentalism: Changing Public Opinion or Changing Publics?" *Social Science Quarterly* 75: 804-819.

Authors demonstrate two dynamics underlying increasing pro-environmentalism among the U.S. public, as determined from General Social Surveys over the course of the period 1980 to 1990. There is strong empirical evidence of BOTH a generational replacement effect and a period effect (increased environmentalism across all aged groups) in the several General Social Surveys analyzed. This is an important study in that it shows that to the extent that environmental attitudes are linked to behavior in the area of commute trip activities, policies directed toward CTR programs and driver participation can take advantage of a social environment in which such calls for "doing the right thing" will receive an increasingly positive reaction.

Kay, J.H. (1997) *Asphalt Nation: How the Automobile Took Over America and How We Can Take It Back.* Berkeley, CA: University of California Press.

Author provides an accurate and complete account of the growth of dependency on automobiles in our contemporary culture, and sets forth both traditional and novel proposals on how changes in land use planning and some innovative public policy initiatives could greatly improve our situation.

Kelman, S. (1981) *What Price Incentives? Economists and the Environment.* Boston, MA: Auburn House.

Good critique of the over reliance on market mechanisms on the part economists given the many symbolic, political and emotional aspects of environmental policy issues.

Kempton, W., J.S. Boster and J.A. Hartley (1995) *Environmental Values in American Culture.* Cambridge, MA: The MIT Press.

Excellent study on the strong themes of environmental protection found in the American political culture, and a demonstation of how those themes have been intensified and strengthened in recent decades.

Koppelman, F.S., C.R. Bhat, and J.L. Schofer (1991) "Market Research Evaluation of Actions to Reduce Suburban Traffic Congestion: Commuter Travel Behavior and Response to Demand Reduction Actions." *Transportation Research* 27A: 383-393.

Authors report on the basis of a survey among commuters in metropolitan Chicago that the most likely non-SOV commuters are single women and individuals from households with few autos. The class inequity implied – that is, those with the funds to afford autos and drive to work and pay for parking – will do so at constant rates as the poorest of the employed workforce take alternative forms as a form of economic adjustment to limited income. In order to secure greater equity in the distribution of non-SOV workplace commuting it would be necessary to enact policies and fees (parking) which would be extremely difficulty to put into place.

Kuzmyak, J.R. and E. Schreffler (1989) *Effectiveness of Existing TDM Programs.* Washington, D.C.: Federal Highway Administration.

Favorable assessment of pilot programs in several states prior to the enactment of mandates for similar programs in the 1990 Clean Air Act Amendments.

Levin, M.H. and B.S. Elman (1990) "The Case for Environmental Incentives." *The Environmental Forum.* (January/ February): 7-11.

Good case made for a wider application of market approaches to environmental protection.

Levin, M.H., B.S. Elman and T. Kuusinen (1988). "Make Pollution Control Easy and Cheap." *Washington Post.* (March 1): A19.

A polemical argument for a broad application of market approaches to environmental protection.

Mahmassani, H., C. Caplice and C.M. Walton (1990) "Characteristics of Urban Commuter Behavior: Switching Propensity and Use of Information." *Transportation Research Record* 1285: 57-69.

Authors report from a survey of commuters in Austin, Texas (1989) that the availability of commute-relevant information (via TV and radio channels) serves as an important element of a commute time switching behavior.

Mannering, F. (1989) "Poisson Analysis of Commuter Flexibility in Changing Routes and Departure Times." *Transportation Research* 23B: 53-60.

Single persons were more likely to switch times of arrival than married persons. These findings were replicated in a later study done in Austin, Texas [Caplice and Mahmassani, 1992].

McMullen, B.S. (1993) "Congestion Pricing and Demand Management: A Discussion of the Issues." *Policy Studies Journal* 21: 285-295.

The author depicts congestion pricing as a potential remedy for traffic congestion, especially if a good mass transit system is available, but notes that there appears to be considerable public resistance to congestion pricing mechanisms on what were previously "free" roads. Starr also cites studies indicating that motorists may significantly understimate the cost of a vehicle trip (including the total cost of vehicle operation and the value of time spent in transit)-this may be relevant as a policy lever--advertisements highlighting the true cost of driving alone might be indicated.

Milbrath, L.W. (1996) *Learning to Think Environmentally While There is Still Time*. Albany, NY: State University of New York Press.

In a chapter on "Theories of Social Change," author stricks an optimistic note on changing environmental attitudes characteristic of a "reflective consciousness." [see Elgin, 1993]. Milbrath is convinced that environmental attitudes are connected to behavior in this profound way, and that the future holds -- among younger cohorts -- good prospects for a more ecologically functional cultural definition of human to nature relationships.

Miller, J. (1997) *Egotopia: Narcissism and the New American Landscape*. Tuscaloosa, AL: University of Alabama Press.

Author paints a pessimistic picture of a culture hopelessly mired in "rampant ego, blatant narcissistic self-indulgence" and disregard to future generations. Save a revolution in thinking, author holds little hope for improvement.

Mitchell, R.C. and R.T. Carson (1989) *Using Surveys to Value Public Goods: The Contingent Valuation Method*. Washington, D.C.: Resources for the Future.

Important presentation of the need for a method to assign costs and determine willingness to pay for public goods. Authors propose an appropriately complex and data-intensive approach to this task.

New York Times (1988) "National Gridlock: Scientists Tackle the Traffic Jam." August 5.

Hopeful article on ideas being discussed to decrease SOV travel, ranging from engineering systems to public transportation to employer-based incentives and travel-related policies.

Nihan, N. and G. Kirkemo (1988) *Driver Information Services: The Feasibility of Using Local Access Cable TV*. Olympia: Washington State Transportation Research Report.

Study of the feasibility of using local cable TV to disseminate traffic congestion information for us by commuters.

Office of Intergovernmental Personnel Programs (1981) *Designing Experiments in Use of Flextime and Compressed Work Schedules: Information for State and Local Governments*. Washington, D.C.: U.S. Government Printing Office.

Good overview on flextime and 4-day workweek programs for reducing traffic congestion.

Orr, D. (1992) *Ecological Literacy: Education and the Transition to a Postmodern World.* Albany, NY: State University of New York Press.

Author sets forth an optimistic assessment of the prospects for environmental education to lead to a more appropriate relationship between humans and their natural environment.

Orski, C.K. (1990) "Can Management of Transportation Demand Help Solve our Growing Traffic Congestion and Air Pollution Problems?" *Transportation Quarterly* 44: 483-498.

Critical prediction of the limited effects likely to result from the implementation of commute trip reduction programs.

Pezzoli, Keith (1998). *Human Settlements and Planning for Ecological Sustainability: The Case of Mexico City.* Cambridge, MA: The MIT Press.

Author analyzes the dynamics underlying the horrendous environmental conditions of contemporary Mexico City.

Pisarski, A.E. (1987) *Commuting in America: A National Report on Commuting Patterns and Trends.* Westport, CT: Eno Foundation (mimeo)

Author reports that the suburb to work to suburb return is the most typical workplace commute in the United States since the late 1950s. Sets forth a thorough assessment of the demands on the transportation road network that this method of residential housing dispersion occasions.

Pisarski, A.E. (1992) *New Perspectives on Commuting.* Washington, D.C.: U.S. Federal Highway Administration

Author reviews the variety of commute trip reduction ideas developed in state implementation plans by 9 different states under the auspices of Section 182(d)(1)(B) of the Clean Air Act Amendments of 1990.

Pisarski, A.E. (1997) "Carpooling: Past Trends and Future Prospects." *Transportation Quarterly* 51: 6-9.

Carpooling fell from 20% of all commuting in 1980 to 13% in 1990. Author questions the continued investment in HOV lanes and ridesharing programs given the limited effect upon commuter travel choices.

Porter, R.C. (1999) *Economics at the Wheel: The Costs of Cars and Drivers.* San Diego: Academic Press.

This book is about cars and driving, and all the problems that cars and drivers create for society. It explains governmental policies intended to reduce the damage cars and drivers do to society, and it explains why these government policies are almost all failures because they attack the wrong problem – or attack it in the wrong way. The problems attributed to cars and drivers are congestion, air pollution, global warming, auto insurance costs, gasoline taxation incentives for governments, leaking underground storage tanks, and highway safety.

Porter and Associates, Inc. (1998) *An Evaluation of Commute Trip Reduction Tax Credits* [Report prepared for the Washington State Commute Trip Reduction Task Force] Seattle, WA: Porter and Associates, Inc.

CTR program was created in 1991 (RCW 70.94.521-551) with the goals of reducing SOV and VMT by substantial amounts through the active planning for non-SOV commuting options by major employers (100+ employees) in nine counties (Clark, King, Kitsap, Pierce, Snohomish, Spokane, Thurston, Whatcom and Yakima). To encourage employer action the legislation permits (since 1994) employers to claim credit against their B&O tax liability and against their public

utility taxes based on the incentives they provide to their employees to adopt non-SOV workplace commuting modalities. Employers may claim up to 50% of the cost of ridesharing programs, and a $1.5 million limit is in place statewide. [1996 changes permit maximum of $60 per employee, $100,000 per employer, and $1.5 million statewide credits.]

The authors conclude, on the basis of their review, that the tax credit program is increasingly popular, is broad-based, and is achieving its intended outcome. The report authors note that very little of the tax credit resource is available to public sector employers (35% of the CTR-affected employment statewide); only 8% of the total tax credits have gone to public sector employers (for utility tax credits). Between 1995 and 1997 worksites that took a tax credit reduced their SOV travel by 5.7% as compared to a 1.2% deduction in this same time period for worksites not taking a tax credit. Total claims taken between the 3rd quarter of 1994 and 3rd quarter of 1997 is just short of $2.5 million..

It should be noted that 126 of the 204 employers that receive tax credits ARE NOT AFFECTED BY THE CTR LAW! These employers claim tax credits (legitimately) for ridesharing and public transit passes services offered to their employees. The finding indicates a noteworthy lack of interest on the part of many CTR-affected employers. The % of participation among eligible CTR worksites by county are as follows: Clark Co. – 8%; King Co. – 26%; Kitsap Co. – 0%; Pierce Co. – 19%; Snohomish Co. – 16%; Spokane Co. – 6%; Thurston Co. – 5%; Whatcom Co. – 0%; and Yakima Co. – 0%.

Poulenez-Donovan, C.J. and C. Ulberg (1995) *An Analysis of Factors Accounting for Successes and Failures in the Acceptance and Utilization of Employer TDM Programs by Employees.* Seattle, WA: Washington State Transportation Center [Final Technical Report, Research Project T9233, Task 42]

Authors conclude that: "It may be that TDM programs have not caused people to change their mode choices as much as they have provided the support needed for non-SOV drivers to successfully utilize their preferred modes." As with the present study, this study pays close attention to the values ("intrinsic motivation") of non-SOV commuters as an important aspect of predictive models.

Pultz, Susan (1988) *Key Considerations for Developing Local Government TSM Programs.* Oakland, California: Metropolitan Transportation Commission.

Discussion of requirements for employer trip reduction program mandates by California Regulation XV in the Los Angeles South Coast Air Basin. Much of the experience of the Southern California program was passed on to the federal government in its Clean Air Act Amendments of 1990 (Section 182(d)(1)(B) requiring 14 states containing severe or extreme ozone nonattainment area to submit State Implementation Plans to establish employer trip reduction programs aimed at increasing average passenger occupancy (APO) by 25% within 4 years of plan implementation.

Research Triangle Institute (1997) *User's Guide for the Public Use Data Files: 1995 Nationwide Personal Transportation Survey.* Washington, D.C.: Federal Highway Administration.

Documentation for making use of the nationwide survey on modes of transportation used by Americans for work and non-work travel.

Rhoads, S.E. (1985) *The Economist's View of the World: Government, Markets, and Public Policy.* Cambridge: Cambridge University Press.

Excellent exploration of the advantages of a public choice orientation to a number of areas of public policy, including transportation.

Rosenbloom, S. (1978) "Peak-Period Traffic Congestion: A State-of-the-Art Analysis and Evaluation of Effective Solutions." *Transportation* 10: 167-191.

Good summary of the limited approaches available to transportation planners before the advent of innovative commute trip reduction programs.

Rossetti, M.A. and B.S. Eversole (1993) *Journey to Work Trends in the United States and Its Major Metropolitan Areas, 1960-1990.* Cambridge, MA: John A. Volpe National Transportation Systems Center, Research and Special Programs Administration, U.S. Department of Transportation.

Documentation of low level of public transportation use and rising levels of SOV commuting over the period of the study.

Salzberg, P. and R. Thurston (1998) *Seat Belt Use Rates in Washington State, 1998.* Olympia, WA: Washington Traffic Safety Commission.

Authors report the results of repeated observational studies beginning in 1986 verifying a consistently high rate of seatbelt use in the state (79%).

Schrank, E.W., S.M. Turner, and T.J. Lomax (1993) *Estimates of Urban Roadway Congestion – 1990. Research Report 1131-5.* College Station, TX: Texas Transportation Institute, Texas A&M University System.

Seattle ranks among the top three most congested metropolitan areas (along with San Francisco and Los Angeles) in the U.S.

Shaw, J. (1997) "Parking: Legislation and Transportation Plans." *Transportation Quarterly* 51: 105-115.

While ISTEA broadens the parameters of transportation planning in useful and timely ways, the author notes that few of any state and local transportation plans under ISTEA include sufficient attention to parking issues.

Shoup, D.C. (1995) "An Opportunity to Reduce Minimum Parking Requirements." *Journal of the American Planning Association.* 61: 14-28

Author makes argument that local land use regulations should be amended to provide for LESS parking per unit of office space so that the inconvenience of SOV commuting will give rise to more extensive use of alternative modes of travel.

Siwek, R. (1991) "Travel Reduction Strategies in the Los Angeles Area.' In Institute of Transportation Engineers, *The 1990 Clean Air Act and the Transportation Engineering Profession.* Washington, D.C.: Institute of Transportation Engineers.

Good account of variety of employer-directed commute reduction programs in metropolitan Los Angeles.

Smith, P. (1992) "Controlling Traffic Congestion by Regulating Car Ownership: Singapore's Recent Experience." *Journal of Transport Economics and Policy* 26: 89-95.

Author demonstrates the effectiveness of a "heavy-handed" approach to traffic congestion. While a powerful policy tool, it is one which has little to no application in the American setting.

Stavins, R.N. (1991) *Project 88--Round II: Incentives for Action: Designing Market-based Environmental Strategies.* Washington, D.C.: Project 88.

Good early summary of innovative ideas for replacing command and control approaches to environmental policy with market-based approaches.

Steel, B.S. (1996) "Thinking Globally and Acting Locally?: Environmental Attitudes, Behavior and Activism." *Journal of Environmental Management* 47: 27-36.

Author reports a strong linkage between environmental attitudes and environment-regarding behaviors (from 1992 national survey). Evidence is strong that the connnection is stronger for women than for men.

Strathman, J.G. and K.J. Dueker (1996) "Transit Service, Parking Charges, and Mode Choice for the Journey to Work: An Analysis of the 1990 NPTS." *Journal of Public Transportation* 1: 13-38.

Improving levels of public transportation service (as opposed to access) and charging parking fees are the two most important policy levers. [1990 NPTS survey involved 22,000 households.]

Tarrant, M.A. and H.K. Cordell (1997) "The Effect of Respondent Characteristics on General Environmental Attitude-Behavior Correspondence." *Environment and Behavior* 29: 618-637.

Authors report that there are strong correlations between three particular scales commonly used to measure support of environmentalism and an 11-item self-reported general environmental behavior index derived from a confirmatory factor analysis. The correspondence between environmentalism scale scores and behavior were affected, however, by several personal characteristics. Correspondence decreased as income increased, increased as education increased, and was stronger for liberals than conservatives.

Van Lange, P.A.M. and M. Van Vugt (1998) "A Social Dilemma Analysis of Commuting Preferences: The Roles of Social Value Orientation and Trust." *Journal of Applied Social Psychology* 28: 792-820.

Authors explore the roles of prosocial (vs. proself) orientations and social trust in decisions relating to carpooling and use of public transportation. Consistent with expectations, prosocial oriented subjects were more likely to favor the use of carpools and public transportation than are proself oriented subjects. Importantly, proself subjects were particularly inclined to emphasize the convenience associated with SOV commuting. Importantly, the greatest support for collectively desirable actions were observed for those subjects who were both prosocial in orientation and trusting in others (vs. misanthropic). This is an important study in that it shows how important underlying values and beliefs are to decisions directly affecting SOV travel and CTR programs.

Wachs, M. (1990) "Transportation Demand Management: Policy Implications of Recent Behavioral Research." *Journal of Planning Literature*. 5:333-341.

Author questions the adequacy of existing growth management and land use planning provisions vis-à-vis the predictable demand for roadways and motor vehicle transport facilities in the 1990s and beyond. Behavioral incentives to continue reliance upon automobile travel to and from the workplace will remain overwhelmingly strong without strong planning provisions to restructure those incentives.

Wachs, M. (1993) "Learning from Los Angeles: Transportation, Urban Form, and Air Quality." *Transportation*. 20 (4): 329-54.

The true costs of sprawl development are clarified in a close assessment of Los Angeles.

Weber, E.P. (1998) *Pluralism by the Rules: Conflict and Cooperation in Environmental Regulation.* Washington, D. C.: Georgetown University Press.

Author explores the potentialities and problems associated with grassroots collaborative processes employed for the resolution of environmental disputes. A careful assessment of a case study of collaborative environmental conflict resolution in the Albuquerque leads to a general model of understanding such collaborative efforts.

Williams, J. and J. Larson (1996) "Promoting Bicycle Commuting: Understanding the Customer." *Transportation Quarterly* 50: 67-78.

Using files from the 1980 and 1990 Public Use Microdata Sample Files (PUMS) compiled by the U.S. Census, the authors present a detailed demographic profile of the bicycle commuter population.

Willson, R.W. (1995) "Suburban Parking Requirements: A Tacit Policy for Automobile Use and Sprawl." *Journal of the American Planning Association* 61: 29-42.

Author makes strong case for the need to assign a high cost to parking to promote effective land use in metropolitan areas.

Willson, R.W. and D.C. Shoup (1990) "Parking Subsidies and Travel Choices: Assessing the Evidence." *Transportation* 17: 141-158.

Authors argue that a strong linkage exists between SOV vs. alternative commuting modes and parking availability.

Winston, C. and C. Shirley (1998) *Alternate Route: Toward Efficient Urban Transportation.* Washington, D.C.: The Brookings Institution.

The authors present a thorough critique of public sector involvement in urban transportation, arguing for a greater use of market mechanisms and less reliance upon public sector programs which "pervert" the structure of private incentives associated with choice of mode of private transportation.

APPENDIX A

Survey Questionnaire

1998

Commuter Trip Reduction Program
Supplemental Employee Survey

This brief survey is being administered by researchers at the Division of Governmental Studies and Services at Washington State University who are assisting the Washington State Department of Transportation in making improvements in the *commuter trip reduction* (CTR) program. The entire survey will take only 10 to 15 minutes of your time, and your answers are absolutely anonymous. This is a request for completely *voluntary* participation, and you are free to leave blank any questions you do not care to answer. This study has been reviewed and approved by the WSU Institutional Review Board (IRB). If you have any questions or concerns regarding this study, you can contact the WSU IRB at (509) 335-9661.

The survey contains questions about your mode of transportation to and from work, and your assessment of a set of incentives that could be used to encourage greater use of *alternatives* to single occupancy vehicle commuting to work. In addition, there are several questions about your feelings concerning a number of problems and current public policies, such as the (CTR), intended to protect the environment. Finally, there are some background questions used to check the completeness of survey results. Your individual answers, however, will remain anonymous.

The results of this survey will be made available to your employer's CTR program manager, to the Washington State Department of Transportation, and to other researchers working in this area.

Thank you for your kind attention to this important request of your time.

Nicholas Lovrich, Ph.D. Edward Weber, Ph.D. David Nice, Ph.D.

Study funded by: **Washington State Department of Transportation.**

The first set of questions deals with *how you commute to work.* We are interested in knowing if you are like most people in your organization and drive to and from work in your own car, or whether you have used any of the alternative modes of transportation listed below: [Check a box for each of the 8 options listed.]

	Always do this	*Occasionally do this*	*Did this, but no longer do*	*Never do this*
• **Drive Alone**	❑	❑	❑	❑
• **Carpool or Vanpool**	❑	❑	❑	❑
• **Motorcycle/moped**	❑	❑	❑	❑
• **Bus or Public Transit or Ferry**	❑	❑	❑	❑
• **Bicycle**	❑	❑	❑	❑
• **Walk**	❑	❑	❑	❑
• **Telecommute**	❑	❑	❑	❑
• **Compressed Workweek**	❑	❑	❑	❑

The second set of questions deals with the various possible incentives that might lead more employees to use alternatives to single occupancy vehicle travel to their workplace. For each of the following, please indicate two impressions – first, tell us how important this consideration is to **you**; and secondly, please indicate how important you think this consideration is to the "average" employee at your place of work. Please mark a number in each box ranging from ONE to TEN – with 1 meaning not important and 10 meaning very important. [*Think of each of these in terms of travel to and from work.*]

	Importance to You	*Importance to Others*
• **Privacy**	❑	❑
• **Flexibility and convenience**	❑	❑
• **Time savings**	❑	❑
• **Cost savings**	❑	❑
• **Enhanced safety**	❑	❑
• **Independence from other people's schedule**	❑	❑
• **Time for relaxation and/or work preparation**	❑	❑
• **Time for thinking**	❑	❑

	Importance to You	*Importance to Others*
• **Reading time**	❑	❑
• **Time to socialize**	❑	❑
• **Helping to protect the environment**	❑	❑
• **Setting a good environmental example for others**	❑	❑
• **Exercise and health benefits**	❑	❑
• **Reducing work-related stress**	❑	❑
• **Enjoyment of being outdoors**	❑	❑
• **Avoiding having to drive in traffic**	❑	❑
• **More family time**	❑	❑
• **More recreation time**	❑	❑
• **Tax advantage of having a home office**	❑	❑

The following list of activities has to do with things some people do in their private actions that promote a healthy environment. Please indicate how often you do each of the following:

	Never	*Sometimes*	*Usually*	*Always*
• **Recycle newspapers**	❑	❑	❑	❑
• **Recycle glass**	❑	❑	❑	❑
• **Recycle aluminum cans**	❑	❑	❑	❑
• **Recycle plastics**	❑	❑	❑	❑
• **Recycle tin cans**	❑	❑	❑	❑
• **Compost yard wastes**	❑	❑	❑	❑
• **Minimize use of aerosols**	❑	❑	❑	❑
• **Minimize domestic use of energy**	❑	❑	❑	❑
• **Purchase gas-efficient cars**	❑	❑	❑	❑

The CTR program is a reflection of the belief that large employers such as yours ought to promote environmentally-considerate policies and programs. How important is it to you that your employers demonstrate an active concern to promote environmental protection in their workplace policies?

Makes No Difference

Not Important ❑ ❑ ❑ ❑ ❑ ❑ ❑ **Very Important**

Some people support *environmental groups* (e.g., the Sierra Club, Washington Environmental Council, Audubon Society, Ducks Unlimited, Nature Conservancy, World Wildlife Fund, etc.) and also support *candidates for public office* who advocate strong environmental legislation as ways of helping to protect the environment. Please indicate how much you have been inclined to do each of the following 6 things during the last four years.

	Never	*Once*	*Occasionally*	*Frequently*
• **Contributed money to environmental group(s)**	❑	❑	❑	❑
• **Volunteered time to environmental groups**	❑	❑	❑	❑
• **Was an active member of an environmental group(s)**	❑	❑	❑	❑
• **Voted for pro-environmental candidates**	❑	❑	❑	❑
• **Gave money to pro-environmental candidates**	❑	❑	❑	❑
• **Actively campaigned for pro-environmental candidates**	❑	❑	❑	❑

People differ considerably in their opinions concerning the status of the environment. The following five statements are commonly used to assess citizen attitudes regarding their concern for the environment. Please indicate on the seven-point scale provided the degree to which you agree or disagree with each the statements provided. [Circle the number which best represents your views.]

	Disagree		*Uncertain*				*Agree*
If things continue on their present course, we will soon experience a major ecological catastrophe	1	2	3	4	5	6	7
The problems of the environment are not as bad as most people think	1	2	3	4	5	6	7
The oceans are gradually dying from oil pollution and dumping of wastes	1	2	3	4	5	6	7
We are fast using up the world's natural Resources	1	2	3	4	5	6	7
People worry too much about human progress harming the environment	1	2	3	4	5	6	7

The following questions deal with a *market oriented approach* to increasing the percentage of non-single occupancy vehicle workplace commuters. The idea behind this approach is that people should remain *free to choose* whether they drive their own car to work or adopt an alternative to that practice. However, advocates of this idea say that if a person decides to drive to work alone they should **pay** a modest amount for that privilege to recoup the costs of pollution and traffic congestion. All such payments would go to a fund used by the employer to pay a bonus to those employees who choose to adopt an alternative mode of transportation.

Please indicate how you feel about this idea, and what level of payment you think would be fair to assess for the privilege of driving one's car alone to work.

Overall, this approach:

- Is a very *good idea* ❑
- Might be a good idea to *try as an experiment* ❑
- Is *not a good idea* ❑

Comments:

If this approach were adopted, what would be a fair payment to assess for driving one's own car alone to work?

❑ $5/week ❑ $10/week ❑ $15/week ❑ $20/week ❑ $25/week

❑ More than $25/week ❑ No fee would be fair

This final section concerns personal background. These eleven questions are included to make certain that the survey includes responses from a wide range of employees with varying backgrounds and commuting circumstances. [Check one answer box for each question.]

1. Gender: ❑ Female ❑ Male

2. How far is your home from your place of work?

❑ Less than one mile ❑ One to five miles ❑ Five to ten miles ❑ 10 miles+

3. How convenient is public transportation for you to take to work?

❑ Very inconvenient ❑ Somewhat inconvenient ❑ Convenient ❑ Don't Know

4. How would you describe the availability of parking where you work?

❑ Parking is difficult to find ❑ Parking is adequate ❑ Parking is ample

5. Do you have to pay for parking where you work?

❑ I pay a high fee ❑ I pay a small fee ❑ Parking is free ❑ Don't drive to work

6. How would you describe "traffic" during your typical work commute?

❑ Highly congested ❑ Moderately congested ❑ Little traffic congestion

7. How much have you heard about the Commuter Trip Reduction (CTR) program at your place of work?

❑ Nothing ❑ A little ❑ A moderate amount ❑ A great deal

8. Have you changed your *normal mode of travel* to work from driving alone to some alternative mode (e.g., carpool, vanpool, public transportation, telecommuting, etc.) in the last six years?

❑ No ❑ Yes

If yes, please indicate why you did so

9. Which of the following best describes your "home" setting?

❑ Single, live alone
❑ Single, live with another adult(s)
❑ Married, spouse does not work, no children living at home
❑ Married, spouse also works, no children living at home
❑ Married, child in the home, spouse does not work
❑ Married, child in the home, spouse also works
❑ Single, child in the home
❑ Other _____

10. Which of the following best describes your level of formal education?

❑ High School Graduate or GED ❑ Some College ❑ College Graduate

❑ Advanced Degree

11. What is your approximate annual household income?

❑ Under $25,000 ❑ $51,000-$75,000

❑ $25,000-$35,000 ❑ $76,000-$90,000

❑ $36,000-$50,000 ❑ $91,000+

THANK YOU VERY MUCH FOR TAKING PART IN OUR SURVEY

COMMENTS: We would appreciate any observations or suggestions you would like to record. Your comments will receive careful attention. Please add additional pages of comments if necessary.

APPENDIX B

Letter to ETCs on Agency Findings and Comments

Washington State University

Department of Political Science
Division of Governmental Studies and Services

PO Box 644870
Pullman, WA 99164-4870
509-335-3329
FAX 509-335-2362

MEMORANDUM

TO:

Randy Stearns
City of Tacoma Public Utilities

Janet Swanson
Hexcel Corp.

Sandra Stock
Providence St. Peter (Olympia)

Don McDowell
Spokane Co. (Spokane)

Jeff Sommerville
WSDOT (Yakima)

Faye Brandt
WA State DSHS (Yakima)

Debbie Oslund
The Vancouver Clinic

Rick Campbell
Good Samaritan (Puyallup)

Tom Skjervold
Intercity Transit (Olympia)

Terry Brown
Regence Blue Shield (Tacoma)

June Simpson
WA State DSHS (Olympia)

Jim Rodal
WA State Dept. of Revenue (Olympia)

Renee Zangari
Whatcom Transportation Authority (Bellingham)

Stephanie Dewey
Yakima Valley Farmworkers Clinic

FROM: Nicholas Lovrich, David Nice and Edward Weber

DATE: March 22, 1999

RE: Commute Trip Reduction Program Study for Washington State Department of Transportation

We would like to thank you for assisting us in collecting survey information from your organization. Because of your efforts, we were able to collect over 900 completed surveys from employees from several areas of the state. At this point all of the survey data has been collected and coded, and preliminary analyses are underway. In this connection, we would like to share with you the results of the survey, and ask that you give us any feedback you would like to share on the findings observed for your own organization. We would like to know if you found anything unexpected in either the comments of employees or the pattern of answers given to the survey questions.

You will find enclosed a transcription of the comments made by employees in your organization, a copy of the survey questionnaire, a summary of responses to all questions for your agency/corporation, and a summary of responses to all questions for all 902 employees taking part in the survey across the state. If you would like any additional information about the CTR survey, please feel free to call us at 509 335-3329.

Thanks again for all of your assistance.

APPENDIX C

Assorted Tables and Analyses

MULTIVARIATE ANALYSIS OF FREQUENCY OF CARPOOL OR VANPOOL USAGE (LOW SCORES DENOTE "ALWAYS" AND HIGH SCORES DENOTE "NEVER")

	beta
ENVACT (environmental actions scale)	-.11
Importance to you of flexibility and convenience (Q2B1)	.17
Importance to you of cost savings (Q2D1)	-.22
Importance to you of being Outdoors	.17
Distance to work (Q8B)	-.13
Heard about the CTR Program (Q8G)	-.20

$R^2 = .19$

MULTIVARIATE ANALYSIS OF FREQUENCY OF WALKING TO WORK (LOW = ALWAYS; HIGH = NEVER)

	beta
ENVACT	-.18
Importance to others of privacy (Q2A2)	-.10
Importance to others of time savings (Q2C2)	-.12
Gender (1=female; 2=male)	-.15
Distance between home and work	.30
Heard about CTR Program	-.13

$R^2 = .20$

MULTIVARIATE ANALYSIS OF FREQUENCY OF BUS OR MASS TRANSIT USAGE (LOW = ALWAYS; HIGH = NEVER)

	beta
Convenience of public transportation*	-.39
ENVACT (Environmental Activities Scale)	-.23
Importance to you of cost savings (Q2D1)	-.16
Importance to you of having an independent schedule (Q2F1)	.22
Importance to others of having an independent schedule (Q2F2)	-.14
Importance to others of reading time (Q2I2)	-.10
Importance to others of the tax advantages of a home office (Q2S2)	.12
Ease of finding parking (Q8D)	.13
Heard about CTR Program (Q8G)	-.11

$R^2 = .42$

*This is a recoded version of variable Q8C with "Don't know" recoded as 1.5. High scores indicate a perception that public transportation is convenient.

MULTIVARIATE ANALYSIS OF FREQUENCY OF BICYCLING TO WORK (LOW = ALWAYS; HIGH = NEVER)

	beta
ENVACT (Environmental Activities Scale)	-.15
Importance to others of time savings (Q2C2)	-.14
Importance to you of health and exercise (Q2M1)	-.31
Importance to others of health and exercise (Q2M2)	.18
Gender (1=female, 2=male)	-.15
Distance between home and work	.15
Heard about CTR Program	-.14

$R^2 = .20$