

**VOLUME III, SECTION V.  
TRANSPORTATION IMPROVEMENT PROGRAM (TIP) ALLOCATION  
PROCESS**

**DISTRIBUTION OF FUNDS IN THE TRANSPORTATION IMPROVEMENT  
PROGRAM (TIP)**

This section describes and analyzes how Transportation Improvement Program (TIP) project selections resulted in geographic fund distribution throughout the DRCOG Transportation Management Area (TMA) for the 1993-2004 period. Part of the analysis involves comparisons with TIP distributions from the three comparable MPOs (Dallas, Phoenix, and Seattle). Some additional background information concerning the sources of funding for the TIP is provided, as well as a brief description of how the TIP is produced in each of the MPOs.

**Background**

By virtue of federal law, the regional TIP document must outline at least a three-year program of: 1) all federally funded priority transportation projects, and 2) all regionally significant priority projects, regardless of funding source, that are subject to air quality conformity analysis. The TIP must be updated at least every two years, on a schedule compatible with that of the State Transportation Improvement Program (STIP),<sup>1</sup> and projects included in the TIP must be consistent with the long-range (20-year) Metropolitan Transportation Plan (MTP).<sup>2</sup> Additionally, the TIP must be financially constrained and include only those projects for which funding has been identified, using current or reasonably available revenue sources.<sup>3</sup> As a result of ISTEA and TEA-21, the MPO is responsible for developing the TIP in cooperation with the state and the local transit operators, each of whom cooperatively determine their responsibilities in the planning process. Furthermore, the MPO cannot distribute funds by geographic area based on predetermined percentages or formulas.<sup>4</sup>

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<sup>1</sup> Texas Transportation Institute. 1997. A Review and Summary of the Seminars on Transportation Improvement Program Development. Sponsored by Federal Transit Administration in cooperation with the Federal Highway Administration. Section 1, p. 1.

<sup>2</sup> Texas Transportation Institute. 1997. A Review and Summary of the Seminars on Transportation Improvement Program Development. Sponsored by Federal Transit Administration in cooperation with the Federal Highway Administration. Section 1, p. 1.

<sup>3</sup> Texas Transportation Institute. 1997. A Review and Summary of the Seminars on Transportation Improvement Program Development. Sponsored by Federal Transit Administration in cooperation with the Federal Highway Administration. Section 1, p. 2.

<sup>4</sup> 23 CFR 450.321(1) provides: "Procedures or agreements that distribute suballocated Surface Transportation Program or Section 9 funds to individual jurisdictions or modes within the metropolitan area by predetermined percentages or formulas are inconsistent with the legislative provisions that require MPOs in cooperation with the State and transit operators to develop a prioritized and financially constrained TIP and shall not be used unless they can be clearly shown to be based on considerations required to be addressed as part of the planning process."

## Funding sources

Transportation projects identified in the TIP are funded from various sources, including the Federal Highway Administration, the Federal Transit Administration, and the state, and local government funds. A breakdown of funding sources for the 1999-2004 TIP for the Denver region is contained in Exhibit 1.

Within the federal sources of funding, there are several categories of funds, each of which specifies the types of projects that are eligible (See TIP Criteria section above). Furthermore, each of these categories involves projects that are within the principal planning domain of one of the cooperating agencies in the Denver metropolitan transportation planning process, i.e. DRCOG, CDOT, or RTD (See Table 1 below). For example, the Federal Highway Administration categories of Interstate Maintenance (IM), National Highway System (NHS), Bridge Replacement (BR), Surface Transportation Program (STP)-Safety, and STP-Flexible typically involve projects in which CDOT assumes principal planning responsibility. (These categories of federal funds, constituted 61% of non-discretionary federal funds allocated to the Denver region in the 1999-2001 TIP period, all of which were “controlled” by CDOT.) The Federal Highway Administration categories of STP-Metro, STP-Enhancements, and Congestion Mitigation/Air Quality (CMAQ) typically involve projects in which DRCOG assumes principal planning responsibility. Thus, DRCOG had “control” of only 21% of non-discretionary federal funds allocated to the Denver region in the 1999-2001 TIP period. Federal Transit Administration categories involve projects in which RTD assumes principal planning responsibility. Thus, RTD “controlled” categories that amounted to 18% of non-discretionary federal funds for the same period.

In addition, the State provides funding for public roads through the Highway Users Tax Fund (HUTF) and general fund monies by the Colorado General Assembly. In the 1999-2001 TIP period, the State of Colorado provided 49 % of the total funding of Denver regional transportation projects, compared to 43% provided by federal funds. Finally, local governments provide matching funds, which amounted to 7.3% of total funding in the 1999-2001 TIP. Thus, even though DRCOG has the overall responsibility for developing the Denver regional TIP, the other cooperating agencies, particularly CDOT, “control” the majority of funds available for programming the TIP, and, therefore, play a large role in determining the projects that ultimately are included in the TIP.

Table 1  
Categories of Federal Funds Controlled by Denver Regional Transportation Planning Agencies

### CDOT

Federal Highway Administration Funds:

- Interstate Maintenance (IM)
- National Highway System (NHS)
- Bridge Replacement (BR)
- Surface Transportation Program-Flexible (STP-Flex)

## Surface Transportation Program-Safety (STP-Safety)

### DRCOG

#### Federal Highway Administration Funds:

Surface Transportation Program-Urbanized Areas > 200,000 (STP-Metro)

Surface Transportation Program-Enhancements (STP-Enhancements)

Congestion Mitigation/Air Quality (CMAQ)

### RTD

#### Federal Transit Administration Funds:

Section 5307 (9)

Section 5309 (3)

Section 5310 (16)

Section 5311 (18)

## **TIP Development Process**

The preceding section relating to TIP criteria discussed the evolution of TIP criteria and resulting TIPs during the 1988-2004 period for the Denver region. This section adds to that discussion by comparing the process of TIP development in Denver with those in Dallas, Phoenix, and Seattle.

Typically, an MPO organizes the development of its regional TIP through the use of specific committees (See TIP Criteria Section above). There is usually a technical committee (Transportation Advisory Committee [TAC] at DRCOG) composed of planners and engineers from jurisdictions represented in the MPO. There is also a policy committee (Transportation Policy Committee [TPC] at DRCOG), composed of local elected officials plus representatives from the state DOT, regional transit operators, business groups, environmental groups, citizen groups, and regional air quality councils. Finally, there is the MPO Board of Directors, usually composed of elected officials from jurisdictions represented in the MPO. There is one other particularly important committee at DRCOG called the Transportation Committee [TC], a 10-voting member group composed of four representatives from DRCOG, three from CDOT, and three from RTD, which has approval authority over all transportation actions. There are also 2 non-voting members on the TC, one from the Regional Air Quality Council (RAQC) and one from the State Air Pollution Control Division (APCD).

The cycle of TIP development usually takes over a year from start to finish<sup>5</sup>. The process starts with the DRCOG staff producing the initial draft of the TIP criteria document, which is reviewed by CDOT, RTD, and the TAC. The TAC makes a formal recommendation for approval of the TIP criteria to both the TPC and the TC. The TPC and TC can also suggest and make changes to the criteria, and then each must formally approve the criteria. Lastly, the criteria are sent to the Board for final approval.

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<sup>5</sup> DRCOG, Interim Policy on Transportation Improvement Program Preparation, May 19, 1999, p. 6.

Once the Board approves the criteria, a solicitation for projects is sent out. Any local government (city, town, or county), CDOT, RTD, or other eligible project sponsors can submit projects to be considered for inclusion in the TIP, subject to limitations on the number of project requests by jurisdictions based on population or employment size (See TIP Criteria section above.) Project applications are submitted and then reviewed by DRCOG staff to determine project eligibility. All projects to be included in the TIP must implement the improvements and/or policies contained in the fiscally constrained Regional Transportation Plan (RTP).<sup>6</sup> DRCOG staff then scores and ranks the eligible projects based on the approved criteria developed for each project type category (maintenance; safety; management; transit; highways; bicycle and pedestrian projects; elderly, disabled, and nonurbanized transit projects; and other projects).<sup>7</sup> The TAC reviews the staff work, which is then reported to the TPC, which may direct that revisions be made to the project evaluation.<sup>8</sup>

Following these reviews and revisions, a draft program of projects is prepared for committee review and public hearing. After review and approval from the TAC, TPC, and TC, the Board approves the list of projects to be included in the air quality conformity analysis. All projects included on the TIP must conform to the State Implementation Plan (SIP) for air quality. The DRCOG staff conducts the air quality modeling for conformity analysis, which is reviewed by the staff at the State Air Pollution Control Division (APCD) and the Regional Air Quality Council (RAQC). For air quality nonattainment and maintenance areas, the MPO, FHWA, and FTA must all issue a conformity determination for final TIP approval.<sup>9</sup>

Following air quality analysis, a recommended program of projects is prepared, public hearings are held, and the recommended program is referred to the TAC, TPC, and TC for recommendation to the Board.<sup>10</sup> The final TIP program must be adopted by the Board upon recommendation of the TC and the TPC.<sup>11</sup> The TIP must also be approved by the Governor before it can be included in the STIP.<sup>12</sup> The TIP is subject to amendment, either administratively by the TC, or when policy amendments are concerned, by the Board.<sup>13</sup>

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<sup>6</sup> DRCOG, Interim Policy on Transportation Improvement Program Preparation, May 19, 1999, p. 7.

<sup>7</sup> DRCOG, Interim Policy on Transportation Improvement Program Preparation, May 19, 1999, p. 17.

<sup>8</sup> DRCOG, Interim Policy on Transportation Improvement Program Preparation, May 19, 1999, p. 17.

<sup>9</sup> Texas Transportation Institute. 1997. A Review and Summary of the Seminars on Transportation Improvement Program Development. Sponsored by Federal Transit Administration in cooperation with the Federal Highway Administration. Section 1, p. 2.

<sup>10</sup> DRCOG, Interim Policy on Transportation Improvement Program Preparation, May 19, 1999, p. 38.

<sup>11</sup> DRCOG, Interim Policy on Transportation Improvement Program Preparation, May 19, 1999, p. 39.

<sup>12</sup> Texas Transportation Institute. 1997. A Review and Summary of the Seminars on Transportation Improvement Program Development. Sponsored by Federal Transit Administration in cooperation with the Federal Highway Administration. Section 1, p.2.

<sup>13</sup> DRCOG, Interim Policy on Transportation Improvement Program Preparation, May 19, 1999, p. 39.

Comparable MPOs

With respect to the MPOs identified by this Study as comparable to DRCOG, the TIP development process is similar. (The names of the committees involved are different but their composition and roles are comparable (See Table 2).) A brief summary of the major differences in the TIP development process for each of the comparable MPOs follows.

Table 2  
Comparison of MPO Committees

<b>Denver</b>	<b>Seattle</b>	<b>Dallas</b>	<b>Phoenix</b>
Board of Directors (Board)	General Assembly and Executive Board	Executive Board	Regional Council
Transportation Committee (TC)	Transportation Policy Board	Regional Transportation Council	Transportation Committee (9 members of regional council – just on transportation issues)
Transportation Policy Committee			Management Committee
Transportation Advisory Committee (TAC)	Regional Project Evaluation Committee and Enhancement Committee	Surface Transportation Technical Committee	Transportation Review Committee

**Seattle**

The Puget Sound Regional Council (PSRC) identifies four categories of programs from which projects are recommended for inclusion in the regional TIP: MPO regionally managed, state managed, state managed federal programs, and locally managed. The MPO regionally managed program is based on federal funding programs for which PSRC has primary project selection responsibility: the Surface Transportation Program (STP-U, STP-R, STP-N)<sup>14</sup>, the Congestion Mitigation and Air Quality (CMAQ) Program, and the Federal Transit Administration (FTA) Programs.<sup>15</sup> The STP and CMAQ funds are somewhat flexible in their use, but the FTA funds must be used for transit-related purposes within three urbanized areas (Bremerton, Seattle-Everett, Tacoma) in the region.<sup>16</sup> For state managed programs, the Washington State Department of Transportation (WSDOT) has primary project recommendation and selection for the federal funding categories of Interstate Highways, Bridges, National Highway System, Enhancements, and Safety, as well as primary responsibility for state-only funded projects.<sup>17</sup>

<sup>14</sup> STP-U are those STP funds available through a regional competition administered by the MPO. STP-R is the portion of these funds assigned to projects located in rural areas. STP-N are substituted for NHS funds for local agencies with roads on the National Highway System. (PSRC, 1998-2000 Regional Transportation Improvement Program, p. D-2).

<sup>15</sup> PSRC, Policy Framework for the 1999 TEA-21 TIP Process, p.2.

<sup>16</sup> PSRC, Policy Framework for the 1999 TEA-21 TIP Process, p.2.

<sup>17</sup> PSRC, Policy Framework for the 1999 TEA-21 TIP Process, p.2.

Within the MPO regionally managed program, there are two independent but coordinated processes for TIP project applications: 1) a Regional Process and 2) a Countywide Process.<sup>18</sup> This method is based on addressing regional and county wide needs identified in the adopted regional long-range plan and adopted local comprehensive plans. The Regional Process is conducted directly by the PSRC. The Regional process is a competitive process that emphasizes larger, higher cost projects. The region adopts a Policy Framework that guides the overall TEA-21 process and is tied to the policies included in the adopted Metropolitan Transportation Plan. All public agencies are eligible to apply for funding, but we are limited in the overall number of applications that may be submitted. Projects are evaluated by staff, then reviewed and prioritized by a technical committee. The recommended regional projects are approved by its policy boards to be included in the public comment period for the regional TIP.

The Countywide Process is conducted within each of the counties and involves the cities and towns, transit agencies, WsDOT, and other relevant groups within the county in recommending local and countywide transportation projects of regional significance. Each countywide organization is responsible for developing criteria for project selection, scoring and ranking projects, performing technical reviews, and adhering to all TEA-21 requirements. The countywide organization submits final project lists to the Transportation Policy Board of the Regional Council for review and approval for regional consistency and conformity with federal requirements.<sup>19</sup> Each countywide organization has an adopted project recommendation process approved by the Regional Council's Transportation Policy Board. The PSRC allocates MPO managed funds to each of these two processes. In 1999, 65% of the funds were allocated to the regional process and 35% were allocated to the countywide processes.<sup>20</sup>

### **Phoenix**

The Maricopa Association of Governments (MAG) has programming responsibility for funds designated as Surface Transportation Program-MAG (STP-MAG) and Congestion Mitigation and Air Quality Improvement Program (CMAQ).<sup>21</sup> The Arizona Department of Transportation (ADOT) programs the following categories of funds: STP-AZ (Arizona), STP-TEA (Transportation Enhancement Activities), STP-HES (Hazard Elimination Safety), BR (Bridge Replacement and Rehabilitation), State (Arizona Highway User Revenues [HURF]), RARF/15% (Regional Area Road Funds & HURF 15% funds), IM (Interstate Maintenance), NHS (National Highway System), and FED DEMO (Federal Demonstration Projects).<sup>22</sup>

The TIP is compiled under the direction of the MAG Street Committee, the Regional Bicycle Task Force, the Regional Pedestrian Working Group, the Enhancement Fund Working Group, as well as the Transportation Review Committee, the MAG

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<sup>18</sup> PSRC, Policy Framework for the 1999 TEA-21 TIP Process, p.3.

<sup>19</sup> PSRC, Policy Framework for the 1999 TEA-21 TIP Process, pp. 10-11.

<sup>20</sup> PSRC, Policy Framework for the 1999 TEA-21 TIP Process, pp. 20-21.

<sup>21</sup> MAG, Transportation Improvement Program FY 1999-2003, September 1998, p. V-5.

<sup>22</sup> MAG, Transportation Improvement Program FY 1999-2003, September 1998, pp. V-5, 6.

Management Committee, and the MAG Regional Council (See Table 2).<sup>23</sup> Projects submitted to MAG are rated using a Congestion Management System rating process and the MAG Air Quality Rating System, and CMAQ emission reduction scores, and then are forwarded to the modal committees for evaluation and prioritization.<sup>24</sup> On the basis of these ratings, MAG staff prepares the draft TIP, which is then reviewed by the Transportation Review Committee. The Management Committee and Regional Council approve the draft TIP for the purpose of air quality conformity analysis.<sup>25</sup> After various phases of public involvement, the Final TIP is refined and approved by each of the relevant MAG committees.

### **Dallas-Ft. Worth**

The North Central Texas Council of Governments (NCTCOG) has project selection responsibility for the following funding programs in the TIP: 1) STP-Metropolitan Mobility (STP-MM), 2) CMAQ, 3) Urbanized Area Formula Program (UAFP, formerly Transit Section 9), 4) Elderly and Persons with Disabilities Program (EPDP, formerly Transit Section 16), and 5) the state-level Urban Street Program.<sup>26</sup> Projects in these programs are selected “in consultation with TxDOT, local governments, and local transportation authorities.”<sup>27</sup> The Texas Department of Transportation (TxDOT) is responsible for selecting projects for all other funding programs with the exception of Federal Demonstration and Capital Program projects.<sup>28</sup> Funding categories in which TxDOT Austin has primary selection responsibility are selected on a statewide competitive basis and approved by the Texas Transportation Commission.<sup>29</sup> But projects selected by TxDOT, as part of the National Highway System (NHS), must be selected “in cooperation with the MPO prior to inclusion in the TIP.”<sup>30</sup>

The 1998 TIP was developed and reviewed by technical and policy committees of NCTCOG.<sup>31</sup> Technical review is provided by the Surface Transportation Technical Committee and the Travel Demand Management Technical Committee, and then the TIP goes to the Regional Transportation Council for approval.<sup>32</sup> The TIP is reviewed by the Government Applications Review Committee (GARC), the primary advisory committee to the NCTCOG Executive Board, in fulfilling its responsibilities as the Regional Review Agency for the Texas Review and Comment System (TRACS) in the NCTCOG area.<sup>33</sup> Upon recommendation from GARC, the Executive Board approves the TIP, and it is sent to TxDOT for incorporation into the Statewide Transportation Improvement Program (STIP).<sup>34</sup>

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<sup>23</sup> MAG, Transportation Improvement Program FY 1999-2003, September 1998, pp. II-10.

<sup>24</sup> MAG, Transportation Improvement Program FY 1999-2003, September 1998, pp. II-10.

<sup>25</sup> MAG, Transportation Improvement Program FY 1999-2003, September 1998, pp. II-11.

<sup>26</sup> NCTCOG, 1998 Transportation Improvement Program, p. III-2.

<sup>27</sup> NCTCOG, 1998 Transportation Improvement Program, p. III-2.

<sup>28</sup> NCTCOG, 1998 Transportation Improvement Program, p. III-3.

<sup>29</sup> NCTCOG, 1998 Transportation Improvement Program, p. III-3.

<sup>30</sup> NCTCOG, 1998 Transportation Improvement Program, p. III-2.

<sup>31</sup> NCTCOG, 1998 Transportation Improvement Program, p. I-15.

<sup>32</sup> NCTCOG, 1998 Transportation Improvement Program, p. I-16.

<sup>33</sup> NCTCOG, 1998 Transportation Improvement Program, p. I-17.

<sup>34</sup> NCTCOG, 1998 Transportation Improvement Program, p. I-17, 18.

## DISTRIBUTION OF TIP FUNDS

One of the principal purposes of this study is to address whether transportation resource needs are being met within the Denver region. As illustrated in the section on Transportation Needs and Equity in this Volume, however, there is no agreement as to the most appropriate methodology to employ for this purpose; there is no single factor that adequately measures transportation needs for the purpose of resource allocation or equity analysis. Furthermore, MPOs in particular are prohibited from allocating funds to geographic areas based on percentages or formulas using such comparative measures.<sup>35</sup> Never the less, need-based proxies can be used for the purpose of analyzing how MPO project selections resulted in a certain geographic distribution of funds. Concerns and caveats associated with this type of analysis have been raised in the section on Transportation Needs and Equity, and are discussed again later in this section.

Several studies have produced results that are relevant to selection of appropriate comparative measures. A 1995 GAO study found that using direct measures of need, such as miles of poor pavement or number of deficient bridges, could foster a perverse incentive that would encourage the deterioration of infrastructure.<sup>36</sup> The GAO also found that the disadvantages of basing a formula on actual needs could be remedied through the use of proxies for need, such as those reflecting the extent (e.g., lane miles) or usage (e.g., vehicle miles traveled) of a highway system, or more highway-neutral measures such as population.<sup>37</sup> The GAO concurred with the Executive Director of the Surface Transportation Policy Project in supporting the use of population levels for the purpose of distributing highway funds.<sup>38</sup> A 1986 GAO report<sup>39</sup> and a 1986 study sponsored by the FHWA<sup>40</sup> both indicated that proxies, such as lane miles and vehicle miles traveled, are closely aligned with highway needs. The American Association of State Highway and Transportation Officials (AASHTO) Policy Review Committee observed that data on vehicle miles traveled have been statistically designed for a high level of measurable accuracy and are relevant as an indicator of both capital and system preservation needs.<sup>41</sup> Using lane miles as a factor for apportioning highway funds was also endorsed by the AASHTO Policy Review Committee in 1991.<sup>42</sup> Nevertheless, factors reflecting a

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<sup>35</sup> 23 CFR 450.321 (1)

<sup>36</sup> General Accounting Office. 1995. Highway Funding: Alternatives for Distributing Federal Funds. GAO/RCED-96-6, p. 6.

<sup>37</sup> General Accounting Office. 1995. Highway Funding: Alternatives for Distributing Federal Funds. GAO/RCED-96-6, p. 32.

<sup>38</sup> General Accounting Office. 1995. Highway Funding: Alternatives for Distributing Federal Funds. GAO/RCED-96-6, p. 35.

<sup>39</sup> General Accounting Office. 1986. Highway Funding: Federal Distribution Formulas Should be Changed (GAO/RCED-86-114, March 31, 1986).

<sup>40</sup> Jack Faucett Associates. 1986. Development and Evaluation of Alternative Factors and Formulas, December 1986. Cited in General Accounting Office. 1995. Highway Funding: Alternatives for Distributing Federal Funds. GAO/RCED-96-6, pp. 22-23.

<sup>41</sup> General Accounting Office. 1995. Highway Funding: Alternatives for Distributing Federal Funds. GAO/RCED-96-6, p. 34.

<sup>42</sup> General Accounting Office. 1995. Highway Funding: Alternatives for Distributing Federal Funds. GAO/RCED-96-6, p. 33.

system's extent and use, in isolation, do not provide a complete picture on needs. Additional variables should be considered in resource allocation decisions or distributional needs analyses.<sup>43</sup>

Recognizing the difficulties of identifying appropriate measures for transportation needs, this Study assessed whether transportation needs are being met by comparing the distribution of funding for transportation project selections with need-based proxies, specifically population, vehicle miles traveled (VMT), and lane miles. (It is recognized that these proxy measures have advantages as well as disadvantages, so that conclusions based on this analysis should be tempered.)<sup>44</sup>

The purpose of this section is to present data and analyses concerning how TIP project selections resulted in fund distribution to counties throughout the Denver metropolitan region for the period of 1993 to 2004. The distribution of TIP funds for the Dallas, Phoenix, and Seattle regions are provided for comparative purposes. For Denver, Dallas, and Seattle, the distribution will be presented for counties, while municipalities will be used for Phoenix (since the Maricopa Association of Governments represents only one county). The time frame was selected so that the analysis would not be based on just a single TIP cycle, but would involve several TIP cycles. The actual time periods vary among the MPOs due to the number of years for which TIPs in different MPOs are programmed. For example, in Denver, each TIP is programmed for six years (the most recent one for 1999-2004). So for Denver, data are available for the entire 1993-2004 period. In Seattle, each TIP is programmed for three years (the most recent one covers the 1998-2000 period). So for Seattle, data are available only for the 1994-2000 period. The time period for Phoenix is 1995-2004, while for Dallas it is 1994-2002.

### Denver

The expenditures of federal and state dollars by county in the Denver Transportation Management Area (TMA) covering all Transportation Improvement Program (TIP)

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<sup>43</sup> General Accounting Office. 1995. Highway Funding: Alternatives for Distributing Federal Funds. GAO/RCED-96-6, p. 36. Disadvantages associated with measures of the system's usage or extent could be at least partially counteracted by building incentives into an allocation formula or by creating appropriate performance standards (p. 34).

<sup>44</sup> Disadvantages of using vehicle miles traveled as a proxy measure of need include: 1) VMT is based on vehicles, not people. Person miles traveled is probably a better measure to use, although these data are more difficult to obtain. 2) Total VMT does not take into account different vehicle classifications, nor does it adequately account for transit. VMT may thus be biased in favor of those geographic areas with comparatively less transit utilization. 3) VMT may be at odds with air quality and energy conservation objectives that emphasize the reduction of VMT. 4) High VMT occurs on roadways with very good levels of service, and does not measure level of congestion. Hours of delay may be a better measure of need to indicate extent of congestion.

Disadvantages of using lane miles as a proxy measure of need include: 1) Lane miles could encourage expansion of the system rather than maintenance of existing system. 2) Lane miles do not take into account utilization of the roadway, nor do they adequately account for transit. Lane miles may be biased in favor of more sparsely-populated areas with more dependence on automobiles.

Disadvantages of using population as a proxy measure of need include: 1) Population only represents one end of a trip, while employment or other activities (retail, recreation, etc.), are reflective of the other end of a trip. 2) Population may be biased in favor of urban areas over rural areas, and it downplays system connectivity needs. Goods produced in sparsely-populated areas ultimately must be transported to more-populated areas.

projects from 1993 to 2004 is displayed in Table 3 below. The Denver TMA includes all of the City and County of Denver, Boulder, Douglas, and Jefferson Counties, plus the western halves of Adams and Arapahoe Counties (See Figure 1).

Table 3 shows total non-discretionary funding, DRCOG-controlled funding, CDOT-controlled funding, discretionary<sup>45</sup>/RTD funding, and total funding by county in both absolute dollars and as a percentage of the six-county total. DRCOG-controlled funding includes the categories of STP-Metro, STP-Enhancement, and CMAQ, while CDOT-controlled funding categories include STP-Flexible, STP-Safety, IM, NHS, and Bridge<sup>46</sup>. RTD-controlled funding categories are Sections 5307 (9), 5310 (16), 5311 (18), and 5309 (3). Discretionary funds represent direct federal appropriations that are not subject to review and analysis within DRCOG. “Regional projects” were those that could not be assigned to any specific county. The following three subsections will address need and equity considerations of three different funding distributions: Total, DRCOG-controlled, and CDOT-controlled.

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<sup>45</sup> Discretionary fund projects are not evaluated through the formal TIP criteria process, but are direct federal appropriations for certain specified projects.

<sup>46</sup> The CDOT-controlled funding categories of STP-Safety and Bridge are not evaluated through the formal TIP criteria process. These projects are selected by CDOT and submitted to DRCOG for direct inclusion in the TIP.

Table 3: Expenditures of Federal and State Dollars by County in DRCOG Region, 1993-2004  
Through 1999-2004 TIP, Amendment # 6 March 1999  
Includes FHWA, FTA, & CDOT Funding Categories  
12-Year Total, FY 1993-2004

<u>County</u>	<u>Funding</u> <u>(\$ 000's)</u>	<u>% of</u> <u>6-County</u>	<u>Average Annual</u> <u>Funding per Capita</u>
<b>Adams Non-Discretionary Total</b>	396,005	20.9%	\$105.07
DRCOG Control	25,752	13.2%	\$ 6.83
CDOT Control	370,253	21.8%	\$ 98.25
Discretionary	34,325		
<b>Adams Total</b>	430,330	18.7%	\$114.17
<b>Arapahoe Non-Discretionary Total</b>	340,863	18.0%	\$ 59.98
DRCOG Control	50,553	26.0%	\$ 8.92
CDOT Control	290,310	17.1%	\$ 51.08
Discretionary/RTD	141,630		
<b>Arapahoe Total</b>	482,493	20.9%	\$ 84.83
<b>Boulder Non-Discretionary Total</b>	168,348	8.9%	\$ 51.44
DRCOG Control	26,838	13.8%	\$ 8.17
CDOT Control	141,510	8.3%	\$ 43.25
Discretionary	--		
<b>Boulder Total</b>	168,348	7.3%	\$ 51.44
<b>Denver Non-Discretionary Total</b>	520,424	27.5%	\$ 86.44
DRCOG Control	59,986	30.9%	\$ 10.00
CDOT Control	460,438	27.1%	\$ 76.50
Discretionary/RTD	233,410		
<b>Denver Total</b>	753,834	32.7%	\$125.25
<b>Douglas Non-Discretionary Total</b>	205,030	10.8%	\$119.48
DRCOG Control	7,519	3.9%	\$ 4.42
CDOT Control	197,511	11.6%	\$115.08
Discretionary/RTD	6,345		
<b>Douglas Total</b>	211,375	9.2%	\$123.17
<b>Jefferson Non-Discretionary Total</b>	260,742	13.8%	\$ 42.17
DRCOG Control	23,770	12.2%	\$ 3.83
CDOT Control	236,972	14.0%	\$ 38.33
Discretionary	250		
<b>Jefferson Total</b>	260,992	11.3%	\$ 42.25
<b>6-County Non-Discretionary Total</b>	1,891,411	100.0%	\$ 70.99
DRCOG Control	194,418	100.0%	\$ 7.33
CDOT Control	1,696,994	100.0%	\$ 63.67
Discretionary/RTD	415,960		
<b>6-County Total</b>	2,307,371	100.0%	\$ 86.58
<b>“Regional Projects”</b>	602,178		
DRCOG Control	65,038		
CDOT Control	294,954		
RTD Control	242,186		
<b>Grand Total</b>	2,909,549		

Source: DRCOG, 1999

*Total Funding Distribution*

Table 4 displays the percentages of total and non-discretionary federal and state transportation expenditures by county within the six-county region in comparison to percentage distributions based on 1998 population, 2001 vehicle-miles traveled (VMT)<sup>47</sup>, and 1998 lane-miles in the six-county region.

Table 4  
Total Denver Region TIP Funding Distribution to Counties, FY 1993-2004  
Percentages of Funding, Population, Vehicle Miles Traveled, and Lane Miles by County

<u>County</u>	<u>% Total TIP Funds*</u>	<u>% Non-Discretionary Total TIP Funds*</u>	<u>% 6-County Population</u>	<u>% VMT</u>	<u>% Lane Miles</u>
Adams	18.65%	20.9%	14.15%	17.40%	19.34%
Arapahoe	20.91%	18.0%	21.33%	16.51%	15.48%
Boulder	7.30%	8.9%	12.28%	8.92%	12.23%
Denver	32.67%	27.5%	22.60%	25.03%	21.02%
Douglas	9.16%	10.8%	6.44%	10.22%	9.95%
Jefferson	11.31%	13.8%	23.20%	21.92%	21.97%

\*Both categories include some CDOT-controlled funds (e.g., STP-Safety and Bridge) that are not evaluated through the formal TIP criteria process.

Source: DRCOG, Denver Regional Travel Demand Model, DRCOG Projects Database (2001 estimated), 1993-2004 TIPs.

In analyzing Tables 3 and 4, several points can be made. First, the City and County of Denver received the largest total TIP funding per capita but only the third highest nondiscretionary funding per capita. Denver had the largest total and non-discretionary percentage of funding in relation to population, vehicle miles traveled, or lane miles of any of the six counties in the region over the 1993-2004 period. As we will see with the other comparable MPOs, this is not an unusual result. Based on findings in this study, central counties tend to receive the largest shares of TIP funds within their metropolitan regions, typically larger than what would be expected in comparison to population, VMT, or lane miles.

Second, Jefferson County received the smallest total funding per capita, as well as a percentage of total TIP funding that was considerably smaller (8%-12% less) than a percentage based on population, VMT, or lane-miles. Third, Boulder County also had low total funding per capita, and received less in comparison to population, VMT, or lane-miles. Fourth, Douglas and Adams Counties received the highest non-discretionary funding per capita, and the second and third highest total funding per capita, respectively. They each received higher non-discretionary funding in comparison to population, VMT, and lane-miles, while their total funding was within an equitable range. Fifth, Arapahoe

<sup>47</sup> DRCOG was able to provide 1998 population and lane-miles by county, but could only provide 2001 estimates of vehicle miles traveled by county.

County's non-discretionary and total funding per capita were somewhat below the regional average, but its total funding was within an equitable range.

*DRCOG-Controlled Funding Distribution*

Table 5 displays the percentages of federal transportation expenditures that were under DRCOG control by county within the 6-county region in comparison to percentage distributions based on population, vehicle-miles traveled, and lane-miles in the 6-county region.

Table 5  
DRCOG-Controlled TIP Funding Distribution to Counties, FY 1993-2004  
Percentages of Funding, Population, Vehicle Miles Traveled, and Lane Miles by County

<u>County</u>	<u>% DRCOG Funds</u>	<u>% Population</u>	<u>% VMT</u>	<u>% Lane Miles</u>
Adams	13.25%	14.15%	17.40%	19.34%
Arapahoe	26.00%	21.33%	16.51%	15.48%
Boulder	13.80%	12.28%	8.92%	12.23%
Denver	30.85%	22.60%	25.03%	21.02%
Douglas	3.87%	6.44%	10.22%	9.95%
Jefferson	12.23%	23.20%	21.92%	21.97%

Source: DRCOG, Denver Regional Travel Demand Model, DRCOG Projects Database (2001 estimated), 1993-2004 TIPs.

It should first be recognized that DRCOG-controlled funds represented only 8.92% of the total federal and state dollars distributed in the 1993-2004 TIP period. CDOT controlled 68.46% of the total funds, while RTD funds and discretionary funds accounted for the remainder (22.62%).

In analyzing the DRCOG-controlled funding distribution, a distinct pattern of higher-share and lower-share counties is apparent. Denver, Arapahoe, and Boulder counties all received higher shares of DRCOG-controlled TIP funds than would be expected on the basis of population, VMT, or lane-miles. Denver received a share that was 5% to 10% higher, Arapahoe's share was 5% to 11% higher, while Boulder's share was 1% to 5% higher. Likewise, Jefferson, Douglas, and Adams Counties received lower shares of DRCOG-controlled TIP funds than would be expected on the basis of population, VMT, or lane-miles. Jefferson County had the largest gap, with funding ranging from 9% to 11% lower than its percentage based on the three comparative measures. Douglas County received only 3.87% of DRCOG-controlled TIP funds during the 1993-2004 period, compared to its 6.44% of metropolitan population, 10.22% of vehicle miles traveled, and 9.95% of lane miles. Adams County had funding levels that were 1% to 6% lower than its percentages based on the three comparative measures.

It is important to remember, however, that the amount of funds under DRCOG control is small relative to the total amount of transportation funds distributed in the TIP. Average annual DRCOG-controlled funding ranged from \$10 per person in the City and County of Denver to \$3.83 per person in Jefferson County. This compares to total TIP annual funding of \$125.25 per person in Denver to \$42.25 in Jefferson County.

*CDOT-Controlled Funding Distribution*

Table 6 displays the percentages of federal and state transportation expenditures that were under CDOT control by county within the six-county region in comparison to percentage distributions based on population, vehicle-miles traveled, and lane-miles in the six-county region.

Table 6  
CDOT-Controlled TIP Funding Distribution to Counties, FY 1993-2004  
Percentages of Funding, Population, Vehicle Miles Traveled, and Lane Miles by County

<u>County</u>	<u>% CDOT Control*</u>	<u>% Population</u>	<u>% VMT</u>	<u>% Lane Miles</u>
Adams	21.82%	14.15%	17.40%	19.34%
Arapahoe	17.11%	21.33%	16.51%	15.48%
Boulder	8.34%	12.28%	8.92%	12.23%
Denver	27.13%	22.60%	25.03%	21.02%
Douglas	11.64%	6.44%	10.22%	9.95%
Jefferson	13.96%	23.20%	21.92%	21.97%

\*Some CDOT-controlled funds (e.g., STP-Safety and Bridge) are not evaluated through the formal TIP criteria process.

Source: DRCOG, Denver Regional Travel Demand Model, DRCOG Projects Database (2001 estimated), 1993-2004 TIPs.

Because CDOT controlled the majority of all federal and state dollars distributed in the 1993-2004 TIP period, this distribution resembles the total distribution. Denver still receives a higher percentage of TIP funding, though the difference here is a little less. Also, similar to the total distribution, both Boulder and Jefferson Counties receive less than would be expected based on population, VMT, or lane-miles, while Arapahoe is within the range. The notable difference between this distribution and the total is that Adams and Douglas Counties received a higher share of CDOT-controlled funds than would be expected on the basis of population, VMT, or lane-miles.

*Analysis of Denver TIP Distribution, 1993-2004*

There are several important factors that must be considered when analyzing these TIP funding distributions, including consideration of how the process of TIP project selection occurs, as well as how the distribution can be interpreted. First, jurisdictions must submit project applications in order to have projects selected. Each jurisdiction is

allowed a certain number of project applications, based on population or employment size. Counties with many municipalities located within them will have the opportunity to have more project applications than those counties with fewer municipalities. Also, not all jurisdictions submit the maximum number of project applications to which they are allowed. It may be difficult to allege that transportation needs are not being met in certain jurisdictions if those jurisdictions are not submitting enough project applications. On the other hand, jurisdictions may be more selective regarding TIP applications, and only submit the most pressing project proposals for inclusion in the TIP. In this case, there may be a problem with how project applications are being scored and evaluated based on the TIP criteria.

Table 7 displays the maximum number of DRCOG TIP applications each county (and municipalities within each county) was allowed to submit, the number of applications actually submitted, and the number of projects selected for the 1995, 1997, and 1999 TIP cycles.

Table 7  
DRCOG TIP Applications Summary—1995, 1997, 1999 TIP Cycles

<u>County</u>	<u>Applications Allowed</u>	<u>Applications Submitted</u>	<u>% Submitted/ Allowed</u>	<u>Applications Selected</u>	<u>% Selected/ Submitted</u>
Adams	231	110	47.6%	23	20.9%
Arapahoe	216	117	54.2%	37	31.6%
Boulder	249	109	43.8%	29	26.6%
Denver	96	94	97.9%	30	31.9%
Douglas	120	22	18.3%	4	18.2%
Jefferson	252	86	34.1%	21	24.4%

Source: DRCOG 1999, and author’s calculations

There is quite a variation among the counties regarding propensity to submit project applications, ranging from Denver submitting 97.9% of its maximum allowable to Douglas County submitting only 18.3% of its maximum allowable. Jefferson County and Boulder County had relatively low submittal rates of 34.1% and 43.8% respectively. The project selected/submitted percentages had less variation, ranging from Denver’s success rate of 31.9% to Douglas County’s 18.2% success rate. Arapahoe County also had a relatively high success rate (31.6%).

One conclusion drawn from this analysis is that jurisdictions must submit a greater percentage of maximum allowable project applications if they hope to have more projects selected. It is difficult to raise equity concerns if under funded jurisdictions are not taking advantage of project application opportunities. Also, based on the result that 26.8% of all project submittals over this time period were actually selected for implementation, it can be inferred that a project submittal has greater than a one in four chance of being selected. Of course, projects must ultimately be worthy of selection.

Projects are evaluated through a competitive TIP process; only the highest ranking projects are selected based on criteria that emphasize regional needs. According to federal regulation 23 CFR 450.321(1), there can be no *a priori* determination of funding allocations by percentages or formulas based on measures such as population, VMT, lane miles, or any other criteria. Legislative provisions require MPOs in cooperation with the state and transit operators to develop a prioritized and financially constrained TIP based on considerations required to be addressed as part of the planning process. The DRCOG TIP criteria are extensive, detailed, and complex, but they are explicit. Jurisdictions have the opportunity to modify the criteria prior to each TIP cycle. Also, jurisdictions can perform internal evaluations to determine how well their projects would score based on the TIP criteria, and then can modify projects to attain higher scores. Nevertheless, because of vigorous competition among jurisdictions for a limited amount of available funding, it may still be difficult for some jurisdictions to get their projects selected.

As this study reveals, funds for transportation projects are limited; some worthy projects may be denied simply due to lack of total funding to the region. If more funds become available, more projects from different jurisdictions would be selected. The problem with lack of transportation funding is affecting virtually all major metropolitan areas, as needs outpace resources. Still, some metropolitan areas and their states are doing better than others in garnering additional transportation resources, and this clearly has a bearing on how many projects an MPO can select in its TIP.

In the preceding section on Transportation Needs and Equity, there were several caveats mentioned which make geographic distributional analysis somewhat problematic. The principal difficulty involves ascribing benefits to geographic areas solely on the basis of specific projects, in light of the fact that residents of other areas use those projects as well. When looking at the regional scale in particular, it becomes even more difficult to ascribe benefits directly. For example, expenditures on projects in the City and County of Denver benefit everyone in the metropolitan area who may need to use those facilities on a daily basis, regardless of residential location. The daily travel and activity patterns of metropolitan area residents are metropolitan in scale. Table 8 shows total daily vehicle trips in the DRCOG region by county of origin subdivided into those trips, which end in the same county, and those trips which end in a *different* county.

Table 8  
Total Daily Vehicle Trips, 2001 (est.)

<u>County</u>	<u>Begin in County</u>	<u>Begin and End in County</u>	<u>Begin in County, End in Other County</u>	<u>% of Trips End in Other County</u>
Adams	1,007,000	571,000	436,000	43.3%
Arapahoe	1,561,000	900,000	661,000	42.3%
Boulder	909,000	749,000	160,000	17.6%
Denver	1,847,000	983,000	864,000	46.8%
Douglas	467,000	236,000	231,000	49.5%
Jefferson	1,691,000	1,116,000	575,000	34.0%
Sub-Total	7,482,000	4,555,000	2,927,000	39.1%

Source: DRCOG, Denver Regional Travel Demand Model

The degree of interaction among the six counties is reflected in this Table. Nearly half of all the trips that start in Douglas County end in another county. Douglas County residents thus rely on transportation infrastructure in Douglas County as well as each of the other metropolitan area counties and other counties in the State. Denver, Adams, and Arapahoe Counties also have relatively high degrees of interaction within the metropolitan area, each having over 40% of trips ending in another county. Jefferson has somewhat less interaction (34%) while Boulder is much more self-contained (17.6%).

In light of all these points, it is unreasonable to assume that the TIP distribution should exactly reflect distributions based on population, VMT, lane miles, or other criteria. This is particularly true for the metropolitan area distributional analysis. Still, the analysis presented here provides a benchmark. Though in any individual year, allocations may be “lumpy”, over the long run there should be a general pattern of equity. There should not be a systematic, entrenched pattern whereby some counties consistently receive much more than their “fair share”, and other counties receive consistently much less than their “fair share”, however defined. In this analysis, Jefferson and Boulder Counties received per capita funding considerably less than the regional average, and funding percentages less than what would be expected on the basis of population, VMT, or lane-miles. This is a problem that should be ameliorated over the next several TIP cycles, if Jefferson and Boulder Counties wish to increase their shares of transportation funding.

### **Dallas-Ft. Worth**

Transportation project selections for the NCTOG TMA from 1994 to 2000 based on the 1994 TIP for the Dallas-Ft.Worth metropolitan area resulted in geographic funding distribution by county, which is displayed in Table 9. The TMA is the Dallas-Fort Worth urbanized area, and includes all of Collin, Dallas, Denton, Rockwall and Tarrant Counties, plus parts of Ellis, Kaufman, Johnson, and Parker Counties (See Figure 2). Table 10 shows how project selection resulted in a distribution of MPO-managed funds by county in the NCTCOG TMA from 1994 to 2001 based on the 1994, 1995, and 1996 TIPs. Table 11 displays percentages of total and MPO-managed TIP funding by county in comparison with percentages of population, vehicle miles traveled, and lane miles for each county or part of a county within the NCTCOG TMA.

Table 9  
 Allocations of Federal, State, and Local Dollars by County in NCTCOG Region, 1994-2002

<u>County</u>	<u>Total Funding (\$ in thousands)</u>	<u>% of Total</u>
Collin	416,238	6.18%
Dallas	4,478,697	66.48%
Denton	364,369	5.41%
Ellis	111,642	1.66%
Johnson	102,884	1.53%
Kaufman	13,490	0.20%
Parker	10,882	0.16%
Rockwall	23,725	0.35%
Tarrant	1,214,985	18.03%
Total	6,737,182	100.00%

Source: NCTCOG, 1994 Transportation Improvement Program.

Table 10  
 Allocations of MPO-Managed Funding by County in NCTCOG Region, 1994-2001

<u>County</u>	<u>MPO Funding</u>	<u>% of MPO Funding</u>
Collin	\$ 50,426,349	8.19%
Dallas	\$342,127,823	55.59%
Denton	\$ 10,380,485	1.69%
Ellis	\$ 0	0%
Johnson	\$ 40,000	0.01%
Kaufman	\$ 0	0%
Parker	\$ 0	0%
Rockwall	\$ 13,575,819	2.21%
Tarrant	\$198,867,222	32.31%
Total	\$615,417,698	100.00%

Source: NCTCOG, 1994, 1995, 1996 Transportation Improvement Programs and author's calculations.

Table 11  
Total NCTCOG TIP Funding Distribution to Counties, FY 1994-2001  
Percentages of Funding, Population, Vehicle Miles Traveled, and Lane Miles by County

<u>County</u>	<u>% Total TIP Funds</u>	<u>% MPO-Managed Funds</u>	<u>% Pop</u>	<u>% VMT</u>	<u>% Lane Miles</u>
Collin	6.18%	8.19%	8.52%	7.10%	9.72%
Dallas	66.48%	55.59%	47.21%	50.10%	43.20%
Denton	5.41%	1.69%	7.83%	6.42%	8.40%
Tarrant	18.03%	32.31%	30.77%	30.06%	27.89%
Other	3.90%	2.22%	5.67%	6.61%	10.79%
Ellis	1.66%	0%	1.98%		
Johnson	1.53%	0.006%	2.21%		
Kaufman	0.20%	0%	0.37%		
Parker	0.16%	0%	0.35%		
Rockwall	0.35%	2.21%	0.76%		

Source: NCTCOG, 1994, 1995, 1996 Transportation Improvement Programs and other data acquired, October 1999; author's calculations.

The figures contained in Tables 9, 10, and 11 indicate several trends. First, Dallas County is receiving a majority proportion of total and MPO-managed funding among the counties in the NCTCOG TMA, larger than its percentage of population, vehicle miles traveled, or lane miles in the region. This is not an unexpected result, as central counties generally contain many regional facilities and a considerable amount of transportation infrastructure that benefits the entire metropolitan region. Second, Tarrant County is receiving less total funding, but a greater amount of MPO-managed funding, in relation to its percentage of population, VMT, or lane miles within the region. Third, Collin, Denton, and the other counties are receiving less total funding in relation to the comparative measures, but Collin and Rockwall Counties, two of the fastest growing counties in the region, are receiving a greater amount of MPO-managed funding.

The same caveats mentioned in the Denver analysis also apply to Dallas and any other metropolitan area subject to need and equity analysis. Projects identified in the TIP are regional projects that benefit the entire region. This is particularly so for many projects in the central county.

### **Phoenix**

Transportation project selections for the Maricopa Association of Governments [MAG] TMA from 1995 to 2004 resulted in a geographic distribution of federal TIP funds by municipality or agency, which is displayed in Table 12. The MAG TMA includes the Phoenix urbanized area, and consists of the 24 incorporated cities and towns within Maricopa County, the Gila River Indian Community, the Salt River Indian Community, and unincorporated parts of Maricopa County (See Figure 3). Funding

identified in the TIP is distributed to these jurisdictions, as well as to the Arizona Department of Transportation (ADOT) and MAG. Table 13 displays how project selections resulted in a distribution of MPO-managed funds by jurisdiction including the geographic location of funds allocated to ADOT in the 1995-2004 TIPs. Percentages of these funds by jurisdiction are compared to percentages of 1998 population by jurisdiction in the MAG region.<sup>48</sup>

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<sup>48</sup> Other comparative data, such as vehicle miles traveled and lane miles, were unavailable for individual municipalities in the MAG region.

Table 12  
Expenditures of Total Federal Funds and MPO-Managed Funds by MAG Agency  
1995-2004 Transportation Improvement Programs

<u>Agency</u>	<u>Total Fed \$</u>	<u>% Total</u>	<u>Total MPO \$</u>	<u>% of MPO</u>
ADOT	\$1,205,850,211	89.38%	\$292,496,323	73.87%
Chandler	\$9,286,488	0.69%	\$8,786,488	2.22%
Gila River I.C.	\$3,000,000	0.22%	\$ 0	0%
Gilbert	\$2,544,700	0.19%	\$2,544,700	0.64%
Glendale	\$5,543,480	0.41%	\$4,408,065	1.11%
MAG	\$22,520,268	1.67%	\$22,520,268	5.69%
Maricopa County	\$33,264,830	2.47%	\$16,261,600	4.11%
Mesa	\$11,387,908	0.84%	\$10,406,405	2.63%
Peoria	\$5,198,522	0.39%	\$5,198,522	1.31%
Phoenix	\$25,161,150	1.87%	\$19,874,800	5.02%
Salt River I.C.	\$2,150,000	0.16%	\$ 0	0%
Scottsdale	\$6,414,961	0.48%	\$6,249,141	1.58%
Tempe	\$6,568,000	0.49%	\$4,178,000	1.06%
Other	\$7,278,259	0.54%	\$3,047,602	0.77%
<b>Total</b>	<b>\$1,349,068,777</b>		<b>\$395,971,914</b>	

Source: MAG, Transportation Improvement Program 1995 – 2004; author’s calculations.

Table 13  
MPO-Managed TIP Distribution to Jurisdictions Including ADOT Apportionment\*  
Percentage of Funding and Population by Jurisdiction  
FY 1995-2004

<u>Jurisdiction</u>	<u>MPO-Managed</u>	<u>% of MPO-Managed</u>	<u>% of Population</u>
Chandler	\$29,494,738	7.45%	5.71%
Gilbert	\$ 2,544,700	0.64%	3.25%
Glendale	\$ 4,408,065	1.11%	7.01%
Maricopa County	\$16,261,600	4.11%	6.61%
Mesa	\$81,957,155	20.70%	12.90%
Peoria	\$ 5,198,522	1.31%	3.20%
Phoenix	\$33,816,800	8.54%	43.50%
Salt River I.C.	\$104,071,000	26.28%	0.21%
Scottsdale	\$ 6,249,141	1.58%	6.97%
Tempe	\$16,706,000	4.22%	5.67%
Other Jurisdictions	\$ 3,047,602	0.76%	4.97%
<b>Sub-Total</b>	<b>\$303,756,000</b>		

Sources: MAG, Transportation Improvement Programs 1995-2004; author’s calculations.

\*MPO-managed funds directed to ADOT are apportioned to jurisdictions in this table. Other funds not directed to populated jurisdictions are excluded.

Analysis of the TIP fund distribution in the MAG region is difficult for a number of reasons. First, there is only one county in the region and a number of municipalities, Indian communities, and other agencies that receive TIP funds, which does not lead to the more straightforward analysis reflective of the other MPOs. Second, ADOT is identified as the recipient of the overwhelming majority of funds (89% of total federal; 74% of MPO-managed) distributed in the TIP. In order to conduct a meaningful distributional analysis, ADOT funds would need to be apportioned to the populated jurisdictions within the MAG region. This approach was employed for MPO-managed funds in Table 13. Fourth, the distributions may be skewed by allocations to certain jurisdictions, such as the Salt River Indian Community with a population of 0.21% of the MAG region receiving 26.3% of the MPO-managed funds during the 1995-2004 period, due to the location of the Pima freeway which received a large amount of federal funds during this period.

Given these deviations, it is difficult to assess the MAG TIP distribution. Nevertheless, a few observations can be made. The largest amounts of total and MPO-managed federal dollars, outside of ADOT, were allocated to Maricopa County, Phoenix, MAG, and Mesa. After MPO-managed ADOT funds are allocated to populated jurisdictions, the Salt River Indian Community and Mesa received the largest dollar amounts, both well above what might be expected based on their percentage of population in the region. This is due to the large investment made in the Pima Freeway located in these specific jurisdictions, but as part of a loop freeway, benefiting many more jurisdictions throughout the region. Phoenix received the next highest amount of funding, but it was much less than its percentage of population. Chandler, Tempe, and Maricopa County were next, and each received funding percentages closer to percentages of population. The remaining jurisdictions all received lower amounts.

Comparison of these results with those from the other MPOs does not reveal corroborative trends. This distribution is much more skewed than the others for specific review, and it is somewhat surprising that the central city (Phoenix) is not receiving a larger percentage of TIP funds. Smaller jurisdictions tend to receive less funding in relation to population, which may be the only corroborative finding in comparison with the other MPOs.

### Seattle

Transportation project selection for the Puget Sound Regional Council [PSRC] TMA covering three Transportation Improvement Programs [TIP] from 1994 to 2000 resulted in a geographic distribution of federal TIP funds by county, which is displayed in Table 14. Table 15 shows how project selections resulted in percentages of MPO-managed funds and total funds distributed to each county, as compared to percentages of population, vehicle miles traveled, and lane miles represented by each county in the region. The TMA for the Puget Sound Regional Council (PSRC) includes the counties of King, Kitsap, Pierce, and Snohomish (See Figure 4). Based on transportation project selections, funding is distributed to these counties, other local governments, the Washington State Department of Transportation (WSDOT), multicounty agencies, and Native American tribal nations.

Table 14: Puget Sound Regional Council TIP Distribution  
Total and MPO-Managed Federal Funds by PSRC County and Other Agencies  
FY 1994-2000  
(thousands of dollars)

<u>Agency</u>	<u>MPO-Managed</u>	<u>% of MPO</u>	<u>Total Federal Funds</u>	<u>% of Total</u>
King	462,904	55.85%	546,310	33.20%
Kitsap	36,267	4.38%	45,111	2.74%
Pierce	115,668	13.96%	140,408	8.53%
Snohomish	100,960	12.18%	142,869	8.68%
Multicounty	47,362	5.71%	66,871	4.06%
Tribal Nations	50	0.01%	1,556	0.09%
WsDOT	65,605	7.92%	702,450	42.69%
<b>Total</b>	<b>828,818</b>	<b>100.00%</b>	<b>1,645,575</b>	<b>100.00%</b>

Sources: PSRC, 1998-2000 TIP, Exhibit 3; 1996-1998 TIP, Exhibit 3; 1994-1996 TIP, Table 3, and author's calculations.

Table 15  
PSRC TIP Distribution to Counties  
Percentage of Funding, Population, Vehicle Miles Traveled, and Lane Miles by County\*  
FY 1994-2000

<u>County</u>	<u>% of Total</u>	<u>% of MPO Managed</u>	<u>% of Population</u>	<u>% of VMT</u>	<u>% of Lane Miles</u>
King	62.46%	64.67%	52.89%	54.66%	47.02%
Kitsap	5.16%	5.07%	7.27%	5.70%	7.70%
Pierce	16.05%	16.16%	21.81%	18.80%	23.38%
Snohomish	16.33%	14.10%	18.04%	20.84%	21.89%

Sources: PSRC, 1998-2000 TIP, 1996-1998 TIP, 1994-1996 TIP and author's calculations.

\*Excludes funding not ascribed to one of the four counties

Project selections resulted in a distribution of TIP funds in the Central Puget Sound region that tends to be oriented to King County, by far the largest of the counties, and the center of the Seattle metropolitan area. King County's percentage of both MPO-managed funding and total funding exceeded its percentage of 1998 population, vehicle miles traveled, and lane miles in the four-county region. King County's percentage of funds ranged from 8% to 17% higher than its percentage based on the three comparative measures. Similar to Denver and Dallas, the central county received a higher percentage of TIP funds in the Central Puget Sound region. This is not unexpected as much of the

transportation infrastructure is concentrated in the central county, and many projects of regional value are located there.

The other three counties, Kitsap, Pierce, and Snohomish, each had amounts of funding less than percentages of population, VMT, and lane miles within the region. Kitsap County had funding percentages closer to the three comparative measures (no more than a 3% gap), while Pierce and Snohomish had gaps that ranged between 2% and 7%. In comparison to Denver and Dallas, these results are also not unusual, and are in fact, more equitable. Other counties, for example Jefferson County in Denver, had much larger funding gaps. These results for the Central Puget Sound region suggest that the PSRC allocation method involving regionwide and countywide processes may be resulting in more equitable distributions of TIP funds, though concern with geographic equity is not a part of the TIP selection process, consistent with federal regulations.

### Comparative TIP Distribution Analyses

In evaluating the distributions of Transportation Improvement Program funds relative to metropolitan needs and equity across the comparable MPOs of Dallas, Phoenix, and Seattle, several conclusions can be drawn. The most noteworthy conclusion is that the proportion of funds distributed to central counties tends to be higher in comparison to percentages based on population, vehicle miles traveled, or lane miles. To a large extent, this result is to be expected. Central counties represent the historic core of highway and transit networks, they contain the most dense transportation infrastructure within a metropolitan area, and maintenance expenses tend to be higher there. Many regional facilities, including sports arenas and stadiums, museums, libraries, orchestra halls, theatres, and performing arts complexes, are located in the central core of cities. In most metropolitan areas, the Central Business District (CBD) still remains the single largest node of employment activity. Residents from throughout the metropolitan region utilize transportation facilities in the central county to avail themselves of activities therein.

Second, there appears to be no systematic pattern of counties or cities that received funding shares less than what might be expected on the basis of population, vehicle miles traveled, or lane miles. This includes those counties or cities that would be identified as fast-growing. There were three counties in this study that experienced 1990-97 population growth rates of at least 40%: Douglas County, Colorado (109%), Collin County, Texas (52%), and Rockwall County, Texas (40%). Douglas County received the highest non-discretionary and second highest total funding per capita among all counties in the Denver region, although its percentage of DRCOG-controlled funds was lower than its percentage of population, VMT, or lane miles in the region. The other fast-growing counties, Collin and Rockwall, had total funding lower in comparison to percentages of population, VMT, or lane miles, while their MPO-managed funding percentages were larger than percentages of the three comparison measures.

### **SUMMARY AND CONCLUSIONS**

Analyses were conducted on how Transportation Improvement Program (TIP) project selections resulted in fund distributions to counties or municipalities throughout the Transportation Management Area (TMA) of Denver and the three comparable MPOs (Dallas, Phoenix, and Seattle) for the period from 1993 to 2004. The Denver TMA includes all of the City and County of Denver, Boulder, Douglas, and Jefferson Counties, plus the western halves of Adams and Arapahoe Counties.

Results indicate that the City and County of Denver received the largest TIP funding per capita among the six counties in the Denver region, the third largest non-discretionary TIP funding per capita, and the largest funding percentages in relation to percentages of population, VMT, and lane miles. Based on results from the comparable MPOs in this study, this is not an unusual finding; other central counties also received the largest percentages of TIP funds within their metropolitan regions, typically larger than percentages of population, VMT, or lane miles. Jefferson County received the smallest funding per capita, as well as a percentage of funding that was considerably smaller (10%-12% less) than its percentages of the three comparison measures. Boulder County also had low total funding per capita, and received a lower funding percentage in relation to the three comparison measures.

The patterns of funding distribution for the other counties were mixed. Douglas and Adams Counties received the highest non-discretionary funding per capita, and the second and third highest total funding per capita, respectively. They each received equitable total TIP funding percentages, but their MPO-managed funding percentages were less than population, VMT, or lane-mile percentages. Arapahoe County's total funding per capita was just below the regional average and it received an equitable funding percentage in relation to the three comparison measures.

Even though some need-based inequities were revealed in this analysis, it is important to recognize several other factors when interpreting these results. There is a considerable amount of daily travel interaction among the counties in the metropolitan area. Nearly half of all the trips that start in Douglas County end in another county. Denver, Adams, and Arapahoe Counties also have relatively high degrees of interaction within the metropolitan area, each having over 40% of residents' trips ending in another county. Jefferson has somewhat less interaction (34%) while Boulder is much more self-contained (17.6%). The degree of daily travel interaction among the counties makes equity analysis at the metropolitan scale more problematic than at other scales of analysis.

Furthermore, the selection of projects is based on a competitive process whereby jurisdictions have the opportunity to submit project applications that are scored and given a priority ranking based on criteria that emphasize regional needs. Some jurisdictions receive lower totals of project funds for a variety of reasons, including: 1) jurisdictions may not be submitting as many proposals as they can, 2) lack of adequate funding may unduly limit the number of projects selected, where in some cases otherwise worthy projects are delayed or not built at all, or 3) the projects of some jurisdictions may simply not score well based on criteria emphasizing regional needs. Also, MPOs cannot make

any *a priori* allocations based on percentages or formulas.<sup>49</sup> In light of these points, it is unreasonable to assume that the TIP distribution should exactly reflect distributions based on population, VMT, lane miles, or other criteria.

Still, this analysis provides a benchmark. Though in any individual year, allocations may be “lumpy”, over the long run there should be a general pattern of equity. There should not be a long-standing pattern whereby some counties consistently receive much more than their “fair share”, and other counties receive consistently much less than their “fair share”, however defined. In this analysis, Jefferson and Boulder Counties received funding per capita considerably less than the regional average, and percentages of funding less than their percentages of population, VMT, and lane-miles in the region. This is a problem that should be ameliorated over the next several TIP cycles, if Jefferson and Boulder Counties wish to increase their shares of transportation funding.

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<sup>49</sup> 23 CFR 450.321(1)