The **MTA County-by-County Cost Benefit Analysis**, published in March of 2008, adopts an approach similar to that undertaken in several previous studies: basically, a ratio of benefits to costs has been calculated. The ratio, however, bears some serious limitations that render it inadequate as a metric for determining the "true" relationship between benefits and costs. These limitations are discussed at length in the study itself. This note is intended simply to delineate the components of benefit and cost so that one type of limitation can be exposed—that arising from shortcomings in the data or the assumptions required to employ the data. It is worth noting that actual county-level data was available for direct use in only five of the twenty-two components of the ratio; all the others were obtained by constructing imperfect proxies.

Benefits

Table 1: Summary of Data Used for Calculating "Benefits"

Data	Method	Using
DORF and MMTOA	Actual	
West of Hudson Operating Expenses	Estimated	Passenger Miles
West of Hudson General Admin. Costs	Estimated	Passenger Miles, Financial Statements
MNR East of Hudson Expenses	Estimated	Passenger Miles
NYCT Expenses and Admin. Costs	Estimated	Ridership
Expenses and Admin. Costs of LIRR and LIB	Estimated	Ridership
MTA Bridges & Tunnels Expenses and Admin. Costs	Estimated	Car trips
MTA-HQ and Police Expenses	Estimated	Passenger miles, Financial Statements, Personnel Assignments
Capital Project Payments	Estimated	Capital Program Data from 1995-1999 and from 2000-2004
MTA Policy and Gap Closing Actions	Estimated	Financial Statements, Passenger miles, Car trips, Ridership

1) Direct Payments of MTA-Earmarked Taxes to Local Counties

Data used: i) Dutchess-Orange-Rockland Fund (DORF) data, as a refunded portion of MRT-2 taxes.
ii) Rockland County's receipt of MMTOA funds

Assumption Issues: Actual data were used.

2) MNR- West of Hudson Operating Expenses

Data used: Payments made by the MTA to New Jersey for Port Jervis and Pascack Valley services.

Assumption Issues: Expense data is not available on a per county basis; therefore, payment data is estimated. Estimated payments are allocated to each county based on its share of passenger miles*. Passenger miles is only one of many determinants of

* Passenger miles is a datum that is itself estimated (according to a methodology approved by the Federal Transportation Administration). This introduces further error into any county share allocation that is based on passenger miles.

actual operating expenses, especially when transit service to a particular destination is part of a much larger system.

3) MNR- West of Hudson General Administrative Costs

Data used: MNR general and administrative cost data, from MNR Financial Statement.

Assumption Issues: The apportionment to counties is made by first estimating West of Hudson service's share in total MNR Revenue passenger miles and then allocating these expenses among Orange and Rockland counties based on each county's share of West of Hudson operating expenses. A problem with this is that the general and administrative costs of operating West of Hudson service are not determined solely by passenger miles; and, with regard to the allotment to the counties, the caveats mentioned above apply.

4) MNR- East of Hudson Expenses

Data used: MNR East of Hudson expense data, from MNR Financial Statement. Origin-destination survey results.

Assumption Issues: Allocations made according to each county's share of passenger miles on East of Hudson service, as estimated from survey results. As mentioned in (2) above, the allocation will carry error.

5) NYCT Expenses and Administrative Costs

Data used: NYCT Financial Statement. Ridership and revenue passenger miles from origin-destination surveys.

Assumption Issues: Each county assigned costs based on the number of its residents' trips as a share of total NYCT trips. Since expenditures by NYCT are not reported a at a per county level, they must be estimated; as above, the apportionment of expenses and costs to each county are not likely explained by a single variable—in this case, ridership; and the estimation of ridership share, in any case, always carries some amount of error.

6) Expenses and Administrative Costs of Other MTA Transit Operations (LIRR and LI Bus)

Data used: Agency Financial Statements. Ridership and revenue passenger miles from origin-destination surveys.

Assumption Issues: Each county assigned costs based on the number of its residents' trips as a share of total LIRR and LI Bus trips. Since actual expense and cost data are not available at a per county level, see Assumption Issues in (5) above.

7) MTA Bridges and Tunnels Expenses and Administrative Costs

Data used: B&T Financial Statements. Car trips from origin-destination surveys.

Assumption Issues: Each county assigned costs based on the number of its residents' car trips into NYC as a percentage of the total. Since B&T does not report its expenses and administrative costs on a per county level, the allocation to counties is only an estimate of actual benefit, and the caveats mentioned above apply.

8) MTA Headquarters and Police Expenses

Data used: Financial Statement from MTA Headquarters and Financial Statements from each agency. Data on police assignments in each transit operation.

Assumption Issues: Each agency assigned a share of total operations and this is used to allocate a share of MTA Headquarters expenses. Share of Police personnel assignments to each agency are used to determine share of Police expenses. The allocations are then made to each county, based on its share of each agency's total revenue passenger miles. As mentioned above, use of passenger miles to determine expense shares to counties is far from perfect.

9) Capital Project Payments

Data used: 2005-2009 Capital Program and Programs from 1995-1999 and 2000-2004.

Assumption Issues: Average annual distribution of expenditures by county was obtained for the ten-year period 1995-2004. The 2005-2009 expenditures were allocated to each county based on this apportionment. Allocation of rolling stock for 2005-2009 was achieved by first assigning the rolling stock to the agencies that will use it, and then making the county-level allocation based on each county's use of each agency (in the same manner as above). The method of allocation used in the study suffers from important shortcomings that stem from unavailability of actual county-level capital expenditure data for 2005-2009. The estimate is based on earlier capital programs, implemented in the context of priorities distinct from those in the 2005-2009 period.

10) MTA Policy and Gap Closing Actions

Data used: MTA Financial Statements.

Assumption Issues : Expenditures for MTA Policy and Gap closing were allocated to the operating agencies according to their shares in overall operations; then the allocation was made to each county in the same manner as described above. See caveats above.

Costs

Table 2: Summary of Data Used for Calculating "Costs"

Data	Method	Using
Real Estate Tax Payments	Actual	
Sales and Use Tax	Actual	
Franchise Tax	Estimated	Population and Employment
Temporary Surcharge Tax	Estimated	Employment, by Industry
Petroleum Business Tax	Estimated	Vehicle Registrations, Electricity Consumption, Passenger Boardings
Local Operating Assistance	Actual	

Table 2: Summary of Data Used for Calculating "Costs" (Cont'd)

Data	Method	Using
Station Maintenance Payments	Actual	
MNR- West of Hudson Fare Revenue	Estimated	Ridership
MNR- East of Hudson Fare Revenue	Estimated	Ridership
MTA B&T Revenue	Estimated	Bridge Crossings from Origin-Destination Surveys
NYCT Revenue Paid	Estimated	Ridership, from O-D surveys.
Other Transit Fare Revenues	Estimated	Ridership, from O-D surveys

1) Real Estate Tax Payments

Data used: Mortgage recording tax receipt data, made available by the County Clerks. MRT data includes MRT-1 and MRT-2. Also, Urban Tax data, made available by the New York City Department of Finance.

Assumption Issues: The data used in the study was drawn from a period of high and rising home prices, as well as a period of unprecedented re-finance activity. This inflated "costs" paid by counties and to smaller ratios, and impacted to a greater degree the counties for which real estate taxes are a greater proportion of total payments to the MTA. This point illustrates the temporal problem associated with the ratios: they represent a snap-shot view of the distribution of benefits and costs, when in fact a more dynamic measure is needed. For example, the subsequent drastic decline in MRT payments, which occurred outside the time-frame of this study, would likely have produced larger ratios for suburban counties.[†]

2) Sales and Use Tax

Data used: Actual sales tax receipts in each county.

Assumption Issues: Collections are based on the county of collection, not the county of residence of the purchaser. The sales taxes collected from a county with a large shopping mall, for example, will be significantly greater in the data than the sales taxes actually paid by its residents.

3) Franchise Tax

Data used: MTA region Franchise tax receipts.

Assumption Issues: Payments are not recorded by county. Allocation to each county was based on its share in the MTA regional population and employment (as a proxy for energy use). A problem with this is that estimation error will arise from the imperfect correspondence between population and employment and energy usage.

[†] In the study, MRT as a percentage of "costs" was 22% for Orange, Rockland and Suffolk; 19% for Dutchess And Putnam; and 13% for Westchester and Nassau. For NYC—when Urban taxes are added—real estate Taxes comprise 16% of "costs".

4) Temporary Surcharge Tax

Data used: MTA region Temporary Surcharge Tax receipts.

Assumption Issues: Payments are not recorded by county. Allocation to each county is based in its share in each of the affected sectors. The estimation will be compromised by the fact that employment shares in each industry will be an imperfect proxy for the size and number of firms taxed, and therefore of total surcharge taxes.

5) Petroleum Business Tax

Data used: MTA PBT receipts.

Assumption Issues: Allocation to each county was made based on its share of vehicle registration, electricity consumption and air passenger boardings; however, the number of petroleum-related businesses in each county may not be well explained by vehicle registrations, electricity consumption and passenger boardings in the county in which the business is located. This is a tax on companies that provide petroleum products, and is not a tax on sales.

6) Local Operating Assistance

Data used: Receipts by the MTA from each county.

7) Station Maintenance Payments

Data used: MTA receipts from each county.

8) MNR – West of Hudson Fare Revenue

Data used: Fare receipts by the MTA for MNR West of Hudson service. Also, origin-destination surveys and data from mail/web ticket sales.

Assumption Issues: Fare revenues attributed to each county as payments are based on each county's share in total MNR West of Hudson ridership. These shares are only estimates, and as such, are not error-free.

9) MNR – East of Hudson Fare Revenue

Data and methodology are the same as in (8) above. See caveat in (8).

Assumption Issues: See (8).

10) MTA B&T Revenue

Data used: MTA Toll receipts and B&T origin-destination surveys.

Assumption Issues: Each county's share in tolls was assumed to be its share in bridge crossings, as found in B&T's origin-destination surveys. These shares are estimates, and as such, are not error-free.

11) NYCT Revenue Paid

Data used: NYCT fares and MTA origin-destination surveys.

Assumption Issues: In the same manner as above, each counties portion of total fares reflects its share of NYCT ridership, reported in the MTA origin-destination surveys. The county shares are estimates, and as such, are not error-free.

12) Other Transit Revenues

Data used: Fares paid to other MTA agencies and origin-destination surveys.

Assumption Issues: Fares paid to the MTA agencies are apportioned to each County using the same methodology as above. The county shares are estimates, and as such, are not error-free.

Note: Many of the "Cost" and "Benefit" measures were estimated using a combination of data that dates back to 2000. As regional travel patterns continually change, these old data will not perfectly represent true origins and destinations. The following table gives the dates of data sources used in attributing ridership numbers to each county.

Table 3: Dates of Surveys Used in the Study

Survey	**Date**
NYC Regional Trips Survey	2000
MNR Ridership Analysis	2005
B&T Survey	2004
NYCT Ridership Survey	1990
LIRR Boarding Counts	2005