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RATIO STUDY

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NATIONAL BUS SPARE RATIO STUDY



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National Bus Spare Ratio Study

Office of Capital and Formula Assistance
Audit Review and Analysis Division

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National Spare Ratio Study
Executive Summary

This study highlights the bus spare ratios nationally in all fleet sizes except those grantees operating under 50 vehicles in maximum service. This study will examine the current condition of the transit industry using trends, statistical analysis, and exhibits. All actual spare ratio percentages are appended as Tables 2, 3, and 4.

Transit agencies have reduced their operating spare ratios, as displayed in Exhibit 1. This Exhibit displays a "snapshot" of the national spare ratio for the transit industry over a five-year span. The national mean spare ratio has decreased from 26.5 percent in 1985 to 22.7 percent in the 1990 report year, which represents a -14.3 percentage decrease, over a five year-span. The mean spare ratio over a five year-span for this sample of the transit industry was 24.3 percent, and the transit industry as a whole, decreased its spare ratios at a mean 2.5 percent yearly.¹ Over a five year-span, 1985 to 1990, 64 percent of all transit agencies sampled decreased their spare ratios, and only 36 percent experienced an increased. The national mean spare ratio has remained under 25 percent within the past three years.

The larger transit agencies have remained fairly constant with a spare ratio consistently less than the national mean. The mean spare ratio for transit agencies with over 1000 VOMS over a five year-span was 21.5 percent. Additionally, transit agencies with over 1000 VOMS increased its mean spare ratio from 19.2 percent in 1985 to 22.2 percent, which represents a 15.6 percentage increase. Note, that this reporting size group sample has only seven agencies. Thus, the fluctuation of one agency could change the entire sample mean drastically. Analyzing this reporting size group from a macro sense, we can clearly see consistency, as noted in table 2 appended. The larger agencies have constantly, over a five year-span achieved a mean spare ratio of less than 24 percent. Fifty-seven percent of the agencies sampled in this reporting size sample group reduced their operating spare ratios by more than 5 percent over a five year-span.

Transit systems with 500 - 999 VOMS decreased their mean spare ratio from 24.8 percent in 1985 to 19.5 percent in 1990, which

¹ This mean (average) percentage decrease represents the yearly increase/decrease over a five year-span in the national transit industry.

represents a -21.3 percentage decrease. Sixty-four percent of the agencies sample, in this reporting size group decreased their spare ratios by more than 11 percent over a five year-span. Only 36 percent of these agencies increased their spare ratios over a five year span, which is extremely good considering 91 percent of the agencies in this reporting size group had spare ratios of 23 percent or less.

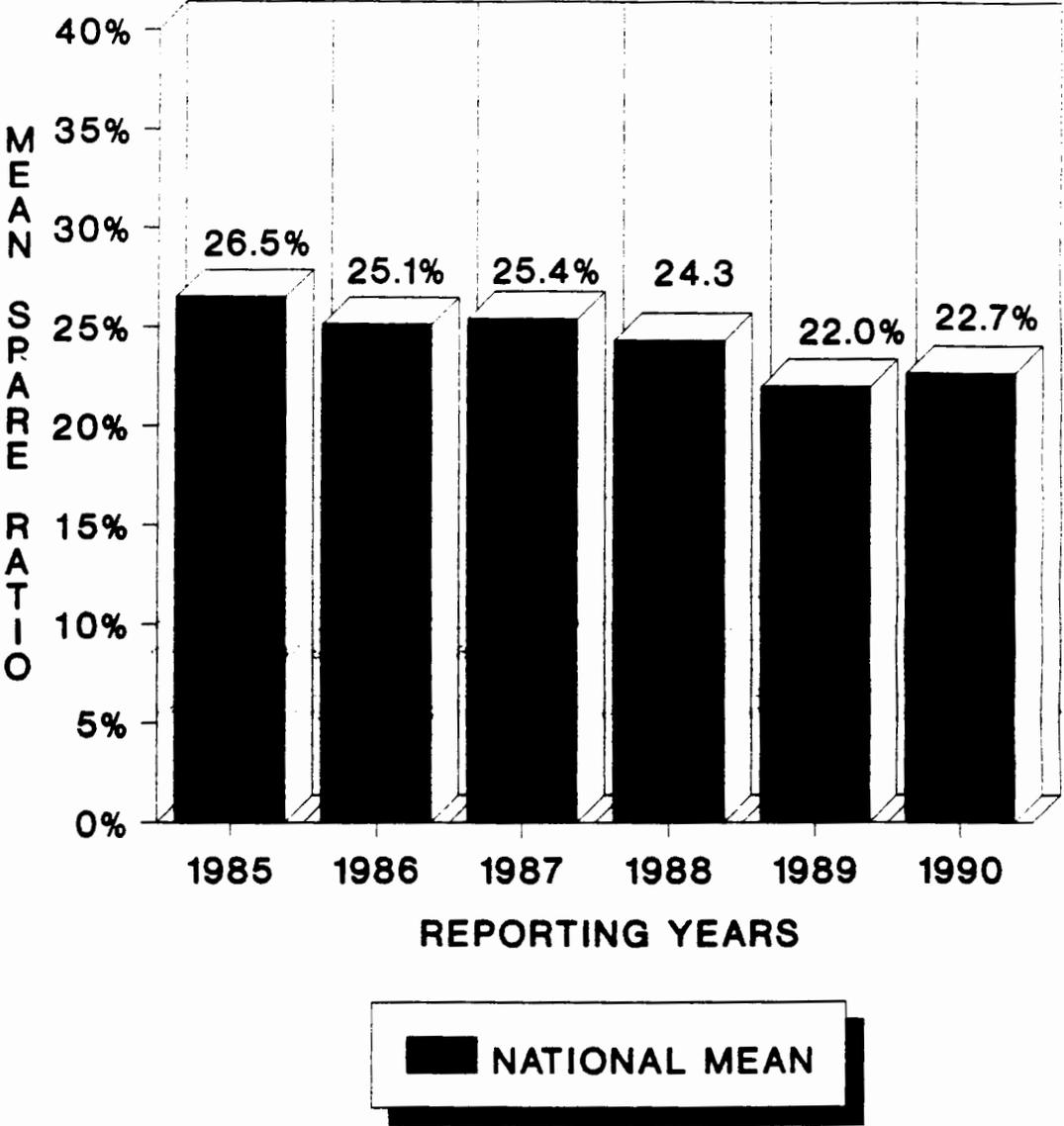
Transit systems with 250 - 499 VOMS decreased their mean spare ratio from 24.2 percent in 1985 to 19.4 percent in 1990, which represents a -19.8 percentage decrease. Seventy-three percent of the agencies sampled in this reporting size group decreased their spare ratios by 42 percent or less, over a five year-span. Only 27 percent of these agencies increased their spare ratios over a five year-span, which represents the lowest percentage of agencies with increased spare ratios of all reporting size groups sampled in this study. Additionally, this reporting size group had 67 percent of its agencies with 20 percent spare ratio.

Transit systems with 100 - 249 VOMS decreased their mean spare ratio from 31.4 percent in 1985 to 24.5 percent in 1990, which represents a -21.9 percentage decrease. Sixty-eight percent of the agencies sampled in this reporting size group decreased their spare ratios, over a five year-span. Only 32 percent of these agencies increased their spare ratios over a five year-span, which again is good considering 59 percent of these agencies operated at 25 percent spare ratio or less.

The small transit agencies, 50 - 99 VOMS, decreased their mean spare ratio from 33.5 percent in 1985 to 27.1 percent in 1990, which represents -19.1 percentage decrease. Fifty-eight percent of the agencies sampled in this reporting size group decreased their spare ratios, over a five year-span. This reporting size group had 42 percent their agencies increase their spare ratios, over a five year-span, and 54 percent of these agencies operated at 25 percent spare ratio or less. It is particularly commendable that transit agencies in this reporting size group have lowered their spare ratios, because these agencies have to work much harder to achieve 20 percent spare ratio.

Overall, 66 percent of all the transit agencies sampled achieved a spare ratio of 25 percent or less, and 79 percent achieved 30 percent spare ratio or less. Clearly, transit agencies in all reporting size group have begun to lower their spare ratios. Thus, this study finds that the national transit industry as a whole has worked towards achieving the FTA's goal of 20 percent spare ratio.

EXHIBIT 1
NATIONAL MEAN SPARE RATIOS
1985 - 1990



National Bus Spare Ratio Study

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SCOPE

This study provides a summary of the bus spare ratio for the national transit industry. A select number of transit agencies have been sampled for the past two years. This yearly analysis has enabled the Federal Transit Administration (FTA) to form a sound conclusion as to the level of spare ratio performance of the transit industry as a whole; and to justify the use of Federal Section 9 Capital funds to purchase additional motor bus. This study supports the management of the Section 9 Formula Assistance Program, and the Triennial Review Program.

Introduction:

The number of spare buses is defined as the number of vehicles within a Total Active Fleet not in use during the hours of maximum service operation. The number of Vehicles Operated in Maximum Service (VOMS) is defined as all vehicles operated during the peak hours of daily operation. The Total Active Fleet (TAF) is defined as all motor buses available for mass transit service at a specific transit agency. Thus, the spare ratio of a standard size motor bus is calculated using the following equation:

$$\text{SPARE RATIO} = \frac{\text{TOTAL ACTIVE FLEET (TAF)} - (\text{VOMS})}{\text{VEHICLES OPERATED IN MAXIMUM SERVICE (VOMS)}}$$

The data used to calculate the spare ratios in this study were extracted from the Section 15 Publication, Data Tables, for the 1990 reporting year for the bus mode only. This information was analyzed from a macro sense, because this particular management indicator tends to fluctuate from year to year. However, it is important to note that some high or low motor bus spare ratios may represent policy decisions rather than inadequate or adequate management.

Additionally, this study contains graphical information for transit systems with 50 - 99 VOMS; 100 - 249 VOMS; 250 - 499 VOMS; 500 - 999 VOMS; and systems with over 1000 VOMS. Transit agencies with under 50 VOMS are not included in this study, because these agencies are not required, according to FTA circular, to maintain a minimum spare ratio level. Each system size will be analyzed to answer the following questions:

- o What percentage of the transit industry achieved less than 20% spare ratio or at least achieved Circular requirements?
- o Over a five year span what percentage increase/decrease occurred in spare ratios?

- o What improvements currently have taken place over the 1990 reporting year and where?
- o How does motor bus weighted age and system size correlate with high or low spare ratios?

Background:

In recent years, it has become increasingly important to monitor and track the spare ratios of the transit industry. In 1988, the Office of the Inspector General (OIG) began an audit of the peak vehicle requirements of Federally funded grantees nationally.¹ Thus, the Office of Grants Management (TGM) has continued to produce an annual study on the increase/decrease of spare ratios of federally-funded grantees nationwide.

The triennial review program requires that grantees receiving Section 9 Capital funds maintain a 20 percent spare ratio. The Triennial Review Program is statutory law as stated in the Federal Transit Act, as amended. Thus, grantees are required to follow the satisfactory continuing control review item of the Triennial Review Program. However, the FTA issued guidance on spare ratios for the transit industry in Circular 9030.1A, "Section 9 Formula Grant application Instructions", dated September 18, 1987 which states:

"The number of spare buses in the active fleet for grantees owning fifty or more revenue vehicles should normally not exceed 20 percent of the vehicles operated in maximum service. For purposes of the spare ratio calculation, 'vehicles operated in maximum service' should be accordance with the definition of this term under the Section 15 reporting requirements. 2 "

Last years study of the transit industry spare ratio concluded that, overall, most systems had continued to lower their spare ratio.³ In 1984, 13 systems had spare ratios of less than 21 percent and 23 systems in 1989. The larger transit systems showed

Transit systems with 500 - 999 VOMS had only two systems with increased spare ratios between 1984 and 1989, and only one transit system showed an increase between 1988 and 1989. the most significant decline in term of actual percentage points.

Transit systems with 250 - 499 VOMS had only two systems with increased spare ratios between 1984 and 1989, and four transit systems increased their spare ratios between 1988 and 1989 within this group. Transit systems with 100 - 249 VOMS had four systems with increased spare ratios between 1984 and 1989, and four transit systems increased between 1988 and 1989.

Generally, twenty-five of the transit systems between 1984 and 1989 decreased their spare ratios and thirteen showed an increase. Thus, the transit systems included in last years study, as a whole, were still making progress in decreasing their spare ratios although a few individual bus agencies had shown increased spare ratios.

Current Development Analysis

Total sample for this study accounts for an average 66.4 percent of all transit agencies reporting Section 15 bus data that operates a Total Active Fleet (TAF) of more than 50 vehicles. However, the sample size for this study was derived using statistical sample size selection methods with 95 percent degree of confidence and 10 percent maximum allowable error. Thus, the sample size of this study was calculated using the following equation:

$$N = P(1-P) \left[\frac{Z}{E} \right]^2$$

P is the percentage of total desired
Z is the degree of confidence
E is the maximum allowable error
Therefore, $.65(1-.65) \left[\frac{1.96}{.10} \right]^2$
 $= .65(.35) \left[19.6 \right]^2$
 $= .23(384.16)$
Sample size = 87.3

In an effort to analyze the number of transit agencies that lie above or below a particular spare ratio percentage (i.e., 20,30, or 40 percent), the following analysis was completed. A less-than-cumulative frequency graph (Exhibit 2) and distribution (Table 1) displays this analysis. This analysis represents the current spare ratios for the sample size above.

The following pages contains Exhibit 2 and Table 1 which represent the spare ratio percentages of the national transit industry for the 1990 reporting year. This exhibit and table indicated the following analysis:

- o Eighty-six transit agencies achieved 50 percent spare ratio or less. This accounted for 98.9 percent of all the reporting agencies sampled.
- o Eighty-one transit agencies achieved 40 percent spare ratio or less. This accounted for 93.1 percent of all the transit agencies sampled.
- o Seventy-five transit agencies achieved 35 percent spare ratio or less. This accounted for 86.2 percent of all the transit agencies sampled.
- o Sixty-nine transit agencies achieved 30 percent spare ratio or less. This accounted for 79.3 percent of all the transit agencies sampled.
- o Fifty-seven transit agencies achieved 25 percent spare ratio or less. This accounted for 65.5 percent of all the transit agencies sampled.
- o Thirty-nine transit agencies achieved 20 percent spare ratio or less. This accounted for 44.8 percent of all the transit agencies sampled.
- o Twelve transit agencies achieved 15 percent spare ratio or less. This accounted for 14.8 percent of all the transit agencies sampled.
- o Only four transit agencies had spare ratios, 10 percent or less.
- o Only one transit agency had a spare ratio greater than 50 percent.

Using the percentage of the total axis (Exhibit 2), 75 percent of the total number of transit agencies sampled achieved 28 percent spare ratios or less; 60 percent of the total number of transit agencies sampled achieved 23 percent spare ratio or less; and 30 percent of the total number of transit agencies sampled achieved 18 percent spare ratio or less. Exhibit 2 and Table 1 indicates that most transit agencies operated at a good level for the 1990 report year.

EXHIBIT 2

1990 SPARE RATIO DISTRIBUTION

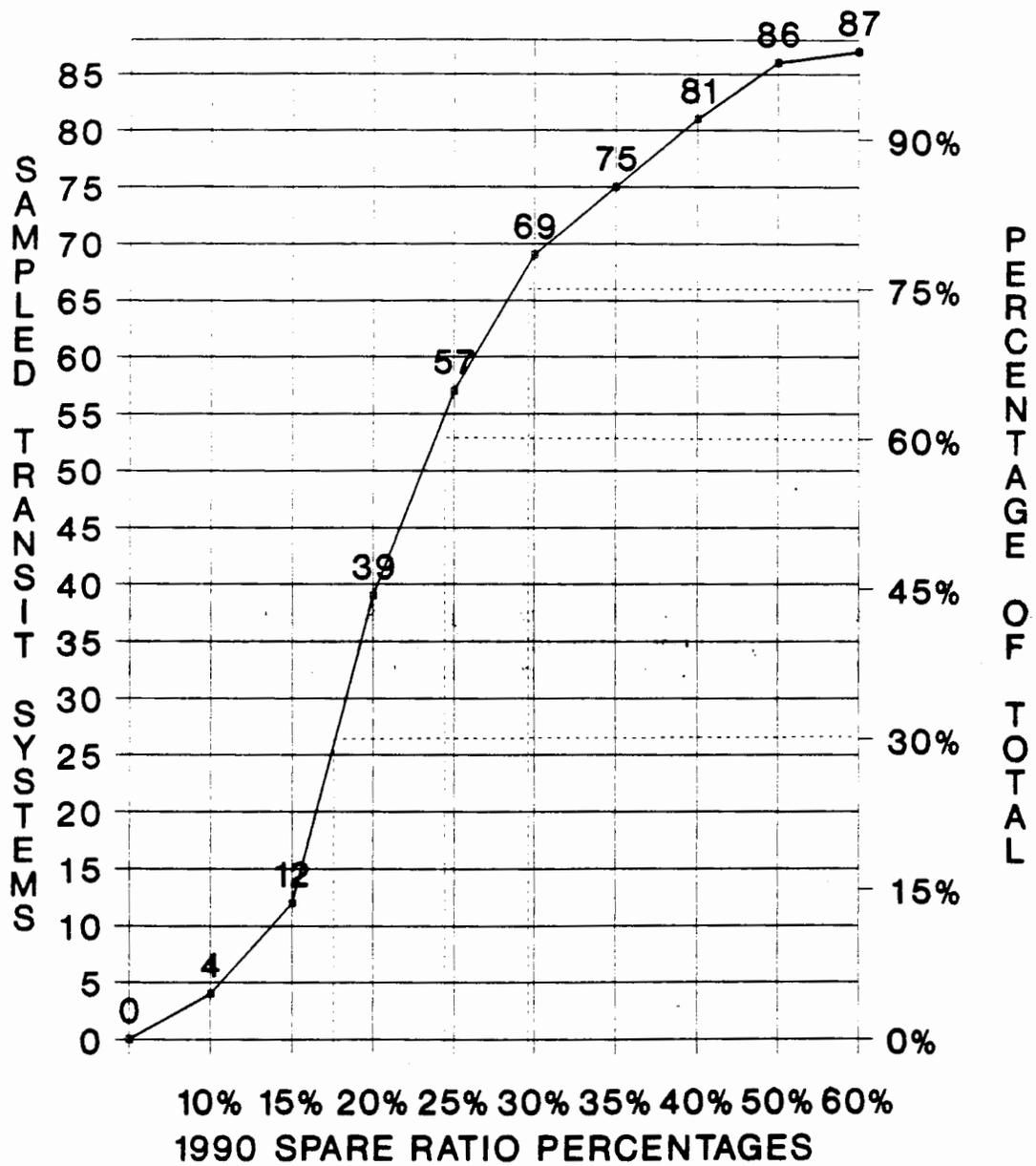


TABLE 1
LESS-THAN-CUMULATIVE FREQUENCY DISTRIBUTION

<u>SPARE RATIOS</u>	<u>FREQUENCIES</u>	<u>CUM. FREQ.</u>
LESS THAN 5%	0	0
LESS THAN 10%	4	4
LESS THAN 15%	9	12
LESS THAN 20%	27	39
LESS THAN 25%	18	57
LESS THAN 30%	12	69
LESS THAN 35%	6	75
LESS THAN 40%	6	81
LESS THAN 50%	5	86
LESS THAN 60%	1	87

TOTAL OBSERVATIONS	87	

*The values in the distribution above are displayed in exhibit 2, and represent the 1990 report year.

The statistical standard deviations were found for each system size group, which indicates the average distance each transit agency spare ratio will deviate from the mean value (average) spare ratio of that group. The mean value spare ratio for transit agencies with over 1000 VOMS was 22.2 percent for 1990. The statistical standard deviation for this system size was calculated to be 9.73 percent, which indicates that all transit systems sampled with over 1000 VOMS will deviate on average plus or minus (\pm) 9.73 percent from the mean value of 22.2 percent. That is -- when one standard deviation was added to the mean value spare ratio of 22.2 percent, 71.4 percent of the transit agencies sampled in this reporting size group fell between the standard deviation interval of 13.3 and 31.7 percent spare ratio for 1990.

The mean value spare ratio for transit agencies with 500 - 999 VOMS was 19.5 percent for 1990. The statistical standard deviation for this system size calculated to be 4.29 percent, which indicates that all transit systems sampled with 500 - 999 VOMS will deviate on average \pm 4.29 percent from the mean value of 19.5 percent. In this reporting size group, 81.8 percent of the transit agencies sampled fell within one standard deviation of the mean value of 19.5 percent. That is -- when one standard deviation was added to the mean value spare ratio, the standard deviation interval for transit agencies with 500 - 999 VOMS was between 15.2 and 23.7 percent spare ratio for 1990.

The mean value spare ratio for transit agencies with 250-499 VOMS was 19.4 percent for 1990. The statistical standard deviation for this system size calculated to be 6.03 percent, which indicates that all transit systems sampled with 250-499 VOMS will deviate on average \pm 6.03 percent from the mean value of 20.8 percent. In this system size group, 66.7 percent of the transit agencies sampled fell within one standard deviation of the sample size mean value spare ratio of 19.3 percent. Thus, when one standard deviation was added to the mean value spare ratio, the standard deviation interval for transit agencies with 250 - 499 VOMS was between 13.32 and 25.4 percent spare ratio for 1990.

The mean value spare ratio for transit agencies with 100 - 249 VOMS was 25.4 percent for 1990. The statistical standard deviation for this system size calculated to be 10.06 percent, which indicates that all transit systems sampled with 100 - 249 VOMS will deviate on average \pm 10.06 percent from the sample size mean value of 25.4 percent. In this sample size, 75 percent of transit agencies sampled fell within one standard deviation of the sample size mean value spare ratio of 25.4 percent. Thus, when one standard deviation was added to the mean value spare ratio, the standard deviation interval for transit agencies with 100 - 249 VOMS was between 15.34 and 35.46 percent spare ratio for 1990.

The mean value spare ratio for transit agencies sampled with 50-99 VOMS was 27.1 percent for 1990. The statistical standard deviation for this system size calculated to be 11.3 percent, which indicates that all transit systems sampled with 50-99 VOMS will deviate on average ± 11.3 percent from the sample size mean value of 27.1 percent. Note, with this sample size, 61.5 percent of the transit agencies sampled fell within one standard deviation of the sample size mean value spare ratio of 27.1 percent. Thus, when one standard deviation was added to the mean value, the standard deviation interval for transit agencies with 50 - 99 VOMS was between 15.8 and 38.4 percent spare ratio for 1990.

Comparing the 1990 reporting year standard deviations analysis of each system size group, transit agencies with 500 - 999 VOMS had the highest percentage of agencies (i.e. 81.8 percent) that was within one standard deviation of its reporting size mean value. Transit systems with 100 - 249 VOMS had the second highest percentage of agencies (i.e. 75 percent) that was within one standard deviation of its reporting size mean value. Transit systems with over 1000 VOMS had the third highest percentage of agencies (i.e. 71.4 percent) that was within one standard deviation of its reporting size mean. Transit systems with 50 -99 VOMS had the lowest percentage of agencies (i.e. 61.5 percent) that was within one standard deviation of its reporting size mean. Transit systems with 250 - 499 VOMS had the second lowest percentage of agencies (i.e. 66.7 percent) that was within one standard deviation of its reporting size mean value.

Additionally, transit systems with 50 - 99 VOMS had the highest standard deviation which was 11.8 percent. Whereas, transit systems with 500 - 999 VOMS had the lowest standard deviation which was 4.29 percent. Transit system with 250 - 499 VOMS had the second lowest standard deviation which was 6.03 percent, followed by transit systems with over 1000 VOMS which had a standard deviation of 9.73 percent. Transit systems with 100 - 249 VOMS had the second highest standard deviation which was 10.06 percent. Their appeared to be no correlation between system size and standard deviation intervals.

Each system size group was analyzed over the most current reporting year, 1990, to indicate any improvements. In 1989, the mean value for transit systems with over 1000 VOMS was 20.2 percent. In 1990, this reporting size mean value spare ratio increased to 22.2 percent. Additionally, 43 percent of these agencies increased their spare ratios between 1989 and 1990. MBTA had the highest spare ratio in 1990 of this reporting size group which was 42.5 percent. Seattle-Metro had the lowest spare ratio, which was 10.5 percent. In 1989, 29 percent of the transit agencies within this reporting size sample achieved spare ratios greater

than 20 percent, and 43 percent of these agencies achieved spare ratios less than 20 percent. However, in 1990, little improvements were achieved, 29 percent of the transit agencies within this reporting sample size achieved a spare ratio greater than 20 percent, as in 1989, and the percentage of transit agencies that operated at less than 20 percent increased slightly to 57 percent.

In 1989, the mean value spare ratio for transit systems with 500 - 999 VOMS was 17.8 percent. In 1990, this reporting size had the second lowest mean value spare ratio of all systems sizes sampled in this study, but increased slightly to 19.5 percent. In this system size group, 64 percent of these agencies increased their spare ratio between 1989 and 1990. Oakland had the highest spare ratio in 1990 of this reporting size group, which was 30 percent. Pittsburgh had the lowest spare ratio in 1990, which was 15.1 percent. In 1989, 64 percent of the transit systems sampled achieved spare ratios of 20 percent or less, and 91 percent achieved at least 23 percent spare ratio or less. In 1990, no improvements were made in this reporting size sample, 64 percent of the transit agencies in this sample size achieved spare ratios of 20 percent or less, and 91 percent operated at 23 percent spare ratio or less as in 1989.

In 1989, transit systems with 250 - 499 VOMS operated at a mean value spare ratio of 20.0 percent. In 1990, this reporting system size had the lowest mean value spare ratio of all reporting systems sampled in this study. Additionally, in 1990 this reporting size sample decreased its mean value spare ratio to 19.3 percent. In this reporting size group, 53 percent of its agencies increased their spare ratios between 1989 and 1990. Salt Lake City had the highest spare ratio in 1990, which was 27.6 percent. San Antonio had the lowest spare ratio in 1990, which was 8 percent. In 1989, 60 percent the agencies within this reporting size sample operated at 20 percent spare ratio or less, and 67 percent of these agencies operated at 23 percent spare ratio or less. Whereas, in 1990 this reporting size sample indicated very little improvement, 67 percent of these agencies operated at 20 percent spare or less, as in 1989. However, 73 percent of these transit agencies achieved at least 23 percent or less spare ratio, which was an improvement over 1989.

Transit systems with over 1000 VOMS; 500-999 VOMS; and 250-499 VOMS and 1989 and 1990 actual spare ratios are appended as Table 2.

In 1989, transit systems with 100 - 249 VOMS operated at a mean value spare ratio of 23.4 percent. In 1990, this reporting system size had the second highest mean value spare ratio of all system

sizes sampled in this study. Additionally, in 1990 this reporting size increased its mean value spare ratio to 25.4 percent. In this system size group, 52 percent of these agencies increased their spare ratios between 1989 and 1990. Norfolk, VA. had the highest spare ratio of this reporting size group, which was 50 percent. Grand Rapids had the lowest spare ratio, which was 3.1 percent. In 1989, 48 percent of the agencies within this reporting size sample operated at 20 percent spare ratio or less, and 66 percent achieved at least 25 percent spare ratio or less. Additionally, 17 percent of the transit agencies sampled in this reporting size operated at a spare ratio greater than 30 percent. In 1990, this reporting size sampled indicated no improvement, 48 percent of the agencies within this reporting size sample operated at 20 percent spare ratio or less as in 1989. However, the percentage of agencies that achieved at least 25 percent spare ratio decreased slightly to 59 percent, and the percentage of agencies that operated at greater than 30 percent spare ratio, increased to 21 percent.

The names of the actual transit agencies with 100 - 249 VOMS and 1989 and 1990 spare ratios are appended as Table 3.

In 1989, transit systems with 50 - 99 VOMS operated at a mean value spare ratio of 29 percent. In 1990, this reporting size had the highest mean value spare ratio of all reporting sizes sampled in this study. However, in 1990 this reporting size decreased its mean value spare ratio to 27.1 percent. In this reporting size group, 54 percent of these agencies increased their spare ratios between 1989 and 1990. Allentown, PA had the highest spare ratio, which was 56.3 percent. Duluth, MN had the lowest spare ratio, which was 11.3 percent. In 1989, 42 percent of the transit systems within this reporting size sample achieved at least 20 percent spare ratio or less, and 62 percent achieved at least 25 percent spare ratio or less. Additionally, 27 percent operated at a spare ratio greater than 30 percent. In 1990, this reporting size sample indicated no improvement, the percentage of transit agencies that achieved 20 percent spare ratio or less decreased to 27 percent, and the percentage of transit agencies that achieved 25 percent spare ratio or less decreased to 54 percent. Furthermore, the percentage of transit agencies that operated at a spare ratio greater than 30 percent increased to 35 percent.

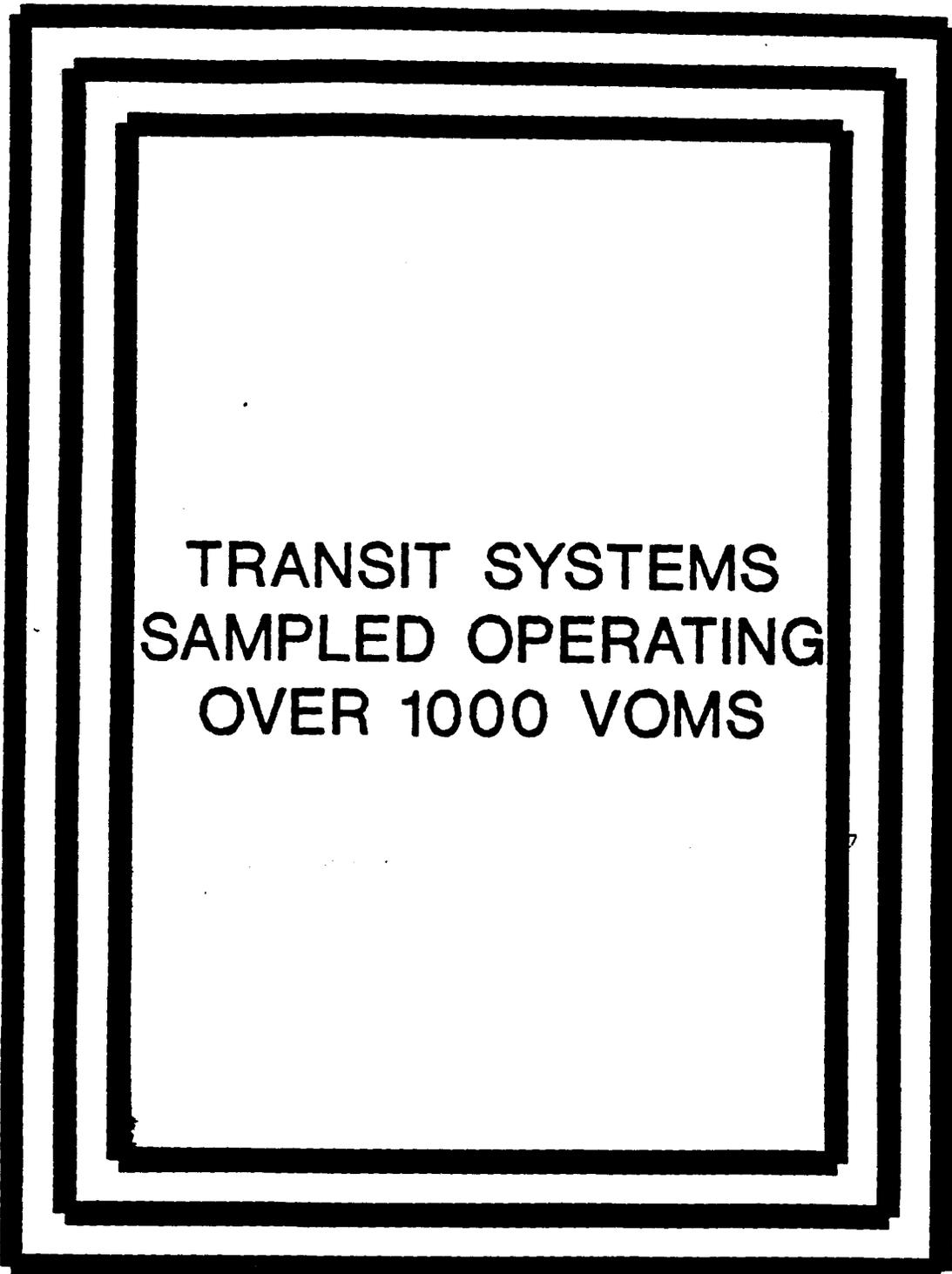
The names of the actual transit agencies with 50 - 99 VOMS, and 1989 and 1990 spare ratios are appended as Table 4.

SYSTEM SIZE ANALYSIS

Each system was analyzed over a five year-span to indicate what percentage increase/decrease occurred in spare ratios, and what improvements have been made during this period. The following section will indicate trends in the national transit industry for bus spare ratios. In addition this section of the study will compare the national mean, over a five year-span, to each system size group sampled. Again, this indicator tends to fluctuate from year to year. Thus, all trends will be analyzed from a macro sense.

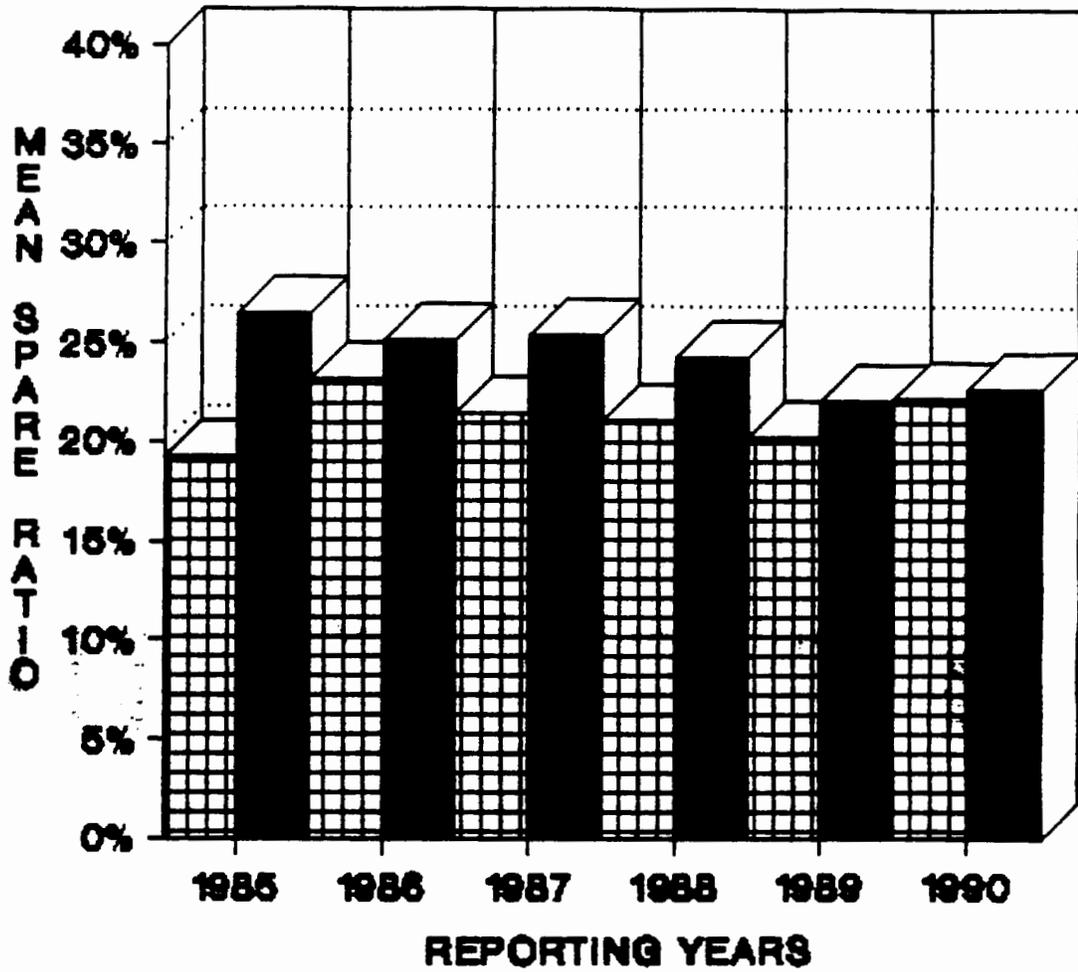
The reporting sample size has not changed for the following sections. The reporting year span that will be used is 1985 to 1990. If you reference the 1985 Section 15 Annual Report you may find many of the agencies contained in this study have shifted back and forth between reporting size groups.

Each of the following reporting sizes have been analyzed separately. The following sections will contain an exhibit followed by an analysis for that particular reporting size sample. These exhibits will display the percentage change in spare ratios by system size, and a comparison of trends. The actual spare ratio percentages for each individual transit agency can be found in the appendix.



**TRANSIT SYSTEMS
SAMPLED OPERATING
OVER 1000 VOMS**

EXHIBIT 3 TIME SERIES COMPARISON BY SYSTEM SIZE



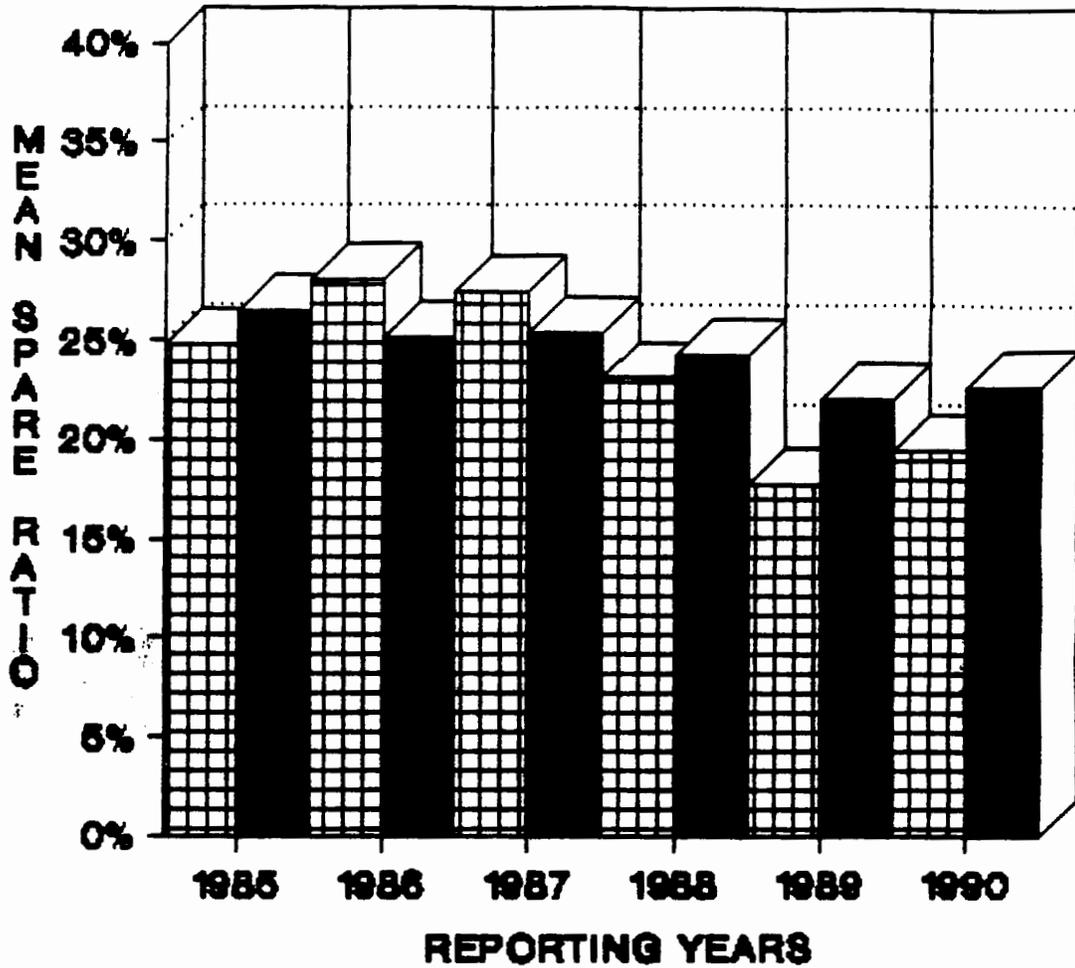
 OVER 1000 VOMS  NATIONAL MEAN

Exhibit 3 represent the comparison of the mean spare ratio for transit agencies with over 1000 VOMS and the national mean spare ratio, over a five year-span. This exhibit indicated the following analysis:

- o The mean spare ratio for transit agencies in this reporting size group have consistently remained under the national mean spare ratio.
- o Over a five year-span, the mean spare ratio for transit agencies with over 1000 VOMS increased by 15.6 percent, however, the national mean decreased by 14.3 percent.
- o In the 1986 report year this system size reached its highest mean spare ratio over a five year-span which was 23.2 percent, its lowest mean spare ratio was achieved in 1985, which was 19.2 percent.
- o Over a five year-span this reporting size group mean spare ratio was less than 24 percent.
- o In the 1985 report year this system size group mean spare ratio was 7.3 percent less than the national mean, which represents the largest difference in the comparison of the national mean and transit agencies operating over 1000 VOMS.

**TRANSIT SYSTEMS
SAMPLED OPERATING
500 - 999 VOMS**

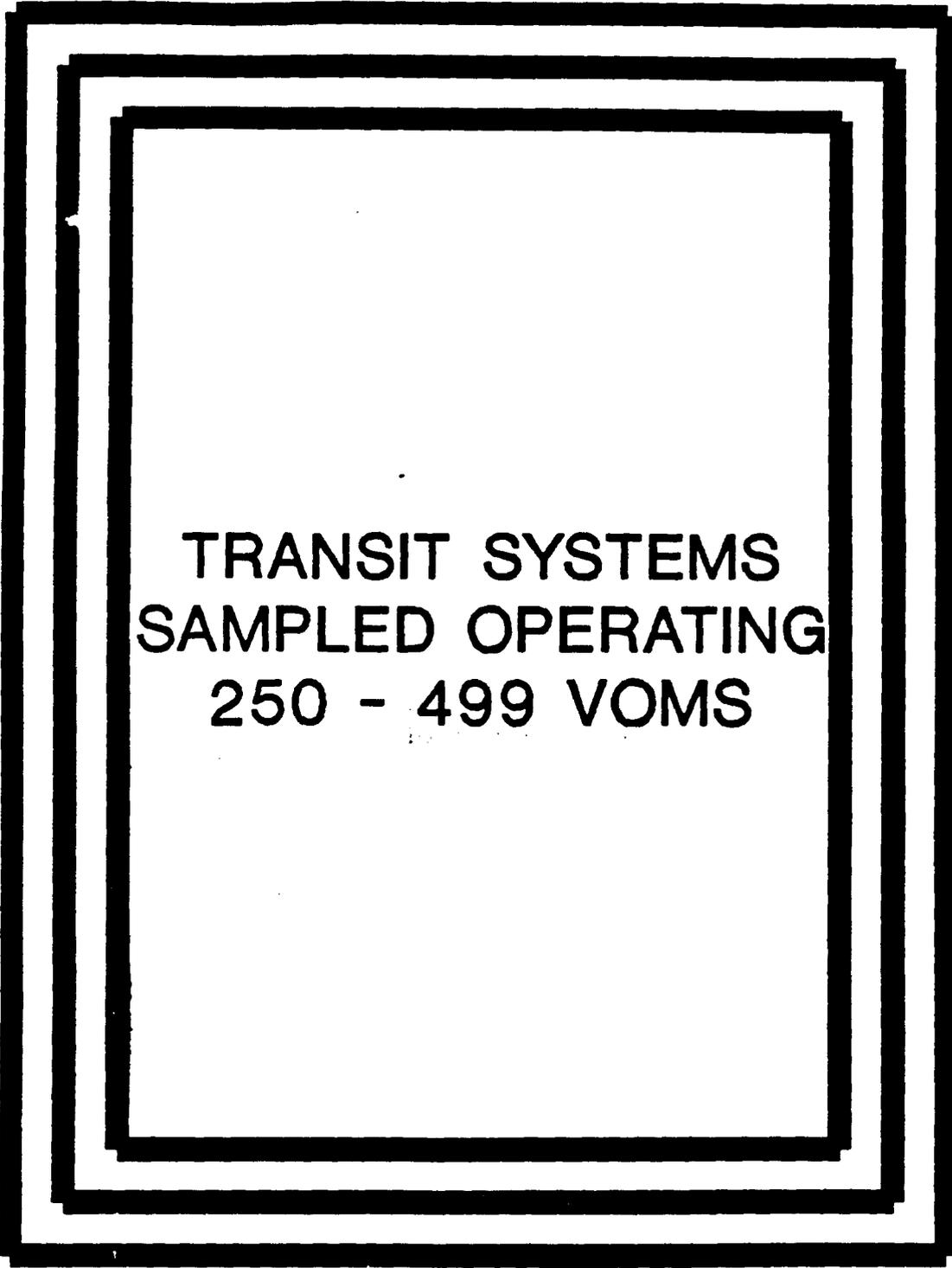
EXHIBIT 4 TIME SERIES COMPARISON BY SYSTEM SIZE



 500 - 999 VOMS  NATIONAL MEAN

Exhibit 4 represents the comparison of the mean spare ratio for transit agencies with 500 - 999 VOMS and the national mean spare ratio, over a five year-span. This exhibit indicated the following analysis:

- o The mean spare ratio for transit agencies in this reporting size group have fluctuated above and below the national mean between 1985 and 1990.
- o Over a five year-span, the mean spare ratio for transit agencies with 500 - 999 VOMS has decreased by 21 percent, compared to the national mean decrease of 14.3 percent.
- o In the 1986 report year this system size group achieved its highest mean spare ratio over a five year-span which was 28.1 percent, its lowest mean spare ratio was achieved in 1989, which was 17.8 percent.
- o In the 1986 and 1987 report years this system size group achieved a mean spare ratio higher than the national mean.
- o This reporting size group achieved a five year mean spare ratio less-than 29 percent.
- o In the 1989 report year this system size mean spare ratio was 4.2 percent less than the national mean, which represents the largest difference in the comparison of the national mean and transit systems with 500 - 999 VOMS.



**TRANSIT SYSTEMS
SAMPLED OPERATING
250 - 499 VOMS**

EXHIBIT 5 TIME SERIES COMPARISON BY SYSTEM SIZE

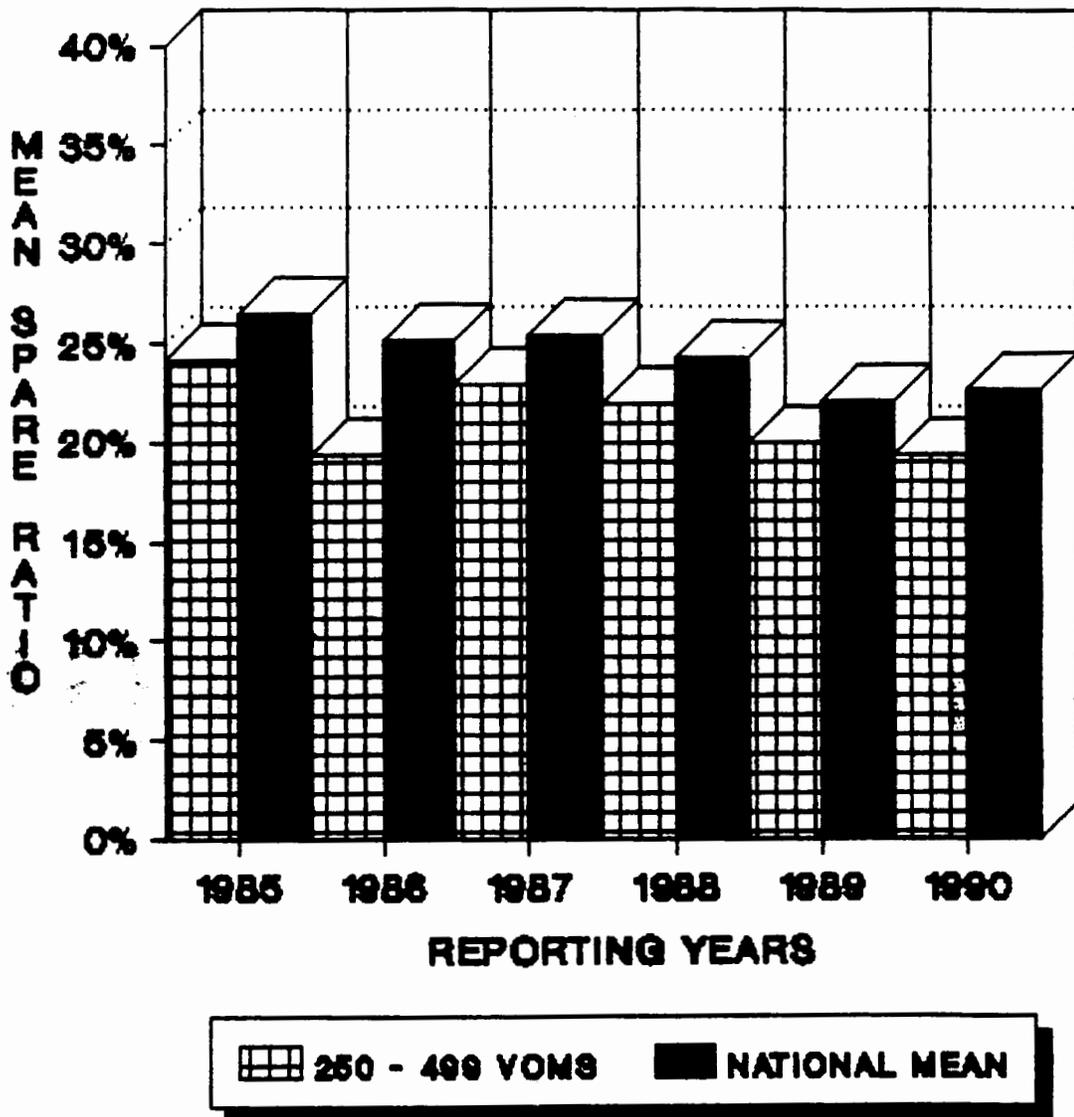


Exhibit 5 represents the comparison of the mean spare ratio for transit agencies with 250 - 499 VOMS and the national mean spare ratio, over a five year span. This exhibit indicated the following analysis:

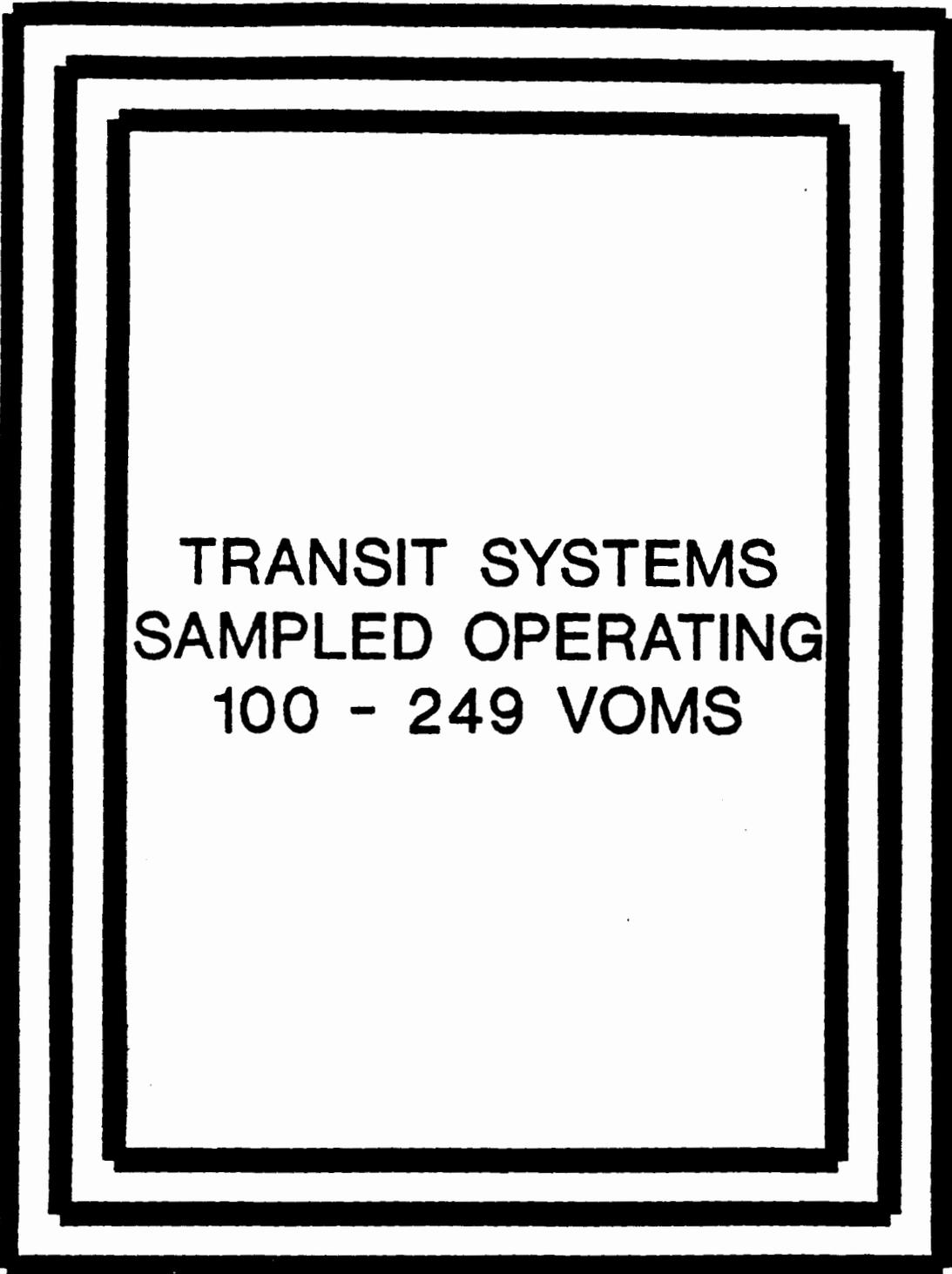
- o The mean spare ratio for this system size group have consistently remained under the national mean spare ratio.

- o Over a five year-span, the mean spare ratio for transit agencies with 500 - 999 VOMS has decreased by 19.9 percent, compared to the national mean decrease of 14.3 percent.

- o In the 1985 report year this system size group achieved its highest mean spare ratio over a five year-span which was 24.1 percent, its lowest mean spare ratio was achieved in the 1986 and 1990 report years, which was 19.3 percent.

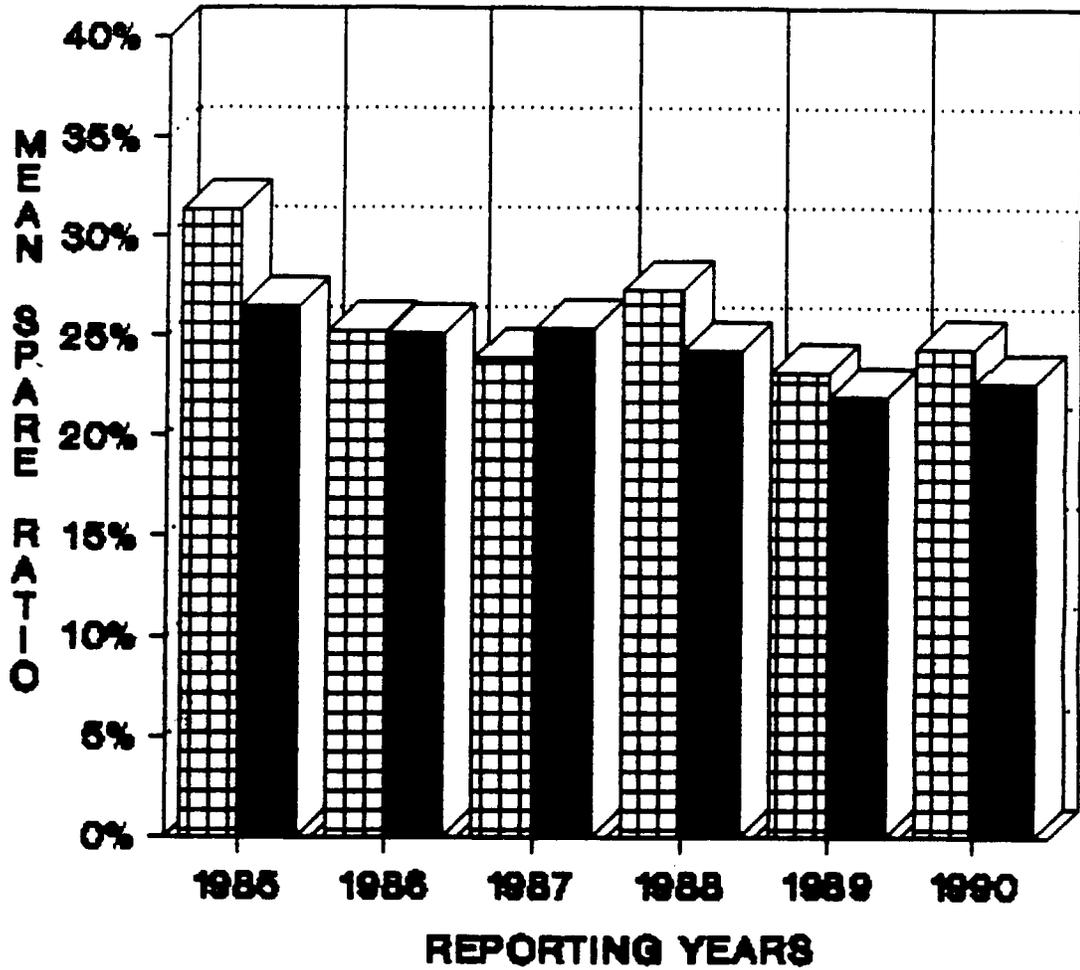
- o This reporting size group achieved a five year mean spare ratio of 21.2 percent.

- o In the 1986 report year this system size mean spare ratio was 5.8 percent less than the national mean, which represents the largest difference in the comparison of the national mean and transit systems with 250 - 499 VOMS.



**TRANSIT SYSTEMS
SAMPLED OPERATING
100 - 249 VOMS**

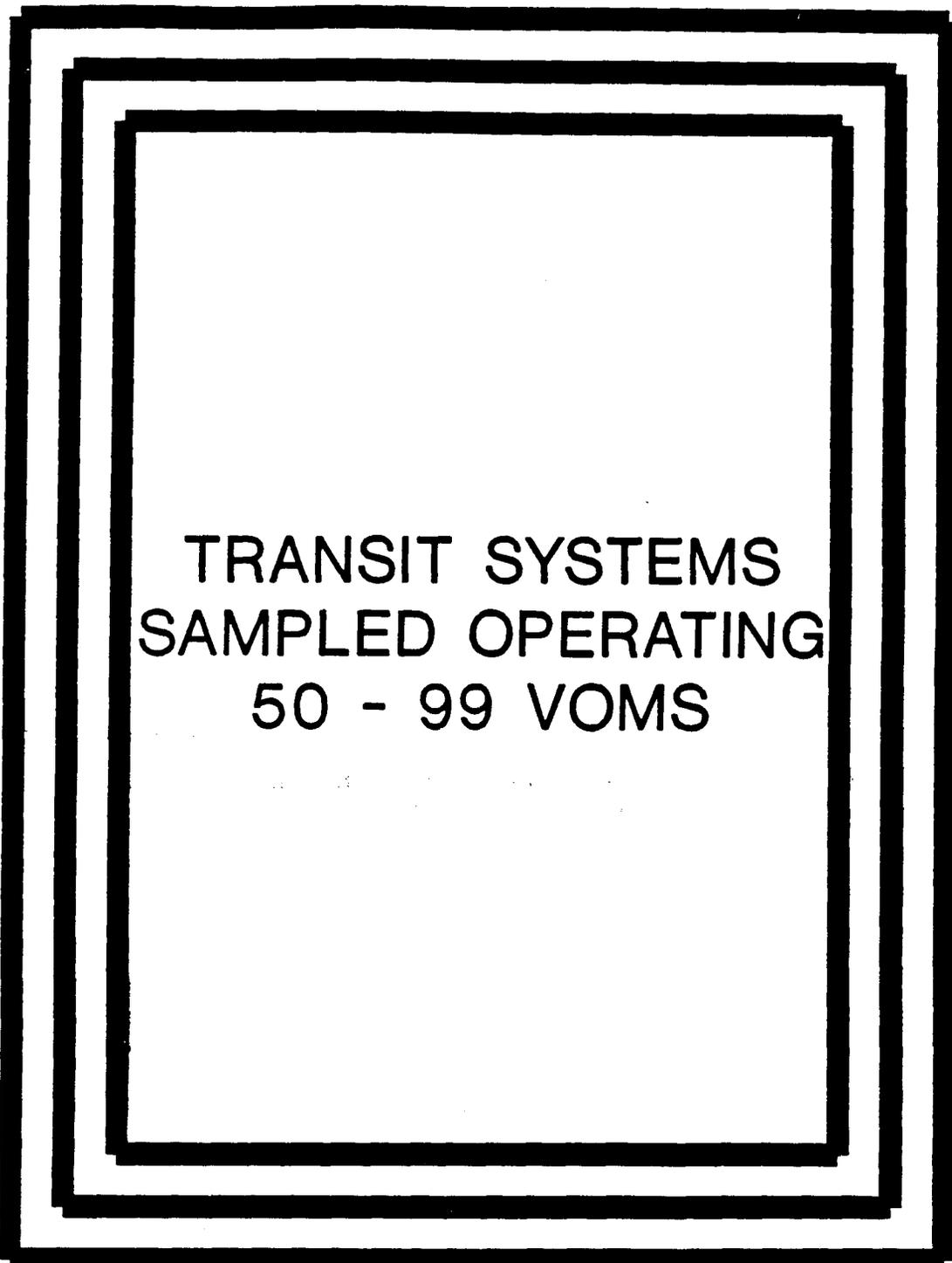
EXHIBIT 6 TIME SERIES COMPARISON BY SYSTEM SIZE



 100 - 249 VOMS  NATIONAL MEAN

Exhibit 6 represents the comparison of the mean spare ratio for transit agencies with 100 - 249 VOMS and the national mean spare ratio over a five year-span. This exhibit indicated the following analysis:

- o The mean spare ratio for transit agencies in this reporting size group have fluctuated above the national mean four of the past five years.
- o Over a five year-span, the mean spare ratio for transit agencies with 100 - 249 VOMS has decreased by 22 percent, compared to the national mean decrease of 14.3 percent.
- o In the 1985 report year this system size group achieved its highest mean spare ratio over a five year-span which was 31.3 percent, its lowest mean spare ratio was achieved in 1989, which was 23.2 percent.
- o In the 1985, 1986, 1988, 1989 and 1990 report years this system size group achieved a mean spare ratio higher than the national mean.
- o This reporting size group achieved a five year mean spare ratio of 26.1 percent.
- o In the 1985 report year this system size group mean spare ratio was 4.8 percent greater than the national mean, which represents the largest difference in the comparison of the national mean and transit system with 100 - 249 VOMS.



TRANSIT SYSTEMS
SAMPLED OPERATING
50 - 99 VOMS

EXHIBIT 7 TIME SERIES COMPARISON BY SYSTEM SIZE

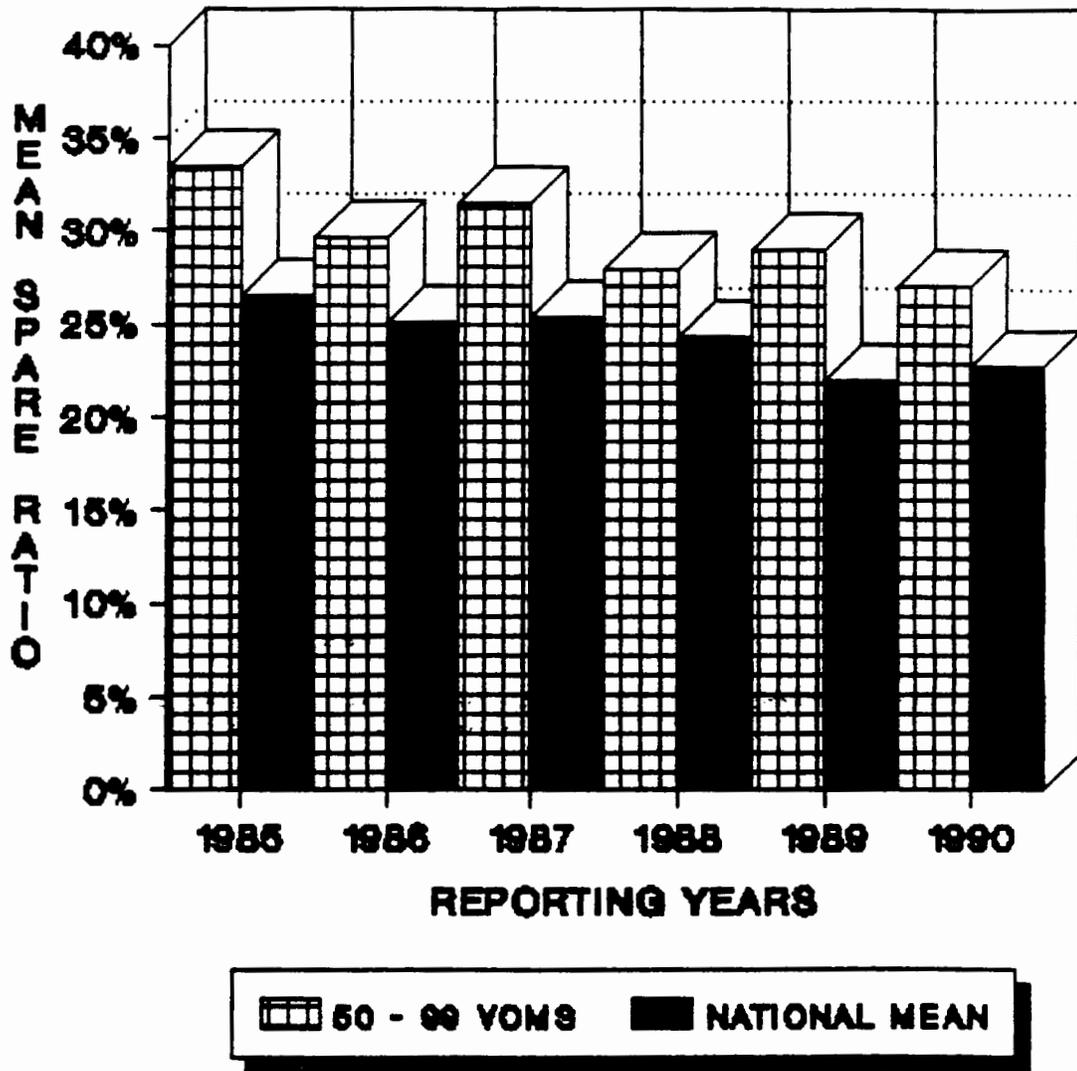


Exhibit 7 represents the comparison of the mean spare ratio for transit agencies with 50 - 99 VOMS and the national mean spare ratio, over a five year-span. This exhibit indicated the following analysis:

- o This system size group have consistently achieved a higher mean spare ratio than the national mean.

- o Over a five year-span, the mean spare ratio for transit agencies with 50 - 99 VOMS has decreased by 19.1 percent, compared to the national mean decrease of 14.3 percent.

- o In the 1985 report year this system size group achieved its highest mean spare ratio over a five year-span which was 33.5 percent, its lowest mean spare ratio was achieved in 1990, which was 27.1 percent.

- o This reporting size group achieved a five mean spare ratio of 29.7 percent.

- o In the 1985 report year this system size mean spare ratio was 7 percent greater than the national mean, which represents the largest difference in the comparison of national mean and transit systems with 50 - 99 VOMS.

Correlation Analysis

In an effort to understand why individual systems have high spare ratios. The following table tested the correlation between the weighted mean age of the total active fleet and the spare ratios of agencies with 500 - 999 VOMS and over 1000 VOMS.

TABLE 1.1

<u>Sampled Transit Agencies</u>	<u>1990 Spare Ratio</u>	<u>Weighted Fleet Age</u>
Washington-WMATA	15.6%	9.8
Seattle-METRO	10.5%	9.8
Boston-MBTA	42.5%	7.9
New Jersey-NJT	20.1%	5.7
Philadelphia-SEPTA	28.9%	6.4
New York-NYCTA	19.3%	8.7
Chicago-CTA	18.5%	10.5
Miami-MDTA	21.3%	5.7
Pittsburgh-PAT	15.1%	9.1
Cleveland-RTA	18.3%	5.8
Houston-METRO	15.5%	5.8
Minneapolis-MTC	16.2%	3.5
Oakland-AC Transit	30.1%	7.5
Atlanta-MARTA	21.2%	7.9
Baltimore-MTA	19.8%	6.4
Portland-Tri-MET	22.3%	6.4
Denver-RTD	18.5%	7.0
ST.Louis-Bi State	16.5%	9.9

This sample indicated that 67 percent of the agencies operated a at a weighted mean age of 8 years of age or less, and the mean age for the entire sample was 7.43. Additionally, only 33 percent of the 67 percent operated at spare ratios of more than 20 percent. The mean value spare ratio for this sample was 20.56 percent.

Thus, there appears to be no correlation between the weighted mean age and high spare ratios. Note, this does not indicate that older agencies do not experience additional maintenance expense due to the number of older motor buses. The weighted mean age simply analyzes the entire total active fleet by putting weight on the age by number of vehicles contained in each vehicle type (i.e. AB, BA, and BB).

Summary Analysis

This section intends to briefly summarize major data collected in determining a summary of the condition of bus spare ratios for each reporting system size sampled. This study indicated the following analysis;

OVER 1000 VOMS

- o Standard deviation interval was 13.3 to 31.7 percent, 71.4 percent of these agencies fell within this interval.
- o Mean value spare ratio was 20.2 percent in 1989, and increased to 22.2 percent in 1990.
- o 43 percent of these agencies increased their spare ratios between 1989 to 1990.
- o 57 percent of these agencies had spare ratios of 20 percent or less.
- o 29 percent of these agencies operated at spare ratios greater than 20 percent.
- o 57 percent decreased their spare ratios by more than 5 percent over a five year span.
- o 43 percent increased their spare ratios by 2 percent or more over a five year span.
- o Highest percentage of agencies with increased spare ratios of all reporting sizes sampled in this study.
- o Lowest percentage of agencies with decreased spare ratios of all reporting sizes sampled in this study.

500 - 999 VOMS

- o Standard deviation interval was 15.2 to 23.7 percent, 81.8 percent of these agencies fell within this interval.
- o Mean value spare ratio was 17.8 percent in 1989, and increased to 19.5 percent in 1990.

500 - 999 VOMS Cont.

- 64 percent of these agencies increased their spare ratios between 1989 to 1990.
- 64 percent of these agencies had spare ratios of 20 percent or less.
- 91 percent of these agencies had spare ratios of 23 percent or less.
- 64 percent of these agencies decreased their spare ratios by more than 11 percent over a five year span.
- 36 percent of these agencies increased their spare ratios by more than 10 percent over a five year span.
- Third lowest percentage of agencies with increased spare ratios of all reporting sizes sampled in this study.
- Third highest percentage of agencies with decreased spare ratios of all reporting sizes sampled in this study.

250 - 499 VOMS

- Standard deviation interval was 13.3 to 25.4 percent, 66.7 percent of these agencies fell within this interval.
- Mean value spare ratio was 20.0 percent in 1989, and increased slightly to 19.4 in 1990.
- 53 percent of these agencies increased their spare ratios between 1989 to 1990.
- 67 percent of these agencies operated at 20 percent spare ratio or less.
- 73 percent of these agencies operated at 23 percent spare ratio or less.
- 73 percent of these agencies decreased their spare ratios by 42 percent or less, over a five year span.
- 27 percent of these agencies increased their spare ratios by more than 3 percent, over a five year span.

250 - 499 VOMS Cont.

- o Lowest percentage of agencies with increased spare ratios of all reporting sizes sampled in this study.
- o Highest percentage of agencies with increased spare ratios of all reporting sizes sampled in this study.

100 - 249 VOMS

- o Standard deviation interval was 15.3 to 35.4 percent, 75 percent of these agencies fell within this interval.
- o Mean value spare ratio was 23.4 percent in 1989, and increased to 25.4 percent in 1990.
- o 52 percent of these agencies increased their spare ratios between 1989 to 1990.
- o 48 percent of these agencies operated at 20 percent spare ratio or less.
- o 59 percent of these agencies operated at 25 percent spare ratio or less.
- o 68 percent of these agencies decreased their spare ratios over a five year span.
- o 32 percent of these agencies increased their spare ratios over a five year span.
- o Second lowest percentage of agencies with increased spare ratios of all reporting sizes sampled in this study.
- o Second highest percentage of agencies with decreased spare ratios of all reporting sizes in this study.

50 - 99 VOMS

- o Standard deviation interval was 15.8 to 38.4 percent, 61.5 percent of these agencies fell within this interval.
- o Mean value spare ratio for 1989 was 29 percent, and decreased to 27.1 percent in 1990.
- o 54 percent of these agencies increased their operating spare ratios between 1989 to 1990.

50 - 99 VOMS Cont.

- o 27 percent of these agencies operated at 20 percent spare ratio or less.
- o 54 percent of these agencies operated at 25 percent spare ratio or less.
- o 58 percent of these agencies decreased their spare ratios over a five year span.
- o 42 percent of these agencies increased their spare ratios over a five year span.
- o Second highest percentage of agencies with increased spare ratios of all reporting sizes sampled in this study.
- o Second lowest percentage of agencies with decreased spare ratios of all reporting sizes sampled in this study.

Conclusion

This study concludes that the national spare ratio for the 1990 reporting year was 22.7 percent. The national transit industry has achieved a mean spare ratio of 24.3 percent over a five year-span, 1985 to 1990. Moreover, the national transit industry has decreased its mean spare ratio from 26.5 percent in 1985 to 22.7 percent in 1990 which accounts for a -14.3 percentage decrease. Overall, in the 1990 report year 45 percent of all system sizes sampled achieved 20 percent spare ratio. Additionally, 66 percent of the systems sampled achieved 25 percent spare ratio or less, and 79 percent achieved 30 percent spare ratio or less. Only, 36 percent of the agencies sampled increased their spare ratios over a five year span.

The larger agencies, over 1000 VOMS, 1990 mean spare was 22.2 percent. Transit systems with 500 - 999 VOMS achieved a mean spare ratio of 19.5 percent in 1990. Additionally, transit systems with 250 - 499 VOMS achieved a mean spare ratio of 19.4 percent. Transit systems with 100 - 249 VOMS achieved a mean spare ratio

Conclusion Cont.

of 24.5 percent, and transit systems with 50 - 99 VOMS achieved a mean spare ratio of 27.1 percent in the 1990 report year.

The larger agencies have consistently remained under the national mean spare ratio. Transit system with 500 - 999 VOMS decreased their mean spare ratio from 24.8 percent in 1985 to 19.5 percent in the 1990 report year, which accounts for -21.3 percentage decrease. Transit systems with 250 - 499 VOMS decreased their mean spare ratio from 24.2 percent in 1985 to 19.4 percent in 1990, which accounts for -19.8 percentage decrease. Additionally, transit systems with 100 - 249 VOMS decreased their mean spare ratio from 31.4 in percent 1985 to 24.5 percent in 1990, which accounts for a -21.9 percentage decrease. Transit systems with 50 - 99 VOMS decreased their mean spare ratio from 33.5 to 27.1 percent over the same five year span, which accounted for a -19.1 percentage decrease. Thus, this study concludes that the transit industry as a whole has lower their operating spare ratios over the past five years. It is particularly commendable that transit agencies with 50 - 99 VOMS has lowered their mean spare ratio over a five year period, considering these agencies generally have difficulty achieving a 20 percent spare ratio.

Based on an analysis of Triennial Review findings in the Triennial Review Program quarterly report ending June 30, 1992, fourteen findings of satisfactory continuing control in four regions nationally were cited as a final report . This review item has become one of the most recurring finding in the Triennial Review Program. However, it is important to note that satisfactory continuing control does deal with, but is not limited too, the spare ratio issue.

In view of this study, and the Triennial Review analysis of current findings, support the FTA policy to lower spare ratios nationally is working. The success of this national move towards lower spare ratios can be attributed to the yearly scrutinization of grantees thru the Triennial Review Program and a commitment of transit agencies nationwide. Studies and analysis of this sort with the improvement of Section 15 database thru diskette reporting will continue the support to FTA's policy to track the usage of buses in mass transit service.

Glossary

Cumulative frequency distribution - a tabular display of data that enables us to see how many observations lie above or below certain values, rather than merely recording the numbers of items within intervals

Data - A collection of any number of related observations on one or more variables.

Frequency distribution - An organized display of data that shows the number of observations from the data set that fall into each of a set of mutually exclusive classes.

Less-than-Cumulative - The display of a data set that shows the fraction or percentage of the total data that falls into each of a set of mutually exclusive classes.

Mean Value - A central tendency measure representing the arithmetic average of a set of observations.

Ogive - A graph of cumulative frequency distribution,

Sample - A collection of some, but not all, of the elements of the population under study, used to describe the population.

Standard deviations - The positive square root of the variance; a measure of dispersion in the same units as the original data, rather than in the squared units of the variance.

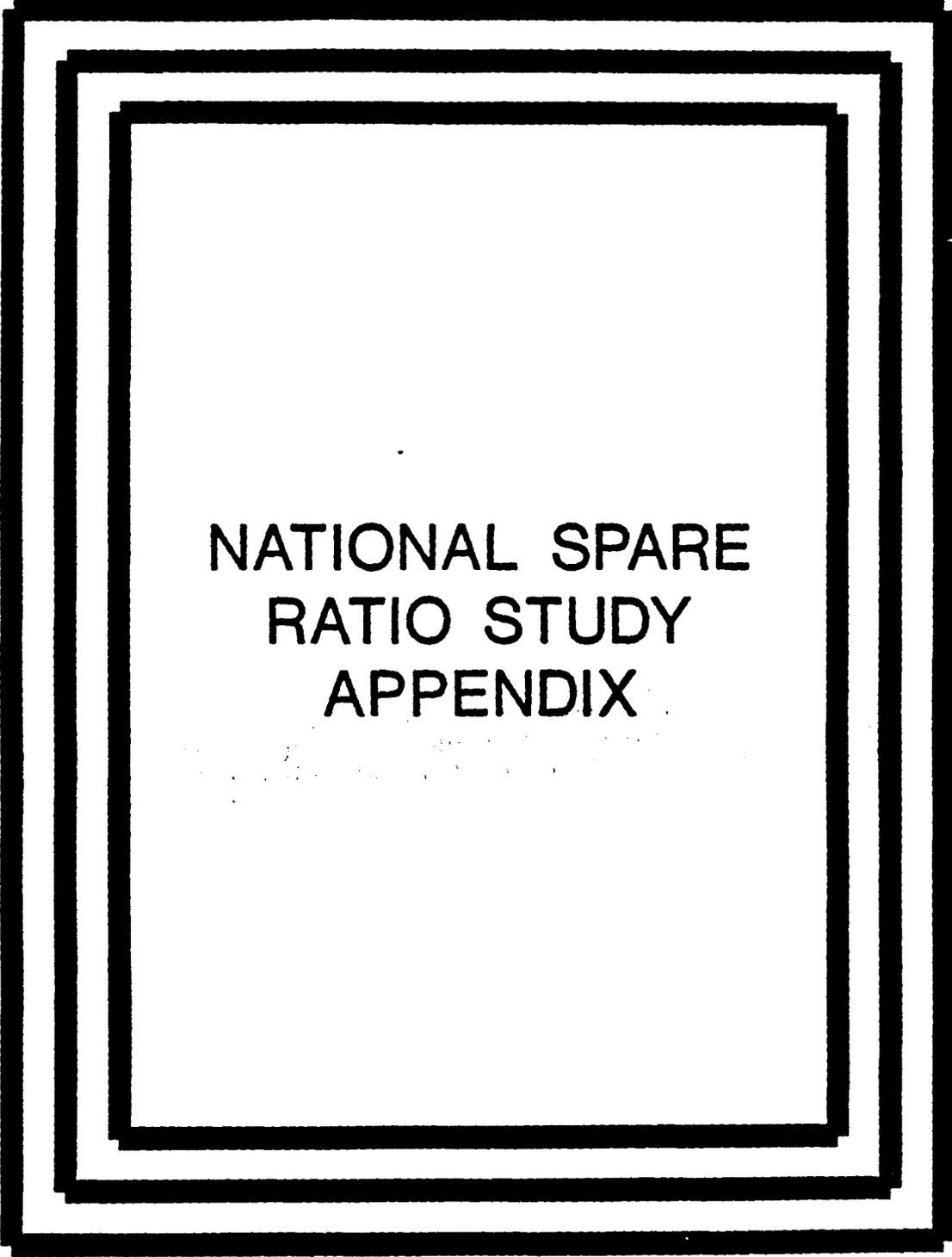
Statistics - A measure of the average squared distance between the mean and each item in the population.

Variance - A measure of the average squared distance between the mean and each item in the population.

Weighted Mean - An average calculated to take into account the importance of each value to the overall total; i.e., an average in which each observation value is weighted by some index of its importance.

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**NATIONAL SPARE
RATIO STUDY
APPENDIX**

NATIONAL SPARE RATIO STUDY

TABLE 2

* ID * CODE	STATE	SAMPLED TRANSIT AGENCIES	SPARE RATIO REPORT YEARS					
			1985	1986	1987	1988	1989	1990
OVER 1000 VOMS								
* 3030	DC	WASHINGTON - WMATA	19.5%	12.7%	16.0%	15.1%	15.0%	15.6%
* 1	WA	SEATTLE - METRO	11.2%	28.6%	23.1%	9.9%	28.3%	10.5%
* 1003	MA	BOSTON - MBTA	22.6%	36.3%	33.3%	25.2%	15.0%	42.5%
* 2080	NJ	NEW JERSEY TRANSIT	14.6%	21.2%	17.9%	23.5%	20.6%	20.1%
* 3019	PA	PHILADELPHIA - SEPTA	31.5%	28.3%	25.2%	36.3%	15.8%	28.9%
* 2008	NY	NEW YORK - NYCTA	15.0%	15.2%	14.7%	20.8%	26.1%	19.3%
* 5066	IL	CHICAGO - RTA - CTA	20.1%	20.6%	20.7%	17.4%	20.6%	18.5%
REPORT YEARS MEAN SPARE RATIO			19.2%	23.3%	21.6%	21.2%	20.2%	22.2%
500 - 999 VOMS								
* 4034	FL	MIAMI - MDTA	36.3%	30.9%	24.3%	22.5%	22.0%	21.3%
* 3022	PA	PITTSBURGH - PAT	13.7%	18.3%	31.5%	18.8%	23.0%	15.1%
* 5015	OH	CLEVELAND - RTA	14.3%	16.9%	13.3%	16.4%	16.2%	18.3%
* 6008	TX	HOUSTON - METRO	33.9%	49.1%	39.9%	31.8%	20.0%	15.5%
* 5027	MN	MINNEAPOLIS-ST. PAUL - MTC	25.6%	20.9%	18.5%	14.8%	10.1%	16.2%
* 9014	CA	OAKLAND - AC TRANSIT	15.0%	18.3%	21.5%	19.0%	19.3%	30.1%
* 4022	GA	ATLANTA - MARTA	28.2%	35.7%	21.9%	38.3%	20.5%	21.2%
* 3034	MD	BALTIMORE - MTA	22.3%	24.0%	38.0%	20.2%	19.3%	19.8%
* 8	OR	PORTLAND - TRI-MET	36.5%	26.1%	27.1%	28.9%	24.2%	22.3%
* 8006	CO	DENVER - RTD	28.2%	38.8%	28.2%	25.2%	5.3%	18.5%
* 7006	MO	ST. LOUIS - BI-STATE	21.6%	28.5%	37.7%	18.3%	16.2%	16.5%
REPORT YEARS MEAN SPARE RATIO			24.8%	28.1%	27.4%	23.1%	17.8%	19.5%
250 - 499 VOMS								
* 5119	MI	DETROIT-D-DOT	29.5%	20.1%	42.2%	33.3%	18.1%	20.3%
* 2004	NY	BUFFALO - NYTA	18.0%	23.8%	24.5%	19.1%	17.3%	17.9%
* 8001	UT	SALT LAKE CITY - UTA	41.5%	21.3%	23.7%	23.3%	25.3%	27.6%
* 5005	WI	MADISON - MET	27.1%	33.3%	18.1%	33.1%	24.3%	8.4%
* 5008	WI	MILWAUKEE - COUNTY	20.6%	8.6%	11.9%	16.3%	18.3%	19.8%
* 5012	OH	CINCINNATI - SORTA	17.8%	18.4%	19.6%	19.6%	15.1%	13.0%
* 7005	MO	KANSAS CITY - KCMATA	29.3%	20.7%	24.0%	21.4%	16.5%	18.8%
* 6032	LA	NEW ORLEANS - RTA	19.9%	18.4%	22.9%	14.2%	18.8%	24.6%
* 6011	TX	SAN ANTONIO - VIA	13.9%	16.4%	25.6%	15.0%	7.7%	8.0%
* 9124	AZ	PHOENIX - PTD/ATC	23.4%	1.7%	18.9%	22.7%	27.2%	25.4%
* 9009	CA	SP - SAN TRANS	22.9%	19.6%	24.1%	24.1%	22.9%	22.5%
* 5016	OH	COLUMBUS - COTA	19.7%	17.9%	14.0%	17.5%	14.3%	19.7%
* 9002	HI	HONOLULU DOT	14.6%	15.2%	11.0%	21.1%	16.5%	15.7%
* 4018	KY	LOUISVILLE - TARC	32.5%	34.6%	34.8%	27.8%	27.3%	26.2%
* 9013	CA	SAN JOSE - SICTD	31.8%	19.4%	28.3%	20.7%	31.8%	22.4%
REPORT YEARS MEAN SPARE RATIO			24.2%	19.3%	22.9%	21.9%	20.1%	19.4%

NATIONAL SPARE RATIO STUDY

TABLE 3

* ID	* STATE	* SAMPLED TRANSIT AGENCIES	* SPARE RATIO REPORT YEARS					
			1985	1986	1987	1988	1989	1980
* 100 - 249 %MS								
* 4003	IN	MEMPHIS - MATA	53.5%	53.2%	19.9%	54.1%	37.3%	44.2%
* 7002	NE	OMAHA - TA	26.6%	25.4%	20.0%	26.4%	27.1%	26.3%
* 5050	IN	INDIANAPOLIS - METRO	17.2%	16.7%	22.2%	18.6%	28.9%	24.7%
* 4040	FL	JACKSONVILLE - JTA	25.2%	5.6%	4.9%	22.7%	18.8%	26.9%
* 4042	AL	BIRMINGHAM - MAX	75.0%	30.2%	30.2%	30.5%	12.1%	12.9%
* 9026	CA	SAN DIEGO - MTS	22.0%	33.5%	28.7%	23.1%	23.2%	35.1%
* 9033	AZ	TUCSON - SUN TRAM	32.5%	14.9%	33.4%	14.0%	10.4%	15.9%
* 9019	CA	SACRAMENTO - RT	17.9%	18.9%	21.0%	15.4%	21.6%	28.5%
* 9023	CA	LA - LONG BEACH	38.5%	28.7%	18.1%	20.0%	20.3%	19.4%
* 3005	VA	NORFOLK - TRT	30.6%	48.3%	37.4%	32.6%	46.2%	50.0%
* 4004	TX	NASVILLE - MTA	40.6%	22.9%	21.8%	29.7%	48.1%	30.1%
* 5022	OH	TOLEDO - TARTA	28.1%	29.2%	14.6%	41.9%	22.7%	20.7%
* 3006	VA	RICHMOND - GRTC	26.1%	14.5%	19.2%	22.8%	22.8%	26.5%
* 6006	TX	EL PASO - SUN METRO	51.8%	63.6%	71.8%	66.7%	26.7%	28.4%
* 9008	CA	LA - SAN MONICA	20.8%	28.3%	18.0%	18.0%	17.9%	17.9%
* 4008	NC	CHARLOTTE - CTS	31.0%	34.2%	3.0%	30.5%	20.8%	19.1%
* 2002	NY	ALBANY - COTA	36.4%	13.2%	15.6%	14.8%	17.8%	19.4%
* 5033	MI	GRAND RAPIDS - GRATA	29.6%	37.9%	19.7%	19.7%	13.6%	3.1%
* 5010	OH	AURON - METRO	20.3%	20.6%	20.2%	18.3%	11.7%	26.7%
* 1001	RI	PROVIDENCE - RPPA	22.4%	30.2%	33.7%	54.4%	30.3%	34.2%
* 3051	MD	MARTLAND - RIDG-ON	29.8%	6.5%	29.4%	18.4%	18.4%	19.1%
* 2113	NY	ROCKSTER - MTS	23.8%	21.9%	26.5%	13.2%	24.3%	21.4%
* 1008	MA	SPRINGFIELD - PFTA	30.1%	31.9%	27.1%	32.1%	30.1%	30.2%
* 6048	TX	AUSTIN - CAPITAL METRO	40.7%	28.4%	20.4%	18.4%	16.1%	19.4%
* 3004	VA	EMPORE/EMPORE NEWS-PENTRAJ	22.2%	25.6%	24.1%	21.0%	20.4%	19.5%
* 6007	TX	FORT WORTH - CITIRAJ	35.3%	22.2%	22.9%	31.4%	20.4%	18.1%
* 4041	FL	TAMPA/MILLERBROOK - BARTLITE	29.6%	21.5%	20.9%	25.0%	26.0%	38.6%
* 4027	FL	PIEDMONT/ST. PETERSBURG - PSTA	20.6%	15.3%	6.5%	30.7%	18.3%	9.6%
* REPORT YEARS MEAN SPARE RATIO			31.4%	26.5%	24.0%	27.3%	23.3%	24.5%

NATIONAL SPARE RATIO STUDY

TABLE 4

ID CODE	STATE	SAMPLED TRANSIT AGENCIES	SPARE RATIO REPORT YEARS					
50 - 99 VOMS			1985	1986	1987	1988	1989	1990
* 6033	AR	LITTLE ROCK - CAT	44.0%	30.0%	18.2%	18.2%	25.0%	27.1%
* 9006	CA	SANTA CRUZ - METRO	20.9%	21.2%	22.9%	24.7%	12.6%	14.7%
* 9027	CA	FRESNO - FAX	45.0%	53.7%	39.4%	24.3%	22.2%	30.8%
* 9031	CA	RIVERSIDE - RTA	32.5%	23.3%	34.2%	26.9%	23.6%	35.6%
* 1055	CT	NEW HAVEN - CT TRANSIT	37.2%	28.7%	35.6%	26.5%	40.6%	37.6%
* 9004	CA	BAKERSFIELD - GET	41.1%	41.2%	20.0%	17.7%	17.3%	17.3%
* 4043	AL	MOBILE - MTA	21.2%	18.8%	60.0%	27.3%	58.6%	21.6%
* 5025	MN	DULUTH - DTA	40.6%	40.6%	40.6%	16.9%	11.2%	11.3%
* 4012	NC	WINSTON - SALEM -WSTA	48.7%	48.7%	70.8%	59.0%	48.7%	45.0%
* 3010	PA	ALLENTOWN - LANTA	37.2%	37.3%	27.3%	26.4%	29.6%	56.4%
* 3013	PA	ERIE - EMTA	30.8%	25.5%	33.4%	12.3%	21.5%	21.6%
* 3024	PA	READING - BARTA	26.1%	34.1%	35.8%	50.0%	39.4%	21.4%
* 4002	TN	KNOXVILLE - K-TRANS	66.6%	66.7%	66.7%	91.3%	89.1%	48.1%
* 4056	SC	FLORENCE - PDRTA	33.9%	7.7%	0.0%	20.0%	28.7%	33.3%
* 24	WA	VANCOUVER - C-TRAN	42.4%	30.5%	38.7%	19.3%	20.3%	14.8%
* 5032	MI	FLINT - MTA	15.1%	25.6%	29.6%	17.3%	12.9%	39.0%
* 5040	MI	ANN ARBOR - AATA	15.0%	17.1%	16.3%	13.7%	18.1%	15.1%
* 8004	MT	BILLINGS - MFT	20.0%	3.8%	3.7%	22.3%	12.5%	25.0%
* 6018	OK	TULSA - MTA	24.3%	19.0%	17.7%	34.3%	38.5%	25.4%
* 7	OR	EGGENE - LAKE COUNTY MTD	11.3%	15.0%	13.2%	13.2%	12.6%	14.5%
* 4037	FL	WEST PALM BEACH - COTRAN	75.5%	62.5%	73.4%	36.4%	28.2%	22.4%
* 5057	IL	ROCK ISLAND COUNTY MTD	12.2%	14.6%	20.9%	20.9%	18.3%	14.3%
* 6022	LA	BATON ROUGE - CAP TRANSIT	20.8%	20.8%	16.7%	18.4%	22.2%	24.3%
* 12	AK	ANCHORAGE PUBLIC TRANSIT	51.9%	38.9%	38.9%	47.1%	64.4%	35.6%
* 7010	IA	DES MOINES - METRO	31.2%	20.3%	21.8%	30.9%	20.5%	29.9%
* 9012	CA	STOCKTON - SMART	25.6%	25.6%	25.6%	10.5%	18.2%	22.9%
REPORT YEARS MEAN SPARE RATIO			33.5%	29.7%	31.6%	27.9%	29.0%	27.1%