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EFFECTIVENESS OF VIOLATOR PENALTIES IN COMPELLING COMPLIANCE WITH STATE TRUCK WEIGHT LIMITS

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This report was prepared for the Federal Highway Administration in response to Section 1213(h) of the Transportation Equity Act for the 21st Century (PL 105-178).

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16. Abstract

There is no available measurement of weight limit compliance sufficiently comprehensive to permit determination of actual penalty effectiveness within different States. The approach used for this study was to conduct discussions with enforcement officials in nine States -- diversified by geography, fine severity, roadside enforcement practice and adjudication system -- on whether their penalty imposition is considered to be effective. The basic question of whether State penalization is inducing satisfactory operator compliance behavior could not be answered definitively. However, the enforcement authorities commonly considered that there are persistent compliance problems on secondary roads and in local bulk trucking. This suggests the potential value of enforcement efforts targeted at these sectors, which are not amenable to economical surveillance by permanent, fixed-site weigh stations. One promising approach appears to be expansion of the practice, already noted as being underway in three of the nine Study States, of analyzing data output from their "non-enforcement" weigh-in-motion equipment so as to efficiently deploy their available mobile truck weight enforcement personnel.

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Executive summary

This Report responds to the requirement in Section 1213(h) of the Transportation Equity Act for the 21st Century (P.L. 105-178) that the Secretary of Transportation conduct a study of the penalties imposed by States for violation of their commercial vehicle weight laws, with the purpose of determining the effectiveness of these penalties as a deterrent to illegally overweight trucking operations.

The systems used by States to measure and record vehicle weight information are designed to produce trend information for highway planning and design purposes. They are not designed, nor is the coverage afforded by the data collection sufficiently comprehensive, to allow an objective determination of the effectiveness of such penalties in deterring illegal operations within the different States. This study, therefore, had to rely largely on personal opinion and observations as the primary source of information.

Section 1213(h)'s basic question -- how effective in compelling compliance is State penalization of overweight trucking? -- cannot be answered definitively at present as noted. However, discussions with State enforcement authorities suggested that the overall extent of truck weight limit compliance per se, while important, is seen by the public as more of an ancillary issue to a more basic public policy question of truck presence in traffic. The public is more concerned with the effects that increasing truck volumes will have on automobile travelers and neighborhood environments. However, the public would likely express greater concern about illegally overloaded trucks if more of an issue were made of the added cost of infrastructure maintenance and potential safety problems caused by these vehicles. While these items are not as easily quantified as mere presence, they are necessary to attract increased public attention.

The discussions also suggested, however, that it is a common view on the part of State enforcement authorities that there are persistent compliance problems on secondary roads and in local bulk trucking. This suggests the potential value of enforcement efforts targeted at these sectors, which are not amenable to economical surveillance by permanent, fixed-site weigh stations.

Legislative recognition of compliance inadequacy and support for more rigorous weight limit enforcement may be most forthcoming where a prominent elected official links them with highway revenue needs and controlling the rate of highway deterioration that is due to usage by heavy vehicles. This was the case in one of the nine participating States, South Dakota, where the governor recently led a successful legislative campaign to raise its already-high fines and also proposed a shipment weight record-keeping requirement that would help to identify bulk commodity carrier violators.

The principal research method adopted for this Report was to discuss with enforcement officials in nine States -- diversified by geography, fine severity, roadside enforcement practice and adjudication system -- the question of whether their State's weight-violation penalty imposition is considered to be effective. Effective, in this sense, was proposed to the participants as meaning:

(a) that the State's fine system -- given its trucking environment and enforcement practices -- was causing weight limit compliance to be significantly higher than it would be otherwise, and (b) that such compliance was at a level considered by the State itself to be satisfactory.

As background to these discussions, the maximum fine for 2,000 pounds of excess gross vehicle weight was calculated from the 1997 basic, first-offense fine schedule of each of the 50 States. Under hypothetical scenarios of both long-haul (truckload van-type) and short-haul (dump truck) service, it was estimated that such a fine would equal 50% or more of incremental net operator earnings from a month's continuous carriage of that much illegal excess cargo in only four States. For a more serious excess of 10,000 pounds, the basic fine was estimated as equaling 50% or more of a month's worth of such earnings in only seven States.

Of the nine sets of discussions conducted for this Report with State representatives, only one yielded a firm opinion that penalization of weight limit violators was having a significant positive effect on general compliance behavior within the State. A second State reported drastic improvement since the mid-1980's in local bulk (particularly construction aggregate) trucker compliance behavior, but this coincided with establishment of a general annual permit system under which these truckers are able to legally operate with gross vehicle weights substantially above non-permit levels. Representatives of two States did not have what they considered an adequate basis for reliably evaluating enforcement effects on level of compliance.

Four other States -- including one chosen to represent relatively high and one relatively low fines -- reported insufficient effectiveness of their systems in compelling compliance on secondary roads and/or among local haulers of bulk commodities. A third among these four noted that compliance behavior did not appear to have improved despite a recent legislative switch to a more progressive fine schedule.

One promising approach appears to be expansion of the practice, already noted as being underway in three of the Study States, of analyzing data output from State "non-enforcement" weigh-in-motion equipment in an effort to direct available mobile enforcement personnel resources to areas where the proportion of above-weight-limit observations is high or is increasing. The primary purpose of this equipment is to provide data for State and Federal highway planning, but enforcement resource allocation can be a useful by-product as long as the installations themselves are not converted in the process to obvious legal weight-check screens, thus jeopardizing their role in providing unbiased sample vehicle weight data for both highway planning and compliance evaluation purposes.

The Federal Highway Administration has long recognized that the data submitted by the States as part of the annual certification of enforcement represent direct measures of enforcement activity, rather than any attempt to measure effectiveness. In part due to an agency desire to obtain better information with respect to the question of effectiveness, the FHWA is resuming a rulemaking procedure to consider revisions to the annual enforcement certification requirements, including issues such as changes to weight data collection systems, and the relationship between overweight fines and permit fees, and the additional pavement use these activities bring.

(1) Introduction and analytical method

Section 1213 of the Transportation Equity Act for the 21st Century (TEA-21) (P.L. 105-178) requires the Secretary of Transportation to conduct a study of the penalties imposed by States for violation of their commercial motor vehicle weight laws, with the purpose of determining the effectiveness of these penalties as a deterrent to illegally overweight trucking operations. The statute specifies that in addition to the formal penalties themselves -- that is, a State's structure of fines -- the study should evaluate three particular aspects of the process of detecting violation and imposing these penalties:

-innovative roadside enforcement techniques,
-the penalizing of shippers and carriers as well as drivers, and
-the effectiveness of the administrative and judicial procedures employed in imposing penalties.[1]

This Congressional requirement to "determine the effectiveness" of penalties in maintaining compliance with weight limits implies a need for at least approximate measurement of the degree of such compliance within the borders of any particular State and also some way of determining the significance of that State's penalties in attaining this degree of compliance. Unfortunately, the systems used by States to measure and record vehicle weight information are designed to produce trend information for highway planning and design purposes. They are not designed, nor is the coverage afforded by the data collection sufficiently comprehensive, to allow an objective determination of the effectiveness of such penalties in deterring illegal operations within the different States. Likewise, it is not possible to determine objectively whether State-to-State variation in the severity of penalties is positively correlated with variation in compliance.

States are required by law (23 U.S.C. 141) and FHWA regulation (23 CFR 657) to certify annually that they are enforcing all State size and weight laws on federal-aid highways. However, even with the enforcement activity data that they provide to the FHWA for purposes of this certification, the magnitude and location of the overweight vehicle phenomenon is unclear. In a 1993 ANPRM issued by FHWA (FR 65830, 12-16-1993) requesting comment on certification problems, it was noted that this enforcement data were showing fewer than 1% of scale-weighed vehicles being cited as illegally overweight, while weigh-in-motion (WIM) observations taken independently of scale stations and special studies of scale bypass routes were showing 10-20% overweights, both legally, under issued permits, or illegally.[2]

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[1] Appendix (1) reproduces the exact language of the statute.

[2] Data submitted by States to the FHWA and summarized in the Department's "Comprehensive Truck Size and Weight Study, Draft Volume II - Issues and Background," 1997 show that on a national basis the ratio of their total number of over-weight citations issued to their total static-scale weighings performed was .6% for each year of the decade 1986-1995. The data for 1997 also shows a .6% ratio.

FHWA also receives annually from the States traffic monitoring data, which includes the output of weigh-in-motion (WIM) stations. However, the primary use of this data is for the estimation of the weight of truck traffic moving on the different functional classes of highway in the U.S., which in turn is used as an input to FHWA's periodic estimates of national highway infrastructure costs. Although individual States may analyze the data for the purpose of estimating frequency of overloads, this has not been done on a national basis.

It seems reasonable to assume that many variables in addition to fine severity alone -- in particular the effective probability of detection provided by a State's enforcement activity and the nature of its local trucking environment -- contribute to the degree of compliance. Given the phenomenon of multiple influences on truckers' behavior in observing of weight limits, plus the lack of comprehensive data on actual compliance that would make possible quantitative modeling of the role of fines and other variables, the research approach adopted for this report was one of case study, with conclusions based on the subjective judgement of knowledgeable persons. Nine States were selected in order to pose to their appropriate officials, an in-depth interview format, the question of whether their State's weight-violation fines may be considered to be effective. All of these States are currently considered to be in compliance with the truck size and weight enforcement requirements of 23 U.S.C. 141.

For the purpose of such discussion, fine "effectiveness" was given the double definition of the fines' causing -- by the combined effect of their severity and the frequency of their being imposed -- compliance with current truck weight limits in the State to be:

1) significantly higher than it would be otherwise, given the State's trucking environment and type of enforcement practices, and
2) at a level considered -- by the State itself -- to be satisfactory.

The enforcement practices considered specifically include the three aspects of enforcement listed above as being identified in TEA-21 section 1213(h).

1) "Innovative" roadside enforcement:

This first aspect might be interpreted to refer to use of electronic communications equipment, in particular, to a State's participation in programs for pre-clearance at weighing/inspection stations of trucks equipped with transponders that provide registration, safety, tax and other official documentation data to wayside readers while moving past, even at mainline speed. There are now two existing in the U.S., the 14-State PrePass program, also known by the name of its administering entity, HELP, Inc. (Heavy Vehicle Electronic License Plate), and NorPass, the product of a recent merger between the four-State MAPS (Multi-jurisdictional Automated Pre-clearance Systems) program in the Northwest and the five-State Automated CVO program, also known as the I-75 program after the Interstate truck route that links its southernmost and northernmost participating U.S. jurisdictions (Florida and Michigan). Six additional States are reported to be considering this latter system.

Although pre-clearance programs are intended to be attractive to all types of trucking, up

until now typical participants have been large, long-distance carriers, and the number of vehicles enrolled is not yet significant in terms of total heavy trucking activity.[3] Readers generally have been installed at permanent scale stations although equipment suitable for accompanying mobile scale teams is now available.

However, any actual screening of participant vehicles at such stations to determine whether static-scale legal weight determination should be performed must be carried out by WIM equipment installed in advance of the static scales, on the mainline or on a special slower-speed lane into which trucks are directed to divert. Non-participants can also be screened by these same WIM installations. As of now, no indication that a vehicle possesses an overweight permit is included in pre-clearance transponder data although consideration is being given to adding this feature, which would facilitate WIM screening for participant vehicles. Another possibility for the future is to add data about a participant carrier's weight-compliance record -- or even screen-weighings of the particular vehicle at previous stations -- in order to allow participants an exemption from certain off-mainline screenings.

Independent of its role in electronic pre-clearance systems, WIM is considered an efficient method of increasing the throughput capacity of the static scales that are legally necessary for formal citation of weight violators, and its use has become very common.[4] WIM screening can be employed not only at fixed stations but also in connection with mobile scales set up to cover truck traffic that does not normally travel on, or deliberately bypasses, main traffic routes.

In view of these considerations, the characteristic of a State's roadside enforcement being "innovative" is interpreted here for case study purposes as encompassing not only electronic pre-clearance but any practices intended to increase -- for a given level of expenditure on roadside inspection -- the overall probability that overweight trucks operating within a State will be detected and cited. This includes the practice followed by a few States of performing roadside enforcement only at mobile sites, thus completely abandoning the traditional permanent scale stations.[5]

2) Shipper/carrier liability:

The second aspect of enforcement named in section 1213(h) is interpreted to refer to any means of imposing liability for overweight violations on a shipper or carrier (as an entity distinct from the driver). For example, the well-known "relevant evidence law" in

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[3] "NORPASS at this point has about 10,000 trucks with transponders enrolled in its program, compared to 80,000 for HELP, Inc. (PrePass)." - ITS World July/August 1999

[4] Data reported to FHWA for Fiscal Year 1997 showed 34 States performing some weight screening of vehicles with WIM equipment.

[5] Data reported to FHWA for Fiscal Year 1997 showed six States performing no vehicle weighing at all on fixed scales.

Minnesota allows civil proceedings against shippers or carriers for violations shown by shipping records. Minnesota's weight enforcement activity has included inspections of the weight records of cargoes loaded into or unloaded from trucks in the State on the basis of weight or liquid measure. Detection of even gross vehicle weight violations from record examination requires, of course, information about the axle configuration, dimensions, etc. of the vehicle employed. It also involves the administrative problem of possibly having to proceed against out-of-State operators of these vehicles after they have left the jurisdiction. During the 1990's other States accepted FHWA grants to evaluate such record-inspection practice. However, Minnesota's system is the only one in general operation. Its effectiveness has been reported as not having been conclusively established.[6]

3) Administrative/judicial procedures:

This third aspect of enforcement is interpreted to refer to the consistency of fines ultimately imposed with those provided by statute for violations that have been (properly) cited, with attention to the possible substitution of administrative for judicial processes and of civil for criminal penalties. Several States impose overweight fines only in the form of civil penalties, with no criminal prosecution involved and any appeals directed to an administrative tribunal or to a civil court proceeding.

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[6] See "Comprehensive Truck Size and Weight Study, Phase I- Synthesis, Enforcement and Truck Size and Weight Regulations," Working Paper #10, prepared for FHWA by Battelle Team, February 1995.

(2) Previous study of overweight vehicle enforcement problems

The long-standing public policy question of what weight regulation to impose on cargo vehicles moving on U.S. highways has generated over the years a considerable body of studies concerning both appropriate limits that might be set and associated problems of enforcement. The literature on enforcement techniques was extensively reviewed several years ago as part of an effort by the FHWA to provide a synthesis of available information on a broad range of topics related to research on truck size and weight issues.[7]

Fines as an offset to potential earnings from illegal overloading

The seemingly irrefutable assertion has often been made in this literature that effective deterrence of weight-limit violation requires fines high enough -- when combined with operator-perceived frequency of apprehension, and, when applicable, the permit fee for legal carriage of certain overloads -- to offset the economic incentive for illegal overloading provided by potentially reduced carriage cost per ton of cargo and/or increased profit per vehicle. To illustrate this point, comparisons have been made of applicable fines in different States for given overweight tonnages with hypothetical estimated motor carrier earnings from such illegal extra cargo.

Assertion of the necessity of sufficiently high fines has been qualified by the observation that U.S. general standards of fairness -- in the sense of matching penalty to perceived gravity of offense -- effectively eliminate the possibility of States' achieving a high level of deterrence simply by raising fines to Draconian levels. Also, deterrence of violation at current fine levels has been made somewhat easier by development of more reliable weigh-in-motion equipment, enabling States to automate pre-weight scale screening, thus increasing their frequency of weight violation checks with less imposition of delay on trucking in general and, presumably, less resistance to increased enforcement.

> For a study sponsored in the 1980s by the American Association of State Highway Officials and FHWA,[8] there was constructed a weighing-in-motion-based enforcement system simulation model which was then used to project total real economic costs to society (including those of government surveillance, truck operation and road maintenance) for certain alternative strategies of inspection personnel deployment and for different levels of fines imposable on truckers apprehended carrying 5000, 15,000 or 25,000 lb. illegal excess weight. A trucker's decision to overload was simulated as a comparison of expected fine and forced unloading cost with illegally-gained revenue less expected costs of stopping or detouring to avoid detection.

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[7] See ibid.

[8] Grenzeback et al, "Feasibility of a National Heavy-Vehicle Monitoring System," National Cooperative Highway Research Program Report 303 (1988)

Under what was represented as an "equitable" enforcement strategy of allocating inspection personnel to segments/time periods on different types of arterial highways in proportion to their expected share of total heavy truck traffic, it was projected that the 1985 average level of fines for the three representative levels of violation could eliminate all economic incentive for illegal overweight operation only if combined with an annual weight enforcement expenditure about 2.5 times what was then being estimated as the current U.S. level. The model was further used to project that at the lower, current expenditure level 1985 fines would have to be increased between three and four times in order to completely eliminate this incentive.

Violator apprehension rates

Differences between States not only in fine schedules (see Section 2) but also in what are thought to be their actual truck weight violator apprehension rates suggest that geographical differences exist in the overall effectiveness of illegal overloading deterrence, and thus in compliance.

A 1987 Texas study[9] used contrasting estimates of 4% and 20%, respectively, to represent probabilities of overweight apprehension in Texas and in neighboring Arkansas that year for a standard 5-axle trailer combination vehicle making a (single) 500-mile trip in an overloaded condition. The 4% figure for apprehension probability in Texas -- characterized as "lower than most States" -- was derived from the then-current records of the number of truck inspections per year in Texas compared to estimated truck-miles operated in that State, or 1 check for every 12,500 miles (500/12,500 = 4%). The 20% level for Arkansas, considered for purposes of the study to have more intensive enforcement, corresponded to the highest estimate for effective apprehension probability offered by State enforcement officials in a 1980 study of three States, Tennessee (5%), Iowa (15%) and Indiana (20%).[10]

A 1991 Washington State study[11] cited past estimates of apprehension rate for a given overloaded truck trip that ranged from 1% to 20%. It also included a nationwide survey of the agencies responsible for truck weight policy in each State that found 32 answering "no" (and 13 "yes") to the question of whether their State's fine schedule provided an economic disincentive for overloading by truckers. However, 37 indicated that their State required apprehended violators to off-load excess cargo tonnage, a practice that had been characterized in a 1990 Transportation Research Board study as "one of the most

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[9] Euritt, M.A., "Economic Factors of Developing Fine Schedules for Overweight Vehicles in Texas," Transportation Research Record 116 (1987)

[10] "Motor Vehicle Size and Weight Regulations, Enforcement and Permit Operations," NCHRP Synthesis 68, TRB 1980, as cited in Euritt op. cit.

[11] Casavant, K.L., "A Preliminary Evaluation of the Equity of the Truck Fee and Fine System in Washington," Washington Department of Transportation Research Project GC-8287 (1991)

effective methods for ensuring compliance."[12]

Estimates of weight limit compliance rate

Estimates have been made on the basis of weigh-in-motion surveys that from 10% to over 20% of truck movements are over the weight allowed by the general provisions of the State where they are taking place or the State overweight permit held. As noted in Section (1), there is yet no general measurement of the degree of weight limit violation sufficiently comprehensive to permit comparison of the actual compliance experienced in different U.S. States or wide geographic areas. It therefore has not been established on the basis of empirical data that any particular combination of fine severity and enforcement activity relative to truck traffic can be considered as necessary to achieve a generally high overall level of compliance with a State's weight restrictions. These restrictions themselves, of course, are not uniform across the country, due to some differences in States' generally-applicable weight limits and also to State issuance of single and multiple-trip overweight permits for single and combination vehicles on non-Interstate highways and, under "grandfather" rights, the Interstate system as well.

On the other hand, accumulated literature on truck weight enforcement does suggest the existence of two weight-limit compliance phenomena that are generally consistent with common intuition.

Enforcement on secondary as well as primary truck routes

It is clear that low-capacity weight-limit enforcement stations located on major truck routes can quickly become saturated and that those not equipped for effective pre-screening can cause much effort to be expended weighing vehicles that are actually in compliance. There also exist opportunities -- in some cases more convenient than others -- for knowing violators to deliberately bypass such stations. Even with continuous weight checking, or frequent, random weight checking, on highways carrying major flows of intercity truck traffic, supplementary monitoring of secondary truck routes appears necessary if enforcement is to have a significant effect in deterrence of illegal overloading.

> As has been noted in previous reports on this topic, field research during the late 1980s and early 1990s in Kentucky, Virginia and Wisconsin documented the phenomenon of high overweight rates on routes bypassing fixed main-route weight scales. The Kentucky study[13] observed proportions of trucks with weights over gross, axle and bridge-formula limits that were far higher on routes bypassing a permanent, continuously-operated I-65 (north) weigh station than on the Interstate itself, which is a major interregional truck route. However, on the basis of reported origins and destinations of trucks inspected on the bypass routes, it concluded that the much lower rate of compliance there must have been due principally to the typically low level of weight enforcement on secondary

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[12] Transportation Research Board, "Truck Weight Limits: Issues and Options" (1990)

[13] Southgate et al., "Weigh Station Bypassing," Kentucky Transportation Center, University of Kentucky, Report KTC-93-13, 1993

highways rather than deliberate bypassing by drivers whose most expeditious route would have been on the Interstate.

An often-cited 1990 experiment that varied the degree of State enforcement in northeastern Florida's I-95 trucking corridor showed a decline in weigh-in-motion-detected overloads on five-axle semitrailer combinations (gross, axle and bridge-formula) from 12.9% of total traffic on combined main and bypass routes under the least intensive enforcement program to 1.4% under the most intensive.[14] "Most violators on the bypass routes," this study noted, "were local and seriously overweight. Most violators at the permanent ... stations were Interstate truckers who were less than 5 percent overweight."

At about the same time, a study of activity records of permanent scales in the Canadian provinces of Manitoba and Saskatchewan concluded that after the proportion of passing truck traffic weighed at a given station were increased to 10%, little further reduction in the rate of violation detected at the station itself could be expected and that the violations detected at inspection rates over 10% were probably dominated by inadvertent infraction.[15]

Certain trucking operations particularly susceptible to overloading problems

Certain types of cargo hauling are more sensitive than others to the constraint imposed by truck weight limits. This naturally involves "weigh-out" rather than "cube-out" commodities: frozen food, logs, wood pulp, chemicals, fuels, building materials, waste, scrap, etc., and agricultural commodities or timber loaded in the field without the benefit of weight-marked packages or conveniently-located scales. Trucks hauling roll-off waste bins, for example, must contend with loads with varying proportions of dense, heavy content, such as concrete scrap or wet grocery store waste. On-truck weighing equipment, however, is available and can be used by waste-truck operators both to assist in pricing disposal service and to maintain highway weight limit compliance.[16] FHWA has been told by manufacturers of such weighing equipment that its use by log-hauling trucks in the Pacific Northwest has become normal practice.

Difficulty with meeting the axle-spacing requirements of the 1975 Interstate highway bridge-formula weight limitation was reported during the 1980s by operators of dump, tank and marine container-carrying semi-trailers, plus straight trucks operating locally in the construction, solid waste, fuel oil distribution and building material supply

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[14] Reported in Cunagin et al, "Evasion of Weight-Enforcement Stations by Trucks," Transportation Research Record 1570 (1997).

[15] Clayton et al, "Enforcement and Overweight Trucking," Canadian Transportation Research Forum, 1992 Annual Meeting. (A 1985 Saskatchewan Department of Transportation study cited in this article had placed this inspection rate threshold at about 5%.)

[16] See "States Throw Enforcement Weight Behind Axle Laws," World Wastes , May, 1992

industries.[17] In 1993, a spokesman for the Oklahoma Highway Patrol reported that enforcement of the federal bridge formula on Interstates was particularly affecting dump trucks hauling rock, asphalt and gravel.[18]

More recently, in connection with controversy over whether gross vehicle weights over 80,000 lb. should be allowed on the Maine Turnpike now that it is part of the Interstate System, that State's Transportation Commissioner noted that the cargoes most affected were gravel and forest products (the latter of which Maine paper plants use as raw material).[19]

Bridge formula compliance still requires enforcement although the growing number of four-axle vehicles has presumably somewhat eased this constraint in the straight truck sector by replacing three-axle units. In the 10 years between the 1982 and 1992[20] Truck Inventory and Use Surveys (TIUS) conducted by the U.S. Bureau of the Census, the (estimated) national proportion of all straight truck mileage run by four-or-more-axle vehicles rose from 23 to 37% for concrete mixers, 12 to 21% for dump trucks, 1 to 7% for liquid/gas tank trucks and 1 to 12% for solid waste trucks. However, such fourth axles may be lift axles, which research on the issue has noted are often underloaded or are not carrying any load at all.[21]

The Study has also noted that dump, transit-mix and trash removal trucks have particularly high empty weights and that thus even small increases in allowed gross weight can translate into significant payload increases.[22] Many States provide overweight permits for particular commodities such as farm products, timber, garbage/waste and sometimes cement or construction material, in addition to general overweight permit systems applying to any commodity. This may be taken as evidence of their desire to provide extra compliance leeway for trucking operations with peculiar cargo weight-control problems as well as for industries particularly important in their region or those viewed as providing important services directly to the general public.

States also issue overweight permits for non-divisible loads such as large items of machinery, a practice long allowed by federal weight-limit legislation as an appropriate exception to general-application weight standards. Under regional permitting systems, the validity of these permits can be extended to multiple States. Certain States have extended eligibility for non-divisible load permits to the carriage of marine containers, which may be overloaded in terms of U.S. limits -- especially if not carried on appropriate-size trailer chassis -- despite being acceptable for

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[17] See Federal Highway Administration Report FHWA-MC-89-050 "Overweight Vehicles - Penalties and Permits" (1989)

[18] Maurer, M., "Oklahoma Begins Enforcing federal Rules for Dump Trucks," Tulsa World, September 23, 1993

[19] Chutchian, K.Z., "Big Rigs, Weighty Problems," Maine Times, January 22, 1998

[20] Total-U.S.statistics from the 1997 TIUS were not available as of this writing.

[21] "Comprehensive Truck Size and Weight Study, Phase I - Summary Report for Synthesis of Truck Size and Weight Studies and Issues," FHWA, March 1995

[22] ibid.

vessel and overseas highway or rail movement. (Since 1997, the Intermodal Safe Container Transportation Act, as amended, has required domestic and foreign shippers of such containers to certify their weight and gives truckers authority to place liens on them for reimbursement of any overweight fines imposed as a result of inaccurate shipper weight documentation.)

> A breakdown by Census Transportation Commodity Code of cited violations of Washington State special overweight permits during a 12-month period in 1991/92 showed that of those where commodity information had been recorded, "machinery," "lumber/wood products" and "nonmetallic minerals" accounted for 65%.[23] The average illegal gross weight excess for machinery was over 3 times as high as for the other two categories.

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[23] Barron et al., "A Case Study of Motor Vehicles Violating Special Weight Permits in the State of Washington," Washington State Department of Transportation , Report WA-RD 353.1 (1994)

(3) Current fine levels in the different States: comparison with hypothetical operator earnings from carriage of illegal excess payload, projected under two scenarios

It is well known that fines for truck weight limit violation vary from State to State. Table 1(a) (page 15) shows the fines -- exclusive of any court costs or similar fees that may be imposed -- reported to FHWA as of 1997 by all States plus D.C. and Puerto Rico for a first-offense single axle weight violation at 1,000 and 4,000 lb. illegal excess, a similar tandem axle violation at 2,000 and 7,000 lb. and a gross vehicle weight (exclusive of any concurrent axle) violation at 2,000 and 10,000 lb.[24] Each pair of weights was chosen to represent a range from a relatively small illegal overweight to a relatively large one. While penalties calculated according to the amount of excess are generally the rule, there was obviously considerable variation in the structure and level of fines. Both are illustrated by Table 1(b) (page 19), which shows the gross vehicle overweight fines again, by State in order of fine severity from highest to lowest. For example, South Dakota ranked first for the 10,000 lb. overload[25] and third for the 2,000 lb.; by contrast California tied for fifth at 10,000 lb. and ranks 31st (among States) at 2,000 lb.

In order to put these fines in the context of truckers' purely economic motivation to comply, Table 2 (page 21) shows the fines for both the 2000 lb. and 10,000 lb. gross vehicle weight violations expressed as a percentage of additional earnings per vehicle operating month from continuously carrying a payload excess of those sizes, projected under two simplified but plausible contrasting scenarios representing long and short-haul heavy vehicle operations. It must be emphasized that motivation in the sense used here relates solely to expectation of having to pay a (first-offense) fine balanced against expectation of additional earnings from illegal operation. It does not consider any other influence on trucker behavior, including the desire on the part of scrupulous operators to be in compliance with legal limits regardless of any potential financial gain from doing otherwise.

Hypothetical excess-payload earnings: long-distance scenario

The financial parameters employed in the long-distance scenario are based loosely on revenue and operating statistics reported to the Department of Transportation by Interstate motor carriers plus securities analysis reports on certain publicly-owned truckload motor carriers. For the short-

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[24] These amounts represent weight treated as illegal excess after application of any enforcement tolerances by State weighing authorities. Table 1(a) notes that in three cases where a State provides for fines calculated on the basis of the proportion that the illegal excess bears to the particular weight limit, the Federal limits for the Interstate System -- which are inclusive of any enforcement tolerances -- were used to represent the weight base for this calculation.

[25] As noted in Section (5), South Dakota fines for higher excess weights have been substantially increased effective July 1, 1999. The fine for a 2,000 lb. violation stays the same as shown in Table 1, but that for 10,000 lb. rises from $2,625 to $3,875.

distance scenario, they are based on the estimates of the overall cost of operating different types of trucks, developed as part of other research involving truck operations,[26] which also provided a secondary approach for the long-distance scenario. Normal operating costs for carrying cargo were treated as indicators of the plausible minimum revenue value to an operator -- after absorbing some incremental fuel, oil and tire wear expense[27] -- of illegally adding a given weight of cargo to payload. (Because the ultimate fine-to-illegal gain comparison presented here is in very general terms, no attempt was made to distinguish between plausible revenue values in different regions of the U.S.) Such use of cost as a surrogate for revenue is based on the assumption that in reasonably competitive transportation market environments, the amount that truckload shippers have to pay to move material tends ultimately toward the cost level of efficiently-operated carriage. For purposes of this paper, costs were based on assumed legal vehicle loads, although in the extreme situation where the going rate for some type of motor transportation was being effectively set at a lower level due to operations being generally conducted at illegally-high payloads, any individual operator would of course still stand to gain financially from accepting cargo weight above the legal level.

The long-distance scenario is intended to represent cargo the competitive transportation price of which is being set by interregional for-hire truckload motor carriers generating revenue of $1.20 per mile (or $1.33 per loaded mile assuming 10% empty mileage) from single-driver operation of 5-axle, single-53' trailer combination vehicles at a legal maximum payload of 49,500 lb. (80,000 lb. gross vehicle weight). Under this scenario, after adjustment of $.025 per loaded mile to represent additional fuel, oil, and tire wear expense, a 10,000-lb. illegal addition would offer potential additional revenue of 10,000 x $1.33/49,500 = $.269 - $.025 = $.244 per loaded trailer mile, or an average $2,118 per tractor month ($489 per week) at an average 2,000 loaded-trailer miles per tractor week (115,555 total miles per year). The corresponding potential additional revenue under the same assumptions for the 2,000 lb. excess gross vehicle weight is taken as 2/10 of the figure for 10,000 lb.

Hypothetical excess-payload earnings: short-distance scenario

The short-distance scenario is intended to provide a distinct contrast, in the sense of the vehicles, operating range and transportation market served. Rather than being representative of interregional truckload van freight carriage, it is based on operations that might be involved, for example, in moving heavy bulk material loads to and from construction sites. However, as can be deduced from Table 2, the potential revenue value that it generates per vehicle per calendar time period for the same weight of illegally-loaded cargo is not greatly different from the long-distance scenario. The added weight is less under that scenario as a proportion of legal

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[26] Costing details for the Study appear in "Comprehensive Truck Size and Weight Study, Phase I - Syntheses, Truck Costs and Truck Size and Weight Regulations," Working Paper 7, prepared for FHWA by Battelle Team, February 1997. Note that for purposes of this paper cost elements from this source were adjusted to a year-1997 basis by use of the Bureau of the Census Producer Price Index.

[27] No adjustment was made to represent vehicle detention time to load/unload this additional cargo.

maximum payload due to the larger-capacity vehicle assumed.

A competitive transportation price is represented in the short-distance scenario by per-mile costs for operation of four-axle, single-unit dump trucks carrying a legal maximum payload of 34,800 lb. (at a gross vehicle weight of 64,000 lb.[28]) and generating on average equal amounts of empty and loaded mileage. These costs were re-calculated for purposes of this report so as to reflect average total vehicle mileage of 25,000 per year (480 per week) rather than the 9,300 figure that has been employed by others, intended to represent local operations over urban streets and roads.[29] At $7.06 per loaded mile ($3.67 per total mile) for movements at the legal maximum, a 10,000-lb. illegal payload addition would translate after fuel/oil/tire wear expense adjustment of $.08 per loaded mile into 10,000 x $7.06/34,800 = $2.03 - $.08 = $1.95 per loaded mile. At 12,500 loaded miles per vehicle year, this would generate an average $2,027 per month additional revenue or, for an enterprise performing its own transportation, saving in the cost of moving material at the legal maximum payload. The corresponding potential additional revenue under the same assumptions for the 2,000 lb. excess gross vehicle weight is again taken as 2/10 of the figure for 10,000 lb.

Offset of hypothetical excess payload earnings by fines

The comparisons in Table 2 (page 21) show fines in only two States fully offsetting hypothetical earnings from a month's worth of continuous overloading at 10,000 lb. and offsetting more than half of such earnings in only seven States. For what is proposed here to represent a relatively low excess-weight violation, there are only two cases of over 100% offset (both caused by maximum fines that are the same at both weights) and four of over 50%. There were numerous cases of the offset at 2,000 lb. being substantially lower than at 10,000 lb., although there were also States where it was higher. In this table, since fines in different States are being compared to the same standard, differences in the extent of these offsets are of course the result of the variation between States in fine level and structure that was previously noted.

The display in Table 2 simply puts fines -- with no addition to account for other costs to the violator of being cited -- in the context of potential reward from undetected non-compliance. Any estimation of effective reward obviously requires some expectation of detection actually taking place. Other trucking operation measurement units could have been chosen for the fine-illegal gain comparison -- illegal gain per trip, for example, as employed in the study by Euritt cited in Section (2) -- rather than a simulated month of continuous overloading. Given the dollar magnitudes involved, however, use of a month as a time period of measurement generated offset percentages that allowed convenient comparison in terms of the likelihood of a particular overloaded vehicle being stopped -- once -- during normal operation.

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[28] Note that to be in compliance with federal Bridge Formula B for Interstate Highway System operation, a vehicle of this overall gross weight requires a 33-foot wheelbase.

[29] The latest published (1992) national totals from the Bureau of the Census Truck Inventory and Use Survey show about a third of the estimated population of 4+-axle single-unit trucks with annual mileage of 30,000 or more and slightly less than half under 20,000.

Parenthetically, it may be recalled that the Euritt study based its apprehension rate for the State of Texas on data implying a 100% expectation of being stopped in 12,500 (presumably total) miles of travel for a combination vehicle making loaded trips that average 500 miles. Were this detection rate applied to the long-distance vehicle operations scenario employed in this report, which implies an average of 8,667 loaded (in this scenario, overloaded) miles per tractor per month, there would be an approximately 69% chance in a month of being stopped while in an overloaded condition and thus having illegal earnings offset by a fine (plus whatever court costs, mandatory unloading costs, etc. were imposed). Were it further assumed that after detection and imposition of a first-offense fine -- occurrence of which would be at random times -- the vehicle would no longer be overloaded (for an unspecified period), it might be expected that on average one half of the month's worth of illegal gain would be lost. Thus the offset calculated in Table 2 would be effectively doubled.

TABLE 1A - 1997 FIRST OFFENSE OVERWEIGHT VEHICLE FINES BY STATE
(MAXIMUM PENALTY PROVIDED)

STATE	SINGLE AXLE OVERLOAD		TANDEM AXLE OVERLOAD		GVW OVERLOAD	
	1,000 lb.	4,000 lb.	2,000 lb.	7,000 lb.	2,000 lb.	10,000 lb.
Alabama[1]	$500	$500	$500	$500	$500	$500
Alaska	$50	$200	$100	$350	$100	$500
Arizona	$1	$700	$100	$1,000	$100	$1,000
Arkansas	$1202	$300 3	$1604	$520 5	$160[6]	$700 7
California	$20	$125	$40	$420	$40	$1,500
Colorado	$20	$34	$20	$226	$20	$842
Connecticut*	$30 [8]	$605[9]	$182[10]	$1,188 [11]	$60 [12]	$763[13]
Delaware	$46	$47	$46	$53	$46	$55
Dist of Col	$100	$100	$100	$520	$100	$700
Florida	$50	$200	$100	$350	$100	$500
Georgia	$8	$68	$23	$178	$23	$318
Hawaii	$125	$200	$130	$360	$130	$560
Idaho	$5	$25	$15	$427	$15	$830
Illinois	$91	$365	$91	$1,191	$184	$1,685
Indiana[14]	$1,000	$1,000	$1,000	$1,000	$1,000	$1,000
Iowa	$15	$260	$25	$900	$8	$600
Kansas	$25	$200	$60	$490	$60	$1,000
Kentucky	$20	$200	$40	$630	$40	$900
Louisiana	$10	$60	$20	$140	$20	$400
Maine*	$50 [15]	$250 [16]	$60 [17]	$270[18]	$30 [19]	$145 [20]
Maryland	$60	$210	$110	$840	$110	$1,200
Massachusetts	$40[21]	$160[22]	$80[23]	$280[24]	$80 [25]	$400[26]
Michigan	$250	$360	$60	$1,400	$60	$2,000
Minnesota	$75	$315	$115	$615	$115	$715
Mississippi	$5	$80	$20	$245	$40	$1,000
Missouri	$50	$400	$200	$700	$200	$1,000
Montana	$30	$75	$30	$175	$30	$250
Nebraska*	$25	$325	$75	$500	$25 [27]	$200[28]
Nevada	$10	$80	$20	$280	$20	$600
New Hampshire	$100	$100	$100	$100	$100	$100
New Jersey	$50	$80	$50	$140	$50	$200
New Mexico	$25	$40	$25	$200	$25	$425

TABLE 1A - 1997 FIRST OFFENSE OVERWEIGHT VEHICLE FINES BY STATE
(MAXIMUM PENALTY PROVIDED)

STATE	SINGLE AXLE OVERLOAD		TANDEM AXLE OVERLOAD		GVW OVERLOAD	
	1,000 lb.	4,000 lb.	2,000 lb.	7,000 lb.	2,000 lb.	10,000 lb.
New York	$100	$600	$200	$1,000	$50	$700
North Carolina	$40	$400	$120	$700	$40	$1,000
North Dakota	$10	$160	$20	$560	$20	$800
Ohio	$80	$140	$80	$270	$80	$330
Oklahoma	$120	$220	$120	$370	$120	$520
Oregon	$5	$200	$30	$910	$30	$1,500
Pennsylvania	$100	$500	$100	$1,100	$150	$2,250
Puerto Rico	$10	$10	$10	$10	$10	$10
Rhode Island	$100	$100	$100	$100	$80	$400
South Carolina	$25	$135	$45	$460	$45	$700
South Dakota	$115	$525	$225	$1,875	$225	$2,625
Tennessee*	$75	$225	$125	$375	$85	$525
Texas	$150[29]	$150[30]	$150[31]	$150[32]	$100	$500 [33]
Utah	$50	$160	$50	$350	$50	$500
Vermont	$10	$40	$20	$140	$20	$200
Virginia	$10	$80	$20	$350	$87	$547
Washington	$80	$170	$110	$530	$110	$890
West Virginia	$20	$20	$20	$70	$20	$100
Wisconsin	$21034	$320 35	$22036	$690 37	$220 [38]	$900 39
Wyoming	$45	$45	$45	$120	$45	$170

SOURCE: Federal Highway Administration records.
NOTES: Do not include court costs. Violations assumed to be of limits equal to the Federal Interstate Highway System standard (20,000 single axle, 34,000 tandem axle, 80,000 gross vehicle weight). States basing fines on the overload in proportion to the limit are marked with an asterisk.

FOOTNOTES TO TABLE 1A

[1] The maximum fine. Fines range from $100 to $500.

[2] The maximum fine. Fines range from $110 to $120 for the 1,000 lb. overload.

[3] The maximum fine. Fines range from $220 to $300 for the 4,000 lb. overload.

[4] The maximum fine. Fines range from $120 to $160 for the 2,000 lb. overload.

[5] The maximum fine. Fines range from $380 to $520 for the 7,000 lb. overload.

[6] The maximum fine. Fines range from $120 to $160 for the 2,000 lb. overload.

[7] The maximum fine. Fines range from $500 to $700 for the 10,000 lb. overload.

[8] Fine calculated on the basis of a 20,000 lb. single axle limit.

[9] Fine calculated on the basis of a 20,000 lb. single axle limit.

[10] Fine calculated on the basis of a 34,000 lb. tandem axle limit.

[11] Fine calculated on the basis of a 34,000 lb. tandem axle limit.

[12] Fine calculated on the basis of a 80,000 lb. GVW limit. For both a 51,000 lb. and a 64,000 lb. GVW limit the fines would be $60 for the 2,000 lb. overload.

[13] Fine calculated on the basis of a 80,000 lb. GVW limit. For both a 51,000 lb. and a 64,000 lb. GVW limit the fines would be $465 for the 10,000 lb. overload.

[14] The maximum fine. Fines range from $1 to $1,000.

[15] Fine calculated on the basis of a 20,000 lb. single axle limit.

[16] Fine calculated on the basis of a 20,000 lb. single axle limit.

[17] Fine calculated on the basis of a 34,000 lb. tandem axle limit.

[18] Fine calculated on the basis of a 34,000 lb. tandem axle limit.

[19] Fine calculated on the basis of a 80,000 lb. GVW limit. For a 51,000 lb. GVW limit the fines would be $40 for the 2,000 lb. overload. For a 64,000 lb. GVW limit the fines would be $30 for the 2,000 lb. overload.

[20] Fine calculated on the basis of a 80,000 lb. GVW limit. For a 51,000 lb. GVW limit the fines would be $250 for the 10,000 lb. overload. For a 64,000 lb. GVW limit the fines would be $190 for the 10,000 lb. overload.

[21] The maximum fine. Fines range from $10 to $40 for the 1,000 lb.overload, and from $40 to $160 for the 4,000 lb. overload.

[22] The maximum fine. Fines range from $10 to $40 for the 1,000 lb.overload, and from $40 to $160 for the 4,000 lb. overload.

[23] The maximum fine. Fines range from $20 to $80 for the 2,000 lb. overload, and from $70 to $280 for the 7,000 lb. overload.

[24] The maximum fine. Fines range from $20 to $80 for the 2,000 lb. overload, and from $70 to $280 for the 7,000 lb. overload.

[25] The maximum fine. Fines range from $20 to $80 for the 2,000 lb. overload.

[26] The maximum fine. Fines range from $100 to $400 for the 10,000 lb. overload.

[27] Fine calculated on the basis of a 80,000 lb. GVW limit. For both a 51,000 lb. and 64,000 lb. GVW limit the fines would be $25 for the 2,000 lb. overload.

[28] Fine calculated on the basis of a 80,000 lb. GVW limit. For both a 51,000 lb. and 64,000 lb. GVW limit the fines would be $350 for the 10,000 lb. overload.

[29] The maximum fine. Fines range from $100 to $150.

[30] The maximum fine. Fines range from $100 to $150.

[31] The maximum fine. Fines range from $100 to $150.

[32] The maximum fine. Fines range from $100 to $150.

[33] The maximum fine. Fines range from $300 to $500 for the 10,000 lb. overload.

[34] The maximum fine. Fines range from $60 to $210 for the 1,000 lb. overload.

[35] The maximum fine. Fines range from $170 to $320 for the 4,000 lb. overload.

[36] The maximum fine. Fines range from $70 to $220 for the 2,000 lb. overload.

[37] The maximum fine. Fines range from $540 to $690 for the 7,000 lb. overload.

[38] The maximum fine. Fines range from $70 to $220 for the 2,000 lb. overload.

[39] The maximum fine. Fines range from $750 to $900 for the 10,000 lb. overload.

TABLE 1B - 1997 FIRST OFFENSE GROSS VEHICLE OVERWEIGHT FINES BY STATE, IN RANK ORDER OF 2,000 LB. AND 10,000 LB. OVERWEIGHT FINES

STATE	2,000 lb. OVERLOAD	STATE	10,0000 lb. OVERLOAD
Indiana	$1,000	South Dakota	$2,625
Alabama	$500	Pennsylvania	$2,250
South Dakota	$225	Michigan	$2,000
Wisconsin	$220	Illinois	$1,685
Missouri	$200	California	$1,500
Illinois	$184	Oregon	$1,500
Arkansas	$160	Maryland	$1,200
Pennsylvania	$150	Arizona	$1,000
Hawaii	$130	Indiana	$1,000
Oklahoma	$120	Kansas	$1,000
Minnesota	$115	Mississippi	$1,000
Maryland	$110	Missouri	$1,000
Washington	$110	North Carolina	$1,000
Alaska	$100	Kentucky	$900
Arizona	$100	Wisconsin	$900
Dist of Col	$100	Washington	$890
Florida	$100	Colorado	$842
New Hampshire	$100	Idaho	$830
Texas	$100	North Dakota	$800
Virginia	$87	Connecticut*	$763
Tennessee*	$85	Minnesota	$715
Massachusetts	$80	Arkansas	$700
Ohio	$80	Dist of Col	$700
Rhode Island	$80	New York	$700
Connecticut*	$60	South Carolina	$700
Kansas	$60	Iowa	$600
Michigan	$60	Nevada	$600
New Jersey	$50	Hawaii	$560
New York	$50	Virginia	$547
Utah	$50	Tennessee *	$525
Delaware	$46	Oklahoma	$520
South Carolina	$45	Alabama	$500

TABLE 1B - 1997 FIRST OFFENSE GROSS VEHICLE OVERWEIGHT FINES BY STATE, IN RANK ORDER OF 2,000 LB. AND 10,000 LB. OVERWEIGHT FINES

STATE	2,000 lb. OVERLOAD	STATE	10,000 lb. OVERLOAD
Wyoming	$45	Alaska	$500
California	$40	Florida	$500
Kentucky	$40	Texas	$500
Mississippi	$40	Utah	$500
North Carolina	$40	New Mexico	$425
Maine*	$30	Louisiana	$400
Montana	$30	Massachusetts	$400
Oregon	$30	Rhode Island	$400
Nebraska*	$25	Ohio	$330
New Mexico	$25	Georgia	$318
Georgia	$23	Montana	$250
Colorado	$20	Nebraska *	$200
Louisiana	$20	New Jersey	$200
Nevada	$20	Vermont	$200
North Dakota	$20	Wyoming	$170
Vermont	$20	Maine *	$145
West Virginia	$20	New Hampshire	$100
Idaho	$15	West Virginia	$100
Puerto Rico	$10	Delaware	$55
Iowa	$8	Puerto Rico	$10

SOURCE: 1997 Federal Highway Administration records.
NOTE: Fines are as calculated in Table 1(a). States basing fines on an overload in proportion to the limit are marked with an asterisk.

TABLE 2 - GROSS OVERWEIGHT FINES COMPARED TO POTENTIAL GAIN FROM OVERLOADING, BY STATE, IN RANK ORDER OF 10,000 LB. GROSS OVERWEIGHT FINE

STATE	GVW FINE		FINES AS % OF POTENTIAL $ GAIN PER MONTH FROM			
			SHORT-HAUL SCENARIO		LONG-HAUL SCENARIO	
	2,000 LB.	10,000 LB.	2,000 LB.	10,000 LB.	2,000 LB.	10,000 LB.
South Dakota	$225	$2,625	56%	130%	53%	124%
Pennsylvania	$150	$2,250	37%	111%	35%	106%
Michigan	$60	$2,000	15%	99%	14%	94%
Illinois	$184	$1,685	45%	83%	43%	80%
California	$40	$1,500	10%	74%	9%	71%
Oregon	$30	$1,500	7%	74%	7%	71%
Maryland	$110	$1,200	27%	59%	26%	57%
Arizona	$100	$1,000	25%	49%	24%	47%
Indiana	$1,000	$1,000	247%	49%	236%	47%
Kansas	$60	$1,000	15%	49%	14%	47%
Mississippi	$40	$1,000	10%	49%	9%	47%
Missouri	$200	$1,000	49%	49%	47%	47%
North Carolina	$40	$1,000	10%	49%	9%	47%
Kentucky	$40	$900	10%	44%	9%	42%
Wisconsin	$220	$900	54%	44%	52%	42%
Washington	$110	$890	27%	44%	26%	42%
Colorado	$20	$842	5%	42%	5%	40%
Idaho	$15	$830	4%	41%	4%	39%
North Dakota	$20	$800	5%	39%	5%	38%
Connecticut *	$60	$763	15%	38%	14%	36%
Minnesota	$115	$715	28%	51%	27%	34%
Arkansas	$160	$700	39%	35%	38%	33%
Dist of Col	$100	$700	25%	35%	24%	33%
New York	$50	$700	12%	35%	12%	33%
South Carolina	$45	$700	11%	35%	11%	33%
Iowa	$8	$600	2%	30%	2%	28%
Nevada	$20	$600	5%	30%	5%	28%
Hawaii	$130	$560	32%	28%	31%	26%
Virginia	$87	$547	21%	27%	21%	26%
Tennessee	$85	$525	21%	26%	20%	25%
Oklahoma	$120	$520	30%	26%	28%	25%
Alabama	$500	$500	123%	25%	118%	24%
Alaska	$100	$500	25%	25%	24%	24%
Florida	$100	$500	25%	25%	24%	24%
Texas	$100	$500	25%	25%	24%	24%
Utah	$50	$500	12%	25%	12%	24%
New Mexico	$25	$425	6%	21%	6%	20%
Louisiana	$20	$400	5%	20%	5%	19%
Massachusetts	$80	$400	20%	20%	19%	19%

TABLE 2 - GROSS OVERWEIGHT FINES COMPARED TO POTENTIAL GAIN FROM OVERLOADING, BY STATE, IN RANK ORDER OF 10,000 LB. GROSS OVERWEIGHT FINE

STATE	GVW FINE		FINES AS % OF POTENTIAL $ GAIN PER MONTH FROM			
			SHORT-HAUL SCENARIO		LONG-HAUL SCENARIO	
	2,000 LB.	10,000 LB.	2,000 LB.	10,000 LB.	2,000 LB.	10,000 LB.
Rhode Island	$80	$400	20%	20%	19%	19%
Ohio	$80	$330	20%	16%	19%	16%
Georgia	$23	$318	6%	16%	5%	15%
Montana	$30	$250	7%	12%	7%	12%
Nebraska *	$25	$200	6%	10%	6%	9%
New Jersey	$50	$200	12%	17%	12%	9%
Vermont	$20	$200	5%	10%	5%	9%
Wyoming	$45	$170	11%	8%	11%	8%
Maine *	$30	$145	7%	7%	7%	7%
New Hampshire	$100	$100	25%	9%	24%	5%
West Virginia	$20	$100	5%	5%	5%	5%
Delaware	$46	$55	11%	3%	11%	3%
Puerto Rico	$10	$10	2%	0%	2%	0%

NOTES: See text for explanation of illegal gain scenarios. Fines are as calculated in Table 1(a) except that for States basing fines on overload in proportion to weight limit (marked with an asterisk), the short haul scenario fines are calculated under the assumption of a 64,000 lb. gross vehicle weight limit (for the 4-axle, single-unit dump truck specified in this scenario).

(4) Case study States: comparisons in enforcement activity and in local-origination trucking of selected weight limit-sensitive commodities

The States studied for purposes of this report were:

California
Georgia
Minnesota
Mississippi
Missouri
Montana
New York
South Dakota
Washington.

This group represents:

three States from the PrePass electronic pre-clearance program (CA, MS and MT) plus two from NorPass (WA, originally from its MAPS component, and GA, originally from the Advantage I-75 corridor program);
the original "shipper liability" State (MN);
a State that no longer uses fixed weigh stations at all (NY); plus
at least one relatively high-fine (SD) and one relatively low-fine State (MT or GA) and some geographical dispersion.

Six of the States -- GA, MN, MT, NY, SD and WA -- reported to FHWA in 1997 that they granted overweight permits for divisible loads.

Enforcement activity comparisons

Tables 3(a) and 3(b) compare -- in absolute and rank terms, respectively -- some parameters of the weight enforcement activity carried out in these nine States as reported to FHWA for 1997. In order to compensate for size differences between States, enforcement activity measures are normalized by the one -- admittedly very broad -- estimate than can be derived from government data for total heavy truck mileage on major rural roads within each State, and also by the mileage of these roads. Some States obviously have a larger proportion of their road network within urbanized areas than do others, and some weight-checking is performed within such areas. However, mileage of major -- that is, Interstate and other arterial -- roads outside of urban areas was chosen here as a single normalizing factor. It is typically on such roads that States have the opportunity to detain certain trucks for legally-required static-scale weight determination without creating an unsafe condition for, or grossly delaying, other traffic.

The 1997 data in these tables show some distinct differences between the Study States in the pattern of their enforcement practices and in the extent of enforcement in relation to size of State. For example:

- States' surveillance of truck weights -- insofar as indicated by their reported total of static and WIM screening weighings -- varied by a maximum factor of about four among all but one of the Study States when that total was expressed as a relationship to their major rural road truck traffic. The exception was New York -- one of three Study States that employed no WIM screening at all in 1997 -- where it was vastly lower than in the rest of the group. (Mississippi was highest, closely followed by Georgia.)

- Georgia's citation rate in relation to major rural road truck traffic was the highest, well ahead of the others.

- New York reported a much higher total number of citations in relation to total weighings -- 4.6% -- than did other States. All other Study States showed 1997 citation-to-total-weighing rates under 1%, with Georgia the highest despite its very high volume of WIM screening weighings. However, over 30% of the reported 1997 citations but fewer than 2% of the weighings were generated by the authorities of the two counties located on Long Island and of New York City, rather than by the State Police, which performs weight enforcement in the rest of the State. New York City, which is subject to its own weight limit regime, alone accounted for over a quarter of the reported total of citations, which actually outnumbered City weighings due to their being issued for multiple types of weight violations by the same vehicle, a practice not generally followed by the State Police.

  The ratio of citations to weighings for the New York State Police alone was 3.2%. This ratio being higher than that in other States might be expected given the exclusive use in New York of semi-portable or completely portable scales. The deployment of mobile scales may be easily altered so as to concentrate on sites or areas where there are thought most likely to be actual violations. Their lower throughput capacity encourages the exclusion from weighing of empty trucks, and, especially where completely portable equipment is used, concentration on the most likely potential violators among loaded trucks.

- New York and Georgia (and to a lesser extent, Minnesota) required load adjustments much less frequently than the other Study States in relation to the number of citations issued. Montana, by contrast, required them much more frequently.

- Variation among States' level of surveillance of truck weight was greater when total weighings were expressed as a relationship to major rural road mileage than when expressed as a relationship to truck traffic. Again, New York was by far the lowest, followed by South Dakota, which also reported no WIM screening at all.

Weight-sensitive commodity comparisons

Table 4 compares the Study States in terms of the proportions of all truck tonnage originating at mines, processing operations and wholesale warehouses within their borders that are accounted for by commodity categories encompassing certain bulk materials often considered sensitive to weight limits: field crops, sand/gravel/crushed stone, logs, cement and solid waste. These statistics are taken from the 1992 Census of Transportation (the latest available at the individual State level as of this writing). The Census does not cover import shipments moving directly to destinations in the U.S. -- such as marine containers trucked away from shipside -- and its State-by-State breakdowns of truck-transported freight are only available for very broad commodity groups. Also, while shipments from timber cutting operations are included, shipments of farm crops directly from the field and of garbage/trash from homes and offices are not.

According to these statistics, for example, shipment of crops and livestock from off-farm collecting points (such as grain elevators) is much more important, relatively, in South Dakota than in California, even though California is an important agricultural State. Likewise, the lumber category, which includes pulpwood logs, is much more important in Mississippi than it is in South Dakota. Trucking of non-metallic minerals may be expected to be important in States with large populated areas -- such as both New York and California -- because it includes the ubiquitous sand/gravel/crushed stone used in construction (accounting for 84% of these truck-hauled minerals at the national level). Department of the Interior statistics for 1992 show sales or use by producers of these construction aggregates at least equal to the 1992 Census estimates of trucked non-metallic mineral tonnage in all Study States.

Table 5 provides another method of comparing the Study States in terms of trucking activity, that is, by the proportion of trucks registered in the State that were estimated in the 1997 Census of Transportation to be primarily engaged in carrying raw farm products (including direct-from-field), logs, building materials other than lumber and refuse/scrap (including household). The types of trucks surveyed are not confined to those that might be hauling heavy loads; only those in the pickup-van-sport/utility categories are excluded. However, the sharp differences noted above in the relative importance of agricultural trucking in South Dakota and California, and that of log trucking in South Dakota and Mississippi, also seem to be reflected in these statistics. Extreme contrasts do not appear in the building material or solid waste carriage categories although predominantly rural South Dakota shows a particularly low proportion for the latter.

Table 3 (a) - Comparison of Case Study States on Various Measures of Truck Weight Enforcement Activity for 1997
(Absolute Values)

	California	Georgia	Minnesota	Mississippi	Missouri
Fines					
Fines per 10k GVW violation (from Table 1a)	$1,500	$318	$715	$1,000	$1,000
Total Enforcement Activity					
No. of Static Weighings	12,260,295	1,768,909	701,898	5,684,389	2,756,503
No. of WIM Screenings	4,187,162	11,787,811	950,000	2,569,819	0
No. of Citations	44,777	122,901	3,438	13,900	8,799
No. of Load Shifts or Off-loadings	46,368	7,876	640	21,660	13,239
Structure of Enforcement Activity					
Citations per Static Weighing or WIM Screening	.003	.009	.002	.002	.003
Ratio of Load Shifts or Off-loads to Citations	1.04	0.06	0.19	1.56	1.50
Percent of Static Weighings on Fixed Scales	99.94	77.88	90.07	99.46	99.88
Ratio of WIM Screenings to Static Weighings	0.32	6.66	1.35	0.45	0
Enforcement Activity Compared to Estimated Truck Mileage on Major Rural Roads					
Vmt Per No. of Static Weighings or WIM Screenings	339	304	816	284	1,136
Vmt Per No. of Citations	122,618	33,542	392,256	168,513	355,875
Vmt Per No. of Load Shifts or Off-loadings	118,411	523,408	2,107,148	108,141	236,524
Enforcement Activity Compared to Mileage of Major Rural Roads					
No. of Static Weighings or WIM Screenings Per Mile of Road	1,354.6	1,477.7	155.2	1,309.2	379.8
No. of Citations Per Mile of Road	3.8	13.4	0.3	2.2	1.2
No. of Load Shifts or Off-loadings Per Mile of Road	3.2	0.5	0.02	2.4	1.4

Table 3 (a) - Comparison of Case Study States on Various Measures of Truck Weight Enforcement Activity for 1997
(Absolute Values)

	Montana	New York	South Dakota	Washington	National Average [1]
Fines					
Fines per 10k GVW violation (from Table 1a)	$250	$700	$2,625	$890	$726
Total Enforcement Activity					
No. of Static Weighings	858,158	167,468	592,123	2,362,044	2,079,566
No. of WIM Screenings	20,116	0	0	1,300,000	1,278,133
No. of Citations	1,846	7,757	3,349	11,433	12,469
No. of Load Shifts or Off-loadings	14,703	149	2,109	13,797	10,329
Structure of Enforcement Activity					
Citations per Static Weighing or WIM Screening	.002	.046	.006	.003	.004
Ratio of Load Shifts or Off-loads to Citations	7.96	0.02	0.63	1.21	0.83
Percent of Static Weighings on Fixed Scales	99.39	0	93.84	98.24	98.33
Ratio of WIM Screenings to Static Weighings	0.02	0	0	0.55	0.61
Enforcement Activity Compared to Estimated Truck Mileage on Major Rural Roads					
Vmt Per No. of Static Weighings or WIM Screenings	908	13,458	1,161	342	1,105
Vmt Per No. of Citations	432,161	290,543	205,235	109,436	153,601
Vmt Per No. of Load Shifts or Off-loadings	54,259	15,125,779	325,904	90,685	185,425
Enforcement Activity Compared to Mileage of Major Rural Roads					
No. of Static Weighings or WIM Screenings Per Mile of Road	130.2	24.2	91.0	802.7	648.9
No. of Citations Per Mile of Road	0.3	1.1	0.5	2.5	2.4
No. of Load Shifts or Off-loadings Per Mile of Road	1.7	0.02	0.3	2.7	1.4

Sources:

Enforcement activity - Federal Highway Administration records
(2) Vehicle and road miles - Federal Highway Administration, Highway Statistics 1997, (FHWA-PL-98-020).

Definitions:

"Major" rural roads defined as the functional classes Rural Interstate, Rural Other Principal

Arterial, and Rural Minor Arterial. Total length of such roads taken from Table HM-20.

Truck vehicle-miles on major rural roads defined as those estimated for the class of "single-unit 2-axle 6-tire or more and combination trucks." Calculated as the product of total VMT for each functional class of road included above and the percentage of VMT estimated for that class to be accounted for by trucks (Tables VM-2 and VM-4).

Notes:

[1] Fines and total enforcement activity are averages over 52 jurisdictions individually (includes DC and Puerto Rico). All other values are for the US as a whole.

Table 3 (b) - Comparison of Case Study States on Various Measures of Truck Weight Enforcement Activity for 1997
(Rank)

Note: Figures in parentheses give rank among the nine States.

	California	Georgia	Minnesota	Mississippi	Missouri
Fines					
Fines per 10k GVW violation (from Table 1a)	5 (2)	42(8)	21 (6)	11(3)	12(4)
Structure of Enforcement Activity					
Citations per Static Weighing or WIM Screening	36(6)	16 (2)	40(8)	45 (9)	32 (4)
Ratio of Load Shifts or Off-loads to Citations	17 (5)	41 (8)	34 (7)	11 (2)	12 (3)
Percent of Static Weighings on Fixed Scales	2 (1)	40 (8)	35 (7)	15 (3)	5 (2)
Ratio of WIM Screenings to Static Weighings	27 (5)	3 (1)	13 (2)	22 (4)	42 (7)
Enforcement Activity Compared to Estimated Truck Mileage on Major Rural Roads					
Vmt Per No. of Static Weighings or WIM Screenings	12 (3)	9 (2)	28 (5)	6 (1)	32 (7)
Vmt Per No. of Citations	13 (3)	5 (1)	37 (8)	19 (4)	32 (7)
Vmt Per No. of Load Shifts or Off-loadings	18 (4)	34 (7)	44 (8)	17 (3)	26 (5)
Enforcement Activity Compared to Mileage of Major Rural Roads					
No. of Static Weighings or WIM Screenings Per Mile of Road	8 (2)	6 (1)	31 (6)	9 (3)	25 (5)
No. of Citations Per Mile of Road	9 (2)	2 (1)	43 (8)	16 (4)	23 (5)
No. of Load Shifts or Off-loadings Per Mile of Road	6(1)	24(6)	37(9))	8(3)	11(5)

Table 3 (b) - Comparison of Case Study States on Various Measures of Truck Weight Enforcement Activity for 1997
(Rank)

Note: Figures in parentheses give rank among the nine States.

	Montana	New York	South Dakota	Washington
Fines				
Fines per 10k GVW violation (from Table 1a)	43 (9)	24 (7)	1 (1)	16(5)
Structure of Enforcement Activity				
Citations per Static Weighing or WIM Screening	39(7)	7 (1)	23(3)	33 (5)
Ratio of Load Shifts or Off-loads to Citations	4 (1)	45 (9)	25 (6)	15 (4)
Percent of Static Weighings on Fixed Scales	20 (4)	50 (9)	33 (6)	26 (5)
Ratio of WIM Screenings to Static Weighings	31 (6)	46 (8)	52 (9)	21 (3)
Enforcement Activity Compared to Estimated Truck Mileage on Major Rural Roads				
Vmt Per No. of Static Weighings or WIM Screenings	30 (6)	45 (9)	35 (8)	12 (4)
Vmt Per No. of Citations	44 (9)	31 (6)	22 (5)	10 (2)
Vmt Per No. of Load Shifts or Off-loadings	12 (1)	51 (9)	31 (6)	15 (2)
Enforcement Activity Compared to Mileage of Major Rural Roads				
No. of Static Weighings or WIM Screenings Per Mile of Road	33 (7)	45 (9)	38 (8)	18 (4)
No. of Citations Per Mile of Road	47 (9)	27 (6)	38 (7)	14 (3)
No. of Load Shifts or Off-loadings Per Mile of Road	9(4)	36(8)	26(7)	7(2)

Sources: Same as Table 3 (a).

Definitions:

"Rank" refers to position in the standard FHWA listing of enforcement activity in the 50 States plus D.C. and Puerto Rico. Note that since D.C. has no rural roads, and no VMT by vehicle class were reported for Oklahoma and Puerto Rico, the highest meaningful rank among all States on a VMT basis would be 4. Also note that VMT rankings are higher the lower the number of VMT per enforcement activity.

Other definitions same as Table 3 (a).

Table 4 Proportion Accounted for by Selected Commodity Groups (2-digit STCC)
of all Truck Tons Originated in Study States

Commodity	California	Georgia	Minnesota	Mississippi	Missouri	Montana	New York	South Dakota	Washington	US
01 Farm products	4%	1%	15%	3%	6%	15%	1%	35%	4%	5%
14 Nonmetallic minerals	25%	23%	20%	11%	37%	6%	25%	20%	31%	27%
24 Lumber or wood	6%	21%	5%	42%	3%	45%	2%	6%	30%	10%
32 Clay, concrete,	15%	16%	12%	8%	19%	10%	15%	11%	7%	3%
40 Waste or scrap	2%	1%	2%	1%	0%[1]	1%	3%	1%	1%	2%
Total	52%	62%	54%	65%	65%	77%	46%	73%	73%	47%

Source: U.S. Bureau of the Census: 1992 Census of Transportation, Commodity Flow Survey

Definitions:

Farm products include field crops, fresh fruit and vegetables, livestock, and poultry.
(Movements directly from the field are excluded.)

Nonmetallic minerals includes quarry stone, crushed stone, sand and gravel, clay, ceramic or refractory minerals, and chemical or fertilizer
minerals.

Lumber or wood products include logs, piling, posts, pulpwood, wood chips, sawmill products, millwork, plywood, and wooden containers.
(Movements from timber cutting operations are included.)

Clay, concrete, glass, or stone products includes flat glass and glassware, hydraulic cement, structural clay products, pottery, concrete, gypsum or plaster products, cut stone, abrasives and asbestos products.

Waste or scrap is primarily solid but includes some liquid chemical waste.
(Residential/office/store trash pickup is excluded.)

Notes: [1] While the actual value is greater than zero, the data do not meet Census Bureau publication standards due to high sampling variability.

Table 5 Proportion of Trucks Registered in Study States:
Selected Categories of Primary Product Carried

Product	California	Georgia	Minnesota	Mississippi	Missouri	Montana	New York	South Dakota	Washington	US
Farm products	7%	7%	24%	6%	16%	29%	8%	43%	10%	12%
Logs and other forest	2%	3%	2%	7%	2%	5%	2%	1%	4%	2%
Building materials	14%	14%	14%	11%	14%	12%	18%	11%	16%	13%
Scrap, refuse or	4%	3%	3%	3%	3%	2%	4%	1%	4%	3%
Total	27%	27%	43%	27%	35%	48%	32%	56%	34%	30%

Source: U.S. Bureau of the Census: 1997 Census of Transportation, Truck Inventory and Use Survey - individual State data
U.S. Bureau of the Census: 1992 Census of Transportation, Truck Inventory and Use Survey - U.S. total data, latest available

Definitions:

Farm products includes grain, crops, eggs, flowers, nursery stock, raw milk, raw tobacco, etc.
Logs and forest products exclude cut lumber and fabricated wood products.
Building materials includes gravel, sand, concrete, flat glass, etc., but excludes cut lumber.
Scrap, refuse or garbage includes scrap (not for recycling), garbage, trash and septic tank waste.

Trucks include all those other than pickups, vans, utilities, and station wagons.

(5) Discussion with State representatives: Summary observations

Telephone interviews were conducted with officials responsible for truck weight limit enforcement in each of the Study States. Individual State summaries of the interviews are found in Appendix (2). This section summarizes the State responses.

How State enforcement authorities view the effectiveness of penalizing violators

The effectiveness of violator penalization in positively influencing compliance behavior within individual States -- not easily evaluated with available information -- is open to question and not always deemed to be adequate.

Of the discussions held with nine States -- diversified from a weight enforcement standpoint -- in only one (MT) did a representative express the firm opinion that penalization of weight limit violators was having a significant positive impact on general trucker compliance behavior within the State, given its current surveillance and adjudication practices. Another State's (NY) establishment in 1986 of a graduated penalty schedule was believed to have been followed by the construction aggregate hauling industry, at least, shifting from what appeared to be a State of virtually universal non-compliance up to an informally-estimated 90% compliance rate. However, this favorable change in local bulk trucking compliance must also be attributed in part to the concurrent establishment of a general annual permit system allowing axle, axle spacing and gross vehicle weights significantly above federal Interstate Highway standard limits. Use of such permits has since become general practice in cement and construction aggregate hauling. In a third State (MN), it was thought that general compliance behavior had improved over the long period since introduction of their well-known "relevant evidence" enforcement system, during which enforcement surveillance had also been increased and there had been somewhat more rigorous prosecution of violations in court.

These views contrast, in varying degree, with those offered in four other States. In one (WA), FHWA was told that a recent fine increase had not been accompanied by discernable improvement in general compliance. In another (SD), a very recent administration campaign to raise already-high fines and legislate greater enforcement powers -- led personally by the governor -- clearly implied past ineffectiveness of violator penalization to generate an acceptable level of compliance. This was laid to general inattention on the part of truckers to weight requirements combined with some apparent acceptance of fines as an expected cost of doing business. A third State's (MO) enforcement effort was thought to have little effect on compliance in certain sectors of short-haul, secondary-road trucking, principally because of an apprehension rate not high enough to eliminate temptation on the part of some operators to take a chance on realizing the potential additional earnings available from an overload. A somewhat similar observation was offered by a fourth State (GA), where the civil penalty being employed for overweight offenses was believed to be less effective in the local bulk than in the long-distance general trucking sector, with the possibility that in the former some intentional overloading was

occurring.

Representatives of the two other States (CA and MS) did not have what they considered to be an adequate basis for evaluating the impact of the enforcement/penalization system on compliance behavior. In one of them (CA), however, representatives allowed the assumption that their State's extensive network of permanent weight/safety inspection stations -- many of which are kept open continuously -- must be deterring some potential violators.

Similarly, the overall level of compliance within a State at any given time is difficult to estimate with confidence.

It is generally accepted that the rates at which overloads are detected at fixed-site weigh stations -- especially if located only on major through routes and/or open at certain times of the day -- are inadequate as a measure of overall weight limit compliance within a State in that they would typically overstate it. On the other hand, detection rates from truck weighings carried out by mobile enforcement units may will understate compliance because of the units' targeting trucks with high violation potential. Recent citation-to-weighing rates that were volunteered by five Study States for their Statewide-deployed portable scales varied from 3% to over 58%, such vast differences presumably being due both to differences in actual violation rates in the deployment areas chosen and in the extent to which only likely violators were being selected for weighing. A representative of a sixth State (MO) ventured the conjecture that on secondary roads the compliance rate among trucks under load with two problem commodities, grain and gravel, might be in the 10-20% range.

In two cases, representatives volunteered informal, unofficial estimates of overall weight limit compliance within the whole State, one of 85%, based on general observation (MT), and another -- counting effective compliance by trucks running empty as well as loaded -- of 94-95% (CA), based on experience in analyzing for enforcement purposes data output from weigh-in-motion installations primarily used for highway planning.

However, level of compliance is typically not enough of a current public policy issue within individual States to reject an assumption of its effective acceptability.

In only one of the Study States, South Dakota, had there been recent "official" recognition of an unsatisfactory level of compliance, in the form of the governor's deliberately making increased weight penalties/enforcement an issue in connection with proposing increased taxes to finance the State share of federally-aided road improvements. It of course cannot be expected that truck weight compliance would ever be of the same order of importance to the general public as education, health, violent crime, etc. However, it is still noteworthy that in no other case did State representatives foresee substantial intensification of the weight enforcement regime or political pressure for such. In two cases (WA and NY), State Departments of Transportation had recently prepared legislative proposals for increased fines. Only one of these (WA) -- which was justified on the basis of the existing schedule being an insufficient economic deterrent to

overloading -- had been considered and accepted by the legislature.

The conventional view of local bulk trucking weight compliance being significantly less controllable than long-distance by existing enforcement efforts is supported by the observations of many State officials.

In seven of the nine Study States, representatives made reference to some form of local bulk trucking -- field crops, logs, trash, sand/gravel, cement, etc. -- either as representing compliance problems or as having noticeably lower compliance than long-distance or through-route trucking. Only in South Dakota, currently engaged in a campaign to raise weight limit awareness among all operators in the State, was it specifically observed that no particular trucking sector could be necessarily characterized as exhibiting poor compliance although it was acknowledged that violations were commonly taking place on local roads.

One State representative (WA) observed that better compliance on the Interstates must be to some extent the result of cumulative enforcement efforts of neighboring States and another (MO) that the good compliance on those highways must be stimulated by long-distance truckers' particular sensitivity to the time delay resulting from a detected overload. A third (GA) offered both reasons for typically satisfactory compliance by long-distance operators.

Characteristics of enforcement regimes that may influence penalty effectiveness

It was not intended for this report to attempt to "model" in a quantitative sense the effect on truck weight compliance of penalty severity and other enforcement or trucking environment variables that might be relevant. As has been noted already, compliance measurement adequate for this purpose does not exist. However, on the basis of the discussions with State representatives and enforcement data reported by States to FHWA, certain observations about these variables may be made.

The conventional view that fine severity alone is not sufficient for compelling satisfactory compliance appears supported by Study State experience.

In one State among the Study group, South Dakota, the administration had recently campaigned for legal tools permitting stricter enforcement, with the implication that past enforcement had not been sufficiently effective in compelling compliance. South Dakota already had high basic fines relative not only to the Study States but to all States (Table 1a). Both South Dakota's relatively low rate of weighings relative to rural road mileage (Table 3a) and the possibility evoked in discussion with State representatives of significant fine reduction in court proceedings may be related to its perceived difficulties. Insufficient State capability to effect adequate surveillance was brought up by the administration in its campaign for new legislation, which, as passed, also contains provisions intended to discourage excessive reduction of statutory fines by county courts.

Enforcement officials' informal observations about compliance are of course not the same as quantitative data and must necessarily reflect to some extent the public policy outlook not only of the individuals concerned but also of their State administrations. It is interesting to note, however, the view of the principal representative of South Dakota's neighbor Montana that its program was currently having a significant positive effect on compliance. This contrasts with the emphasis in discussion with South Dakota on the significant effect expected in the future from the State's current trucker awareness and roving enforcement patrol enforcement campaigns. The fine schedule in Montana -- a State where forest and farm products are also important but with an apparently higher proportion of timber originations -- was lower than South Dakota's even before the latter's recent increases.

It is also interesting to note in regard to fine severity Georgia's high weighing rate (particularly by WIM) and low basic fines compared to other Study States. Georgia representatives offered the specific observation that their State relies on intensive enforcement to offset low fines. Table 3a shows its citation rate to be much higher than other Study States relative to rural road mileage and estimated truck traffic on these roads.

WIM installations, which accompany electronic inspection pre-clearance systems, are at present more significant for the overall effectiveness of roadside weight surveillance than the systems themselves.

States participating in pre-clearance have installed WIM equipment in parallel with the equipment to read and react to information in truck transponders. However, it is the practice of applying WIM to all, not just transponder-equipped, trucks passing a given weigh station -- such as in Georgia, Washington and Missouri -- that is significant for the surveillance of main-route truck traffic flows. Representatives of Missouri specifically noted the suppression of truck waiting lines at two stations where that State had recently installed WIM.

In terms of application to the largest numbers of trucks, WIM is of course most economical on major through routes, where current motor carrier safety and tax documentation, as well as weight checks are typically performed in volume. However, as already noted, the most severe compliance problems are commonly believed to be on secondary roads, where a single State's enforcement efforts benefit much less from the cumulative impact of neighbor State activities and local bulk trucking is more prevalent. In what may be a promising development for positively affecting compliance on such roads, some States are analyzing data from their already-installed highway-planning (non-enforcement) WIM equipment in order to target promising areas for roving enforcement patrols and points for fixed-site inspection that are not operated on regular schedules but rather on a random or an as-needed basis. The desirability of operating such checkpoints was specifically mentioned in discussion with Washington and Mississippi, with Washington noting its plans to provide mobile inspectors with fixed sites pre-equipped with scale platform pedestals, which permit application of a higher-volume weighing operation to the traffic flow at these points than if semi-permanent scales have to be brought in and set up.

Adequacy of fine imposition in criminal courts is still an issue within enforcement communities, including those in the three Study States whose representatives expressed dissatisfaction with enforcement effectiveness and that employed a criminal penalty system.

Among the Study States, there were two instances of specific statutory restriction on judges' power to reduce fines during criminal court proceedings. The cited defendant in these States is normally the driver, in only rare cases the registered owner, although the registrant bears ultimate legal liability in one of the States and may be held liable if cited in the other.

In discussions with two other Study States, where the penalization system consisted of civil assessments on vehicle registrants (who may be carriers or shipper/carriers), downward adjustment of penalties did not arise as representing a major impediment to enforcement effectiveness. This is perhaps not surprising in that administrative adjudication of these penalties is by executive-branch governmental units with Statewide jurisdiction, just as are the State enforcement units with which the discussions were held. It should be noted, however, that one of these States, Georgia, did not consider that its imposition of (relatively low) penalties on vehicle owners had produced a satisfactory overall level of compliance in local bulk trucking.

Stated policies vary on the circumstances under which cited violators are allowed to move overweight vehicles before necessary load shift or off-load -- the cost of which may be considered as a "supplementary penalty" for detected violation -- with excess-weight tolerance thresholds common.

One Study State, for example, allowed a 6,000 lb. GVW tolerance before mandatory pre-movement unloading, another a 10% tolerance before any required adjustment and a third a 7% tolerance with no citation and issuance of a $10 permit to move to the nearest appropriate facility for off-loading. A fourth State imposed an absolute pre-movement load correction requirement only on vehicles inbound from outside the State, and a fifth left the whole matter to the discretion of the inspecting officer. It may be noted that one Study State that did not during discussion acknowledge any load adjustment tolerances was also one where particular pessimism was expressed in regard to the effectiveness of current penalties for compelling compliance by local bulk trucking. That State, however, offers violators detected off Interstate highways an exemption from citation if they can correct the violation on the spot by load shifting.

It is obviously more difficult for State authorities to insist on load shifting/off-loading when a violation is detected on a secondary road than at a spacious, major-truck-route inspection station, where load adjustment can be easily monitored, special equipment be brought in if necessary and the process take place safely out of the stream of traffic. California noted in discussion the availability of such stations in their State. On the other hand, ordinary roadsides in South Dakota were reported to typically offer sufficient space and visibility so that without major safety concerns the State could switch, recently, from the issuance to detected violators of temporary, one-way overweight movement permits to a policy of requiring load correction before movement.

(6) Conclusions

Discussions held by FHWA with highway weight limit enforcement personnel from a diverse group of States confirm that the basic question posed by Section 1213(h) -- how effective in compelling compliance is State penalization of overweight trucking? -- cannot be answered definitively at present given a lack of systematic data on overall compliance. Lack of systematic data on disposition of those violator citations that are processed in States' criminal court systems even prevents reliable evaluation of the extent to which penalties are actually imposed. However, the discussions strongly suggest that there are sectors of trucking activity within States where the enforcement authorities consider their present systems of detecting and penalizing violators as far less effective than other segments of the enforcement program.

Weight limits are primarily intended to yield benefits in controlling the rate at which highway infrastructure deteriorates with heavy vehicle usage, but at the same time have the potential to provide safety benefits as well. Although the impacts of heavy truck traffic on passenger automobile travelers and, especially, on neighborhood environments have become issues in the U.S., it is the mere presence of trucks, rather than the weight limit compliance of any specific truck that is generating the public's interest. Unlike truck size, the public is largely unaware of truck weights, inasmuch as an empty truck traveling on the highway more or less looks and behaves the same as a heavily overloaded one. Nonetheless, we can assume that the public strongly supports the elimination of overloaded trucks from our highways, especially when informed that they cause premature deterioration of pavements and bridges which result in higher public expenses and highway taxes. Also, that trucks loaded beyond the weights they were designed to carry are less safe and increase the chances of highway crashes, injuries and fatalities. The public would express greater concern about illegally overloaded trucks if more of an issue were made of the added cost of infrastructure maintenance and potential safety problems caused by these vehicles. While these items are not easily quantified, they are necessary to attract increased public attention. Legislative recognition of compliance inadequacy and support for rigorous weight limit enforcement may be most forthcoming where a prominent elected official links them with the issue of State highway revenue need, as the governor of South Dakota -- a participating Study State -- has done recently.

As is consistent with conventional expectations, the enforcement authorities participating in the discussions underlying this report typically view secondary roads and local bulk trucking as the sectors where their State's violator detection/penalization system has had an insufficient effect. Local trucking is less likely than interstate/interregional trucking to be exposed to surveillance by high-volume weigh stations set up at fixed sites to intercept a State's major truck traffic flows (often for purposes of simultaneously carrying out safety and tax/registration document checks). Also, to the extent that the rate of citation for serious overweights is greater for local truckers when subjected to enforcement, they presumably benefit more from any significant reduction of overweight fines during adjudication by local criminal courts -- still cited as an enforcement problem by some authorities.

The long-standing Minnesota system in which shippers/receivers weighing truck cargo are required to retain records from which the State may later detect and penalize vehicle owners for gross weight limit violations, represents one effort to establish a higher degree of surveillance that particularly affects local bulk trucking. However, there appears to be potential legislative resistance in other States to the establishment of a system that relies on warrantless search of possibly incriminating records, even where -- as in Minnesota -- only civil penalties are applied to violations detected after their commission. Also, while representatives of the two participating Study States employing all-civil penalty systems did not view penalty reduction by adjudicatory bodies as a particular barrier to effective enforcement, neither could declare local bulk trucking compliance to be generally under control.

To the extent that some weight limit violation by local truckers of dense, heavy-loading bulk commodities results from conscious or unconscious decisions to "take a chance" on having to pay a penalty, States have three major policy options for improving compliance. FHWA's discussions with the States participating in this Study provided at least one distinct illustration of each such option.

First, Georgia described itself as relying on extensive surveillance to offset the temptation to potential violators offered by its relatively low fines, which are civil penalties assessed against vehicle owners. Secondly, South Dakota called attention to its administration's recent campaign in the legislature to raise already-high fines imposed on drivers -- and establish a weight record-keeping requirement to identify carrier/shipper violators -- during which the State Patrol characterized its surveillance resources as inadequate to assure satisfactory compliance on secondary roads. New York State's report of drastic improvement in compliance among haulers of bulk construction material after it established a system of generally-available annual permits allowing substantial weight increases represents a third option, that of "raising the bar." This presumably concentrates enforcement effort on loads that are much higher than would be legal under normal limits.. As illustrated in the reports of the discussions with State officials [Appendix (2)], many -- although not all -- other States also grant divisible-load overweight permits and various types of weight limit exceptions for agricultural and other commodities of local economic importance.

An approach to improving compliance in local bulk trucking that is already employed in some jurisdictions and appears worthy of further expansion is the analysis of "non-enforcement" weigh-in-motion data for identifying times and sites for most efficient deployment of specialized mobile weight enforcement personnel. Such deployment -- either on a temporary fixed point or a "roving patrol" basis -- is particularly appropriate for secondary roads where permanent weigh stations would be costly relative to the potential traffic volume, but where compliance problems can and do develop.

State Transportation Departments already collect and provide to FHWA sample truck weight data from weigh-in-motion equipment placed at various points within their jurisdictions. As noted in Section (1), the purpose of this surveillance is highway requirements planning, in

particular the detection of trends in the number of equivalent standard axle loads of pavement wear being imposed on different categories of roads by the truck traffic volume passing over them. At the Federal level, the resulting data is used as input for periodic Federal Highway Cost Allocation Studies. A specialized database management system (Vehicle Travel Information System) is available to States from FWHA for analysis of WIM output, including display of the proportion of passing vehicles, by axle configuration type, that exceed user-specified single axle, tandem axle, gross vehicle weight and axle bridge formula limits.

At present, with the U.S. heavy truck fleet not universally equipped for automated wayside capture of all official vehicle documentation data, analysis of WIM output for evaluating the extent of over-legal-limit trucking at a particular point necessarily involves some estimation of the extent to which heavier loads are being registered at that point by vehicles holding State overweight permits. It is perhaps not surprising that California, one of three participating Study States specifically reporting use of WIM data for this purpose, is also a State that does not issue overweight permits for divisible loads. However, when the purpose of such analysis is allocation within a State of available enforcement resources, approximate estimation of the effect of permits on proportion of overweights registered should be adequate. It is important that those WIM installations intended for highway planning purposes not be employed -- as are "enforcement" WIMs -- in screening individual vehicles for immediate weight checks by enforcement officers. Otherwise, the behavior of truckers passing them might be altered and their output become both less representative of the true compliance situation and less valuable as sample data for highway planning.

FHWA has long recognized that the data submitted by the States as part of the annual certification of enforcement represent direct measures of enforcement activity, rather than any attempt to measure effectiveness. In part due to an agency desire to obtain better information with respect to the question of effectiveness, FHWA in 1993 initiated a rulemaking procedure [an Advance Notice of Proposed Rulemaking (ANPRM), 58 FR 65830, December 16, 1993] which sought to see what improvements might be made to existing weight enforcement procedures, methodologies and the current certification reporting regulation contained in 23 CFR 657.

As FHWA completed its initial review of the comments received in response to the ANPRM, then Federal Highway Administrator Rodney Slater, in June 1994, committed the FHWA to a comprehensive review of all aspects of the truck size and weight issue. Since the agency was then committed to a comprehensive review of the program, it decided to table the rulemaking until the comprehensive study could evaluate existing issues, including size and weight enforcement by States and the annual certification process. Although the size and weight study did ask questions about State enforcement programs, only a few comments were received on the topic. After consideration, the FHWA determined that public comments on the enforcement discussion in the size and weight study did not eliminate the need for a rulemaking concerning the enforcement of size and weight rules. With the comprehensive study nearing completion, therefore, the FHWA is resuming its work to revisit the certification process and determine if a

rulemaking effort on this topic should be continued.

At least three of the topics on which comment was sought in the 1993 notice are related to the objective of this study. The three were 1) potential changes to the information collection system to better identify the location and degree of illegally overweight trucking, 2) the extent to which overloaded trucks operating under special permit are an important component of the overweight problem, and 3) the relationship between permit fee and overweight fine structures and the cost of the additional pavement use occasioned by these activities. These topics will again be included in the resumption of the rulemaking process.

Appendix (1): Transportation Equity Act for the 21st Century (P.L. 105-178); Section 1213(h), Vehicle Weight Enforcement

STUDY -- The Secretary shall conduct a study of State laws (including regulations) relating to penalties for violation of State commercial motor vehicle weight laws.

PURPOSE -- The purpose of the study shall be to determine the effectiveness of State penalties as a deterrent to illegally overweight trucking operations. The study shall evaluate fine structures, innovative roadside enforcement techniques, and a State's ability to penalize shippers and carriers as well as drivers and shall examine the effectiveness of administrative and judicial procedures utilized to enforce vehicle weight laws.

REPORT -- Not later than 2 years after the date of enactment of the Act, the Secretary shall transmit to Congress a report on the results of the study with any legislative recommendations of the Secretary.

Appendix (2): Discussion with State representatives: Results by State

This section summarizes, separately, the telephone discussions that were held with officials responsible for truck weight limit enforcement in each of the Study States.

First reported for each State are these officials' general views -- in consolidated form where more than one person was involved -- as to the effectiveness of their State's imposition of overweight penalties in compelling compliance with its weight limits, given its enforcement system and its commercial trucking environment. This is divided into the separate questions of whether compliance in the State is, effectively, considered acceptable and whether the penalization system is having a significant positive effect on degree of compliance. Then follow notes, as bulleted below, on certain characteristics of the State's weight limit system that may be relevant to the effectiveness of penalties in achieving satisfactory compliance, including the three aspects specified in TEA-21 section 1213(h): roadside enforcement methods, penalization of shippers/carriers, and adjudication of penalties.

- The State's rank among the nine Study States in the severity of its basic 2,000 lb. and 10,000 lb. gross vehicle overweight fines and also in its 1997 reported truck weighings in relation to its estimated truck vehicle-mileage on major rural roads (from Tables 1B and 3B);

- Its stated load-shift/off-load policy for overweight violators detected by roadside inspection;

- Any distinctive aspects of its roadside weight enforcement practices;

- Any mechanisms for penalization of carriers and/or shippers (as distinct from drivers);

- Any basis for evaluating the effectiveness of the adjudicatory process in imposing scheduled fines on properly-cited violators;

- Any substantial margin by which the State's weight limits exceed the generally-applicable federal Interstate standard, any significant provision of overweight permits or special tolerances for divisible loads, and the State's status with respect to allowing longer combination vehicles (LCVs). LCVs are defined in 23 CFR 658 as any combination of a truck tractor and two or more trailers or semitrailers which operates on the Interstate System at a gross vehicle weight greater than 80,000 pounds.

The organizational responsibility of the State personnel with whom discussions were conducted is also shown for each State. These include the person to whom the FHWA addressed its formal request for participation, or that person's delegate, plus any others to whom FHWA was referred during the course of the discussion for additional information and observations.

California

Discussions were conducted with representatives of the Highway Patrol (CHP) Enforcement Services (truck weight enforcement), and the Department of Transportation (CALTRANS), truck weigh-in-motion data program.

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Opinions and observations of State representatives

Is the level of truck weight limit compliance considered satisfactory?
Truck weight compliance is not a major issue in California at the present time. This may be interpreted as implicit acceptance of the current overall compliance level as satisfactory. However, weight compliance problems do arise in the often-cited bulk-commodity sectors of local trucking such as gravel, cement and trash.

1998 weighings on portable scales -- miniscule in number compared to weighings at California's numerous permanent weigh stations but typically employed in apparent problem areas and applied only to vehicles appearing very likely to be overweight -- yielded a 58% citation rate. Experience with analysis for mobile weight inspector deployment purposes of output from the Statewide network of highway-planning WIM installations suggests that general compliance can vary widely by site, with overload rates at those remote from the major truck-route inspection stations or particularly affected by logging, farming, construction, etc. likely to be significantly higher. While the percentage of overloaded trucks in such problem areas could run as high as 25%, 5-6% might be a plausible estimate for the overall, Statewide rate (as a percentage of all cargo-carrying trucks on the road, loaded and empty).

Does the overweight penalization system significantly affect compliance behavior?
There has been little opportunity in recent years to observe the effect of change in overweight fines/enforcement on truck weight compliance behavior within the State, but it is reasonable to believe that given California's "blanket" network of safety inspection/weigh stations -- many of which are kept open continuously -- overloading by some operators is being deterred.

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Fine severity and surveillance intensity
California ranked sixth among Study States for severity of its basic 2000 lb. GVW fine but second for 10,000 lb. (Local judicial districts in which overweight citation may be contested apply differing administrative fees, which may be as much as 170% of the fine.) The State ranked third for reported weighings per estimated truck-mile on major rural roads (1997 data).

Load-shift/off-load policy
The stated policy is to require correction of detected overloads before vehicle is moved. (The Highway Patrol describes California's permanent truck safety inspection/weighing stations on the Interstate highways as having sufficient space for this to be done safely.)

Distinctive aspects of roadside enforcement practice
Electronic truck inspection pre-clearance (PrePass program) and mainline, high-speed WIM are being expanded in parallel and are already installed at the State's 22 combined weighing and safety inspection stations located on major truck routes. Stated policy is to accord PrePass system participation to truckers as a reward for maintaining a satisfactory safety record; members do include certain operators in the overweight-sensitive construction material sector that have repetitive short-haul movements past inspection stations. However, all other loaded trucks are weight-checked either by passing over static scales or, at certain stations, off-mainline low-speed WIM's. In order to be aware of the times and locations of truck traffic flows with high overload rates, District Highway Patrol commanders planning weight-check operations may call for special analyses by CALTRANS of output from its highway-data WIM installations. Overload rate estimation from this data is not complicated as in other States by permit-authorized legal overweights on divisible loads, which California does not allow.

Penalization of carriers or shippers
On a standard State form, the owner or other person not the driver may formally acknowledge responsibility for any registration, safety or weight violation on a truck, to be adjudicated under the same criminal system as the citation that would otherwise be issued against the driver. The effectiveness of this system in terms of encouraging compliance is hard to evaluate, but there is significant usage, especially among local haulers with repetitive movements on the same itinerary.

Adjudication of fines
While most cited violators mail in their overweight fines, it is thought that where higher-fine cases are taken to court it is just as likely as not that the fine will be reduced by judicial action. (As an alternative to personal appearance, California provides for court appeal by a "written declaration" system that may be used for overweight as well as other traffic offenses.)

Above-federal-standard weight limits and divisible-load overweight permits
Divisible load overweight permits are not issued. Marine containers -- typically considered as non-divisible by States that accord them special treatment -- are allowed higher weights within harbor areas only. California does not allow LCVs.

Georgia

Discussions were conducted with representatives of the State Department of Transportation (truck weight permits and enforcement).

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Opinions and observations of State representatives

Is the level of truck weight limit compliance considered satisfactory?
Truck weight compliance is not a Statewide issue at the present time, and no significant changes in State practice are foreseeable as being stimulated by public dissatisfaction with the level of compliance. In general, the present weight limit system -- which relies on extensive enforcement to offset relatively low fines -- appears to be accepted and considered effective. Violation rates are typically lower for long-distance trucking -- and traffic in general that is checked at permanent weigh stations on major routes -- than they are for local trucking, especially of logs, sand/gravel and ready-mix cement.

Does the overweight penalization system significantly affect compliance behavior?
The typically satisfactory compliance behavior of long-distance operators is probably due in large part to the cumulative effect of other States' enforcement and the deterrent effect of potential road delay in case of detected violation in Georgia. The State's system of penalizing violators appears less effective in compelling compliance in local bulk trucking, possibly to some extent because violations do not represent criminal offenses, and the occurrence of some intentional overloading is suggested. Mobile weight enforcement units targeting this trucking typically detect axle spacing violations. (Neither the availability of on-board scales nor potential refusal by mills of illegally-heavy log loads seems to be having a significant effect on the level of compliance by log truck operators, who complain of the difficulty of ascertaining weights at field loading locations, especially by enterprises too small to afford their own portable scale equipment.) Compliance by asphalt trucks delivering to public construction projects is noticeably better than in other local bulk trucking, but they are subject in Georgia to supplemental enforcement in the form of a special requirement to carry a certified scale ticket.

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Fine severity and surveillance intensity
Georgia ranked ninth among Study States for severity of its basic 2,000 lb. GVW fine and eighth for 10,000 lb. The State ranked second for reported weighings per estimated truck-mile on major rural roads (1997 data).

Load shift/off-load policy
The stated policy is to require load adjustment before moving vehicle if illegal excess weight is over certain limits (6,000 lb. for GVW).

Distinctive aspects of roadside enforcement practice
All the permanent weigh stations operated by the State are equipped with off-mainline 35 mph WIM's, which screen all vehicles for the static scales except the small number that now participate in the (Norpass) electronic pre-clearance program, which are called into the station on a sample basis. It is intended eventually to incorporate prior weight-check information into the data transmittable electronically by these vehicles. Also, two stations have been equipped to electronically access State records on past weight violations.

Penalization of carriers or shippers
Overweight citations are all civil and are issued to the vehicle's registered owner.

Adjudication of fines
The adjudication of penalties may be considered effective in the sense that there are relatively few requests for the hearing that is provided before an administrative law judge (from the State's Board of Administrative Hearings). However, collection is less effective, particularly since State law only provides for the impoundment of individual vehicles on which overweight fines have not been paid. The equipping of two weigh stations to access fine delinquency records and thus quickly identify vehicles liable to impoundment represents an attempt to improve collection performance and has proved useful in detecting delinquent-fine vehicles of which the registered owner was a leasing company and not the operator at the time of the offense.

Above-federal-standard weight limits and divisible-load permits
A tandem axle weight of 40,680 lb. is allowed tractor semi-trailer combinations on State (not Interstate) highways. 40,680 lb. is also the general Interstate tandem limit when gross vehicle weight is not over 73,280 lb. Off the Interstates, adjacent-county movements of forest products, feed, live poultry or granite benefit are allowed an exemption from weight limits as long as single axles do not exceed 23,000 lb. and gross vehicle weight 80,000 lb. Trip permits, valid on Interstates, are available for marine containers allowing up to 100,000 lb. GVW on 5 axles. Also, seasonal permits allowing up to 65,000 GVW without axle limits are offered for certain agricultural products, of which cotton is the principal one involving weight-limited loads. Georgia does not allow LCVs.

Minnesota

Discussions were conducted with representatives of the State Patrol (commercial vehicle enforcement), and the State Department of Transportation (truck weight permits).

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Opinions and observations of State representatives

Is the level of truck weight compliance considered satisfactory?
There are no current proposals for major change in Minnesota's overweight penalty system and thus no reason to believe that the state of compliance produced by that system is not generally viewed as satisfactory.

Does the overweight penalization system significantly affect compliance behavior?
Although there is no systematic compliance data on which to base a judgement, it is believed that compliance has improved during the period since the 1981 inception of Minnesota's unique system of civil penalties based on the "relevant evidence" of overweight truck shipment provided by shipper/receiver weight and liquid volume measurement records. This improvement is variously ascribed to the effects of gradually increasing awareness among affected parties of the relevant evidence system, more comprehensive on-road surveillance, especially on weigh station bypass routes, and cooperation between the State Patrol, Transportation Department and Attorney General's Office to reduce the impact of (criminal offense) plea bargaining on penalization system effectiveness. Although that particular traffic has declined with changes in shipping patterns, suppression of chronic truck overloading in the movement of grain across Minnesota to the port of Duluth (where it is weighed) is cited as an example of the effectiveness of the relevant evidence system in improving compliance behavior.

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Fine severity and surveillance intensity
Minnesota ranked third among Study States for severity of its basic (first-offense, criminal) 2,000 lb. GVW fine and sixth for 10,000 lb. (Counties may add their own court fees, typically under $100.) The State ranked fifth for reported weighings per estimated truck-mile on major rural roads (1997 data).

Load-shift/off-load policy
The stated policy is that the driver may move to a "suitable location" to correct detected overloads, typically to be verified by an enforcement officer. (Ready-mix cement trucks may move to destination or back to origin, whichever is shorter.)

Distinctive aspects of roadside enforcement practice
Minnesota is considering an electronic truck inspection pre-clearance system. WIM equipment (for enforcement purposes) is installed at only two of the State's eight permanent weigh stations; both are located near points of entry from neighboring States.

Penalization of carriers or shippers
Normal roadside weight inspection citations are adjudicated under the State's criminal system and are issued to the driver. They can also be issued to the vehicle owner, but this is rarely done. At the roadside inspector's discretion, a civil case may also be opened against the owner or, in cases such as load weight misrepresentation, even against the cargo shipper. The civil penalty schedule is much higher than the criminal at high excess weights although several years ago a $150 civil penalty maximum was enacted for first offenses. It is State Patrol policy to initiate a civil proceeding for penalizing all overweights of 8,000 lb. or more. Civil actions are typically initiated against Minnesota-registered vehicles, but also sometimes against vehicles from jurisdictions with which the State has civil process reciprocity, such as North Dakota and Canadian provinces.

In addition, since 1981, Minnesota has had its well-known and still unique system of civil proceedings against vehicle owners and (much less frequently) shippers on the basis of "relevant evidence" in the form of records of shipment weight, shipper identification, truck identification and truck's number of axles that persons weighing, or measuring the liquid volume of, cargo in connection with truck loading or unloading are required by State law to retain for 30 days. These records are periodically inspected -- without warrant -- by State Patrol officers in order to detect combined cargo-and-vehicle weights exceeding legal limits. Weighers of raw farm products transported in 3-axle or farm tractor-towed trailers are exempted, and records relating to first-haul-from-field farm products (maximum 50 miles) or unprocessed forest products do not qualify by themselves as relevant evidence of violation when the applicable weight limitation is not exceeded by more than 10%.[30]

Except for cargo-only "hopper" weights registered by certain grain terminals, most weighing for which records are required involves weighing the truck and cargo together, thus generally relieving the Patrol of having to determine truck tare weight (available from registrations of Minnesota vehicles and generally -- although not always -- on request from out-of-State registrants). Violations may be detected with reference to absolute maximum gross weight limits or the limits allowed by the distance between first and last axle, this distance being determined based on truck identifications appearing in the weigher records. Axle violations can usually only be detected when an axle or an axle combination on a trailer has been weighed separately, as is done at certain grain elevators not equipped with a long enough scale platform to

[30] Note that sellers of construction aggregate by cubic volume do not fall into the category of cargo weighers. However, loading of ready-mix cement trucks is considered to be liquid volume for purposes of the record-keeping requirement.

weigh a combination vehicle in one pass.

The State Patrol tries to educate county and city law enforcement officers to the existence of the relevant evidence system so that they may alert the Patrol to the location of probable overloading that might be detected by record inspection. The system is believed to have been effective in discouraging repeat violation of weight limits. A case listing for calendar 1997 furnished to FHWA by the State showed timber and grain as typical overweight cargoes detected, with about 20% of that year's violations from sand/gravel hauling. Timber violations (mostly logs, some woodchips) represented those above the 10% tolerance noted above.

Inspections and detected violations fell last year due to an organizational change from deployment of five full-time relevant evidence record inspectors to the training of officers Statewide to perform this function along with other duties. In 1997, 889 violations were detected by record inspection (out of a total of 916 handled by civil processes), compared to 3,438 criminal citations. In 1998 record-inspection violations dropped to 209 (out of a total of 265 handled by civil processes).

Adjudication of fines
It is difficult to evaluate the effectiveness of adjudication of criminal penalties given a lack of Statewide data by which to track the outcome of cases. There may be some significant fine reduction by courts. The civil penalty system, on the other hand, administered centrally by the State Patrol, is considered to be operating effectively. Civil penalty reduction in court does not appear to be significant. In an estimated 90% or more of cases, these penalties are paid without court proceedings, which is presumably encouraged by violators being routinely offered the opportunity to pay in full at 80% of the scheduled fine, plus the availability of extended-payment plans for amounts that can be separated into monthly remittances of $300 or more. Civil cases may be appealed to small claims-type or regular district courts; these venues are also used for proceedings by the State against non-payers. Extreme delinquency cases are referred to the collections unit of the State revenue department. The State Patrol estimates that ultimate write-offs are in the 1-2% range.

Above-federal-standard weight limits and divisible-load overweight permits
Minnesota requires lower axle and gross vehicle weights on local roads than it does on major State/US routes and Interstate highways. However, it provides roughly 10% increases on both categories of roads during winter months (defined differently in the upper 1/3 and lower 2/3 of the State). Under grandfather rights, winter weights are valid on the Interstates (with an annual permit), which brings the Interstate GVW maximum, for example, up to 88,000 lb. from the normal 80,000 lb. All sectors of trucking take advantage of these winter weight increases although bulk haulers of grain, liquid chemicals, fuel, sand/gravel, etc. are most prominent. In addition, there are annual permits providing higher axle weights for refuse compactor trucks and harvest permits according 10% increases (not valid on the Interstates) for root crops moving from the fields. Minnesota does not allow LCVs.

Mississippi

Discussions were conducted with a representative of the State Transportation Department which is charged with of both weight enforcement and overweight permits.

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Opinions and observations of State representative

Is the level of truck weight limit compliance considered satisfactory?
The true overall level of truck weight limit compliance within the State is practically impossible to estimate with confidence. Its FY99 total citation-to-weighing rate of less than two tenths of one percent, for example, contrasts with a rate of 16% for citations issued its mobile enforcement details using portable scales, which is probably biased toward sites where compliance problems are believed to be occurring and toward intrastate trucking of commodities such as sand/gravel and logs. While it is reasonable to assume that the additional surveillance would generate some improvement, inadequacy of compliance is not a public policy issue in Mississippi at present. Policy change proposals received favorably in the State legislature have tended toward weight limit liberalization by special provisions for certain types of local trucking, particularly to match similar changes in other States, to which the (elected) State transportation commissioners have been opposed.

Does the overweight penalization system significantly affect compliance behavior?
Annual citations of weight violators increased substantially after primary responsibility for truck weight enforcement was transferred from the State tax commission to its newly-created Transportation Department in 1992. The practice of giving inspectors discretion to issue overweight permits to detected weight violators was ended. The rise in citation volume eventually leveled off, and it is believed -- although without any firm justification by data -- that the program change caused some improvement in compliance behavior. A substantial portion of citations now issued are to vehicles engaged in local bulk trucking. This cannot necessarily be taken to indicate that the State's overweight penalization system is less effective in these sectors, since they tend to be disproportionately subject to its weight-checking activities. Local enterprises engaged in bulk hauling complain that it is difficult for them to ascertain their actual cargo weight and thus avoid citation. In response, the transportation department has proposed without success that the legislature temporarily set aside a portion of overweight fine revenue to assist these operators in acquiring on-board scales, which certain log haulers have already done.

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Fine severity and surveillance intensity
Mississippi ranked seventh among Study States for severity of its basic (first-offense) 2,000 lb. GVW fine and third for 10,000 lb. The State ranked first for reported weighings per estimated truck-mile on major rural roads (1997 data).

Load-shift/off-load policy
The stated policy is to require correction of detected overloads on interstate trucks before the vehicle is moved if they are inbound into Mississippi. On intrastate moves, mandatory load adjustment is at the discretion of the inspector and depends on the distance to destination.

Distinctive aspects of roadside enforcement practice
PrePass electronic pre-clearance is offered at two weigh stations but involves documentation only, with no weight element. Participants are called into the station for weight check on a sample basis, in contrast with all other trucks, which are weighed on every pass by the station, using ramp WIM load cells as a screen at the four stations where they are now installed. The current long-term strategy for weight surveillance is to maintain permanent stations only on major routes, with 24-hour border stations operated on a joint basis with the adjoining State. One-person permanent stations (easily bypassed) would be replaced by "weighing areas" built into the highway, where enforcement officer details could set up to perform random spot checks. The output from the State's 20 non-enforcement (highway planning data) WIM's is used at present to plan deployment of details but has not been analyzed sufficiently to serve as an indicator of compliance levels.

Penalization of carriers or shippers
All overweight fines are civil penalties imposed on the vehicle owner. They may be appealed to an administrative board within the State Department of Transportation and subsequently to a court in the State capital. Drivers can be cited under the criminal code, but only a $50 fine is provided, and such citations are used infrequently, mainly to "get the attention" of any flagrant violators. The State department of transportation has participated in federally-funded study of the "relevant evidence" system of detecting truck overloads (see Minnesota) and believes it would be helpful in improving compliance, particularly by the minority of "unscrupulous" operators. Such a system, with all or part of penalties to be borne by shippers, has been suggested to, but not accepted by, the State legislature.

Adjudication of fines
The current civil penalty system is considered effective in the sense that penalties for citations issued are generally collected although sometimes with downward adjustment by the MDOT Appeals Board, which allows, for example, a 2,000-lb. "accuracy credit" for citations based on portable scale weighings. It is estimated that fewer than 10% of citations are appealed. In-State vehicles with unpaid citations are subject to a tax lien and seizure by the State, which maintains a "warrant list" for this purpose. Out-of-State vehicles are required to pay the penalty before moving.

Above-federal-standard weight limits and divisible-load overweight permits
Since 1994 the State has offered annual "harvest permits" that allow 84,000 lb. GVW for agricultural products moving from fields and logs from forests, plus sand and gravel. There is also an annual permit to carry "two pieces of forestry equipment" up to 95,000 GVW. Neither are "grandfathered" onto the Interstates. Import or export marine containers are issued 95,000 lb.

GVW non-divisible load permits. Several years ago, cotton modules and solid waste were added to an off-Interstate statutory exemption that had been in effect for cement mixers, allowing 60,000 lb. GVW without axle limits. Even though twin trailer combination vehicles with trailers up to 30-feet long are allowed, Mississippi is not considered as allowing LCVs, in that these combinations are not allowed to exceed a gross weight of 80,000 pounds on the Interstate System.

Missouri

Discussions were conducted with representatives of the State Highway Patrol (commercial vehicle enforcement) and the State Department of Transportation, involving both Motor Carrier Services, and Engineering.

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Opinions and observations of State representatives

Is the level of truck weight limit compliance considered satisfactory?
There are currently no major public issues concerning, or proposals for change in, the State's weight limit enforcement regime, which may be taken as indicating general acceptance of the current State of truck weight limit compliance. It was noted in discussion that the State's own trucking association is not promoting any increase in weight limits (although automobile transporters are known to desire some increase over the federal standard Interstate Highway System axle and gross weight limits that would permit hauling full trailerloads of sport-utility vehicles).

Does the overweight penalization system significantly affect compliance behavior?
In general, compliance is good on the Interstates, where long-distance truckers are believed to be particularly sensitive to the time delay that would result from detection of any overload. By contrast, the system seems to have little effect on secondary-road trucking operations, especially for grain and gravel. This is not thought to be as much the result of the State's level of fines, or of judicial reduction of the more severe fines, as the very low chance of apprehension on any given trip and consequent temptation to overload and thus generate more revenue per trip for the vehicle operator.

It is suspected that some operators on secondary roads are "playing the odds." Hauls are typically short and overloads effectively subject to detection only by State Patrol officers equipped with one of their 22 sets of portable scales, with which the entire State must be covered, other than St. Louis and Kansas City, where municipal police enforce weight limits. (Portable scale deployments are rotated through the various counties under the jurisdiction of each Patrol Troop but can be directed to apparent overweight problem areas -- such as might be brought to Patrol attention by county authorities -- and are not constrained to any system of equal coverage of all roads or territories.) While compliance behavior by an individual operator may improve temporarily after an overweight citation, there appears to be little permanent overall improvement. A guess at the actual overall loaded-truck violation rate for grain or gravel operations on secondary roads, for example -- admittedly based on impressions rather than data -- would be 10-20%.

It is pointed out that trucks hauling construction materials to road construction projects under management of the State Transportation Department represent an exception, in that the scale

weight of each load delivered is subject to inspection by department representatives. They would notice any overloading and take appropriate action with the trucker, and the State Patrol if necessary, to stop it.

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Fine severity and surveillance intensity
Missouri ranked second among Study States for severity of its basic 2,000 lb. GVW fine and fourth for 10,000 lb. (to which are added court costs, which vary by jurisdiction but are typically around $50.) The State ranked seventh for reported weighings per estimated truck-mile on major rural roads (1997 data).

Load-shift/off-load policy
The stated policy is that detected overloads must be corrected before proceeding, except for movement to an appropriate designated site in the case of livestock, hazardous material, etc. (Off, but not on, the Interstates, detected overloads that are corrected before movement by load shifting do not result in a citation.)

Distinctive aspects of roadside enforcement practice
WIM's have been installed on the ramps of two of the State's 33 permanent weight/safety inspection stations (24 of which are on Interstates and the balance on other National Highway System routes). All trucks pass over these WIM's and, unless registering on them as likely to be overweight, are then free to continue. Trucks are directed in for inspection on a random sample basis. As might be expected, the installations have suppressed the formation of weighing-line queues at these stations and have increased their throughput capacity by several times. It is planned to gradually install such WIM's at high-volume stations; a third installation is underway at present. In addition, there is planned a pilot project to install mainline WIM at a station near the Oklahoma border, to be accompanied by some type of equipment -- exactly what is still under consideration -- that can read any pre-clearance transponders that trucks might be carrying, including those used for payment on the Oklahoma toll road that connects with the non-toll Interstate in Missouri on which this station is located.

Penalization of carriers or shippers
All overweight citations are issued to the driver and are solely the legal responsibility of the driver.

Adjudication of fines
While fines are often mailed in, there is a substantial appeal to the (regular traffic) courts in high-fine cases and considerable exercise of judicial discretion to reduce such fines. Local drivers are believed to especially benefit from such discretion.

Above-federal-standard weight limits and divisible-load overweight permits
Off Interstate highways, Missouri allows 22,000 lb. on single axles and 36,000 on tandems. No

divisible-load overweight permits are issued. Marine containers are treated for permit purposes as non-divisible; overweight container movements may only be issued the single-trip, one-way permits that are accorded such loads. Missouri allows LCVs that can legally operate in Oklahoma and Kansas, to move to and from terminals in Missouri which are located within a 20-mile band of the State Line for these two States.

Montana

Discussions were conducted with representatives of the Motor Carrier Services Division of the State Department of Transportation, which administers both weight enforcement and overweight permits.

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Opinions and observations of State representative

Is the level of truck weight limit compliance considered satisfactory?
Unsatisfactory compliance is not a public issue Statewide at the present time and tends to come up only occasionally in local situations, for example when heavy log trucks are noticed on the roads of some particular jurisdiction. While there is no estimate derived from comprehensive data of the overall weight limit compliance rate of loaded trucks while operating within the State, 85% would be a reasonable guess based on informal observation.

In general, overweight offenses are rare in long-distance van-type trucking; the most common being excess weight on tractor drive axles caused by a fifth wheel having been adjusted so as to shift weight off the steering axle. Violations are more likely to occur in the classic problem sectors for weight compliance, local bulk trucking of forest and farm products and of solid waste. 1998 weighings on portable scales, which naturally monitor traffic with a greater proportion of such trucking than permanent scale stations, generated "Notices to Appear" for 11% of vehicles weighed.

Does the overweight penalization system significantly affect compliance behavior?
It is believed that the State's current system of overweight detection and penalization does significantly affect weight compliance behavior. It is anticipated that future expanded analysis of the output of the State's non-enforcement (highway data collection) WIM's will confirm this belief. The incidence of severe overloading having dropped after fines were increased in 1985 is taken as evidence of the impact of penalty imposition. Also, while the weight limit compliance rate is very high on the Interstate highways while weight stations are open, a study of WIM data in 1997 showed that at a point where a permanent station had been closed it was running at only about 70%. This again suggests the impact on compliance of the current penalization system where accompanied by adequate surveillance.

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Fine severity and surveillance intensity
Montana ranked eighth among Study States for severity of its basic 2,000 lb. GVW fine and ninth for 10,000 lb. (before a $20 Statewide court fee and an added $30-$100 determined by the judge in court cases). The State ranked sixth for reported weighings per estimated truck-mile on major rural roads (1997 data).

Load-shift/off-load policy
The stated policy is that in cases of detected overloads of 7% or less, the driver may, at the discretion of the inspector, be simply issued an oral warning (for small overloads such as those caused by ice buildup) or may be allowed to shift the load (if that would be adequate to correct the overload) or may be issued a $10 overload permit and instructed to proceed to the nearest appropriate facility for off-loading (all without citation). For other overloads of up to 10,000 lb., a citation is to be issued together with a permit to proceed for off-loading at a site designated by the inspector. In the infrequent cases of overloads above 10,000 lb. a citation is to be issued and unloading at inspection station required (subject to modification due to worker safety problems in field handling, for example, of logs and the obvious problems of transferring livestock or garbage).

Distinctive aspects of roadside inspection practice
Mainline WIM has been installed at the first of the State's 20 permanent weigh stations to be equipped for PrePass electronic truck pre-clearance. Two more PrePass installations are in progress. (A second enforcement WIM is also in operation as a remote monitor at a point where two important traffic streams intersect but where installation of a permanent scale is awkward due to a nearby school.) At the WIM-equipped station, however, it is current practice to route into the station all non-PrePass vehicles -- which at present constitute all but about 5% of the traffic flow -- where certain of them are selected for documentation check.

Non-enforcement WIM's are considered more significant for weight enforcement in that their output is used to plan the time and site deployment of portable scales. An output data processing program for identifying overweight trucks in the traffic flow over WIM/AVC (Automatic Vehicle Classifier) installations has been developed for the State and is in limited use. Portable scale operation -- more efficient than that of permanent stations for detecting overloads but less so for documentation (including truck tax revenue) enforcement -- accounts for about 20% of weight enforcement personnel time. A small portion of it is spent checking known bypass routes for permanent stations and the rest in remote rural areas, in urban areas or in monitoring overweight problem sectors of trucking such as seasonal movement of grain, sugar beets, etc.

Penalization of carriers or shippers
Overweight citations are handled in the criminal justice system and are issued to the driver. An owner may, of course, cover a driver's fine but has no legal obligation to do so. The State Department of Transportation has studied Minnesota's "relevant evidence" system of civil penalties based on inspection of weighing records. It was not deemed suitable for Montana, in part because of the difficulty that alternative vehicle axle configurations pose for ascertaining the legal weight of a past shipment.

Adjudication of fines
Except for overloads detected on tribal lands -- overweight offenses not being recognized in the tribal judicial system -- the adjudication of penalties may be considered reasonably effective in the majority of the local courts to which citations may be appealed if not paid by mail (or paid by

forfeit of bond, in the case of out-of-State trucks). However, in some jurisdictions the exercise by judges of their power to reduce fines is significant. The Department of Transportation has traced the judicial disposition of all citations issued during a recent one-year period for over-10,000 lb. overweights (which accounted for approximately 19% of all weight citations during the period). On 29% of the 250 that had been adjudicated as of the end of the period, the fine was reduced to some extent or (in only two cases) not collected at all.. Among those court districts where fine reduction occurred, the percentage of reduced-fine cases to all over-10,000 lb. citations adjudicated ranged from 7% all the way up to 86%. Of the 71 cases of fine reduction in court, only 12 concerned out-of-State drivers.

Above-federal-standard weight limits and divisible-load overweight permits

Gross vehicle weight in Montana is regulated on and off the Interstates only by the federal bridge formula, with a nine-axle maximum. Until the beginning of 1998, an annual permit was required for overall GVW's over 80,000 lb., but this permit has been abolished and its $100 fee folded into the vehicle registration fee schedule. Under permit, Montana allows LCVs in the form of triple 28'-6" trailers and "Rocky Mountain" doubles. ["Rocky Mountain" is a commonly used name for a doubles combination consisting of a long (40 to 53-feet) semitrailer and short (26 to 28-feet) trailer.] Weight problems do not normally arise from usage of the former, but the latter are employed in weight-sensitive hauling such as of agricultural products, wood chips and fuel. Also, a specific provision of federal law makes it possible for 8-axle, 138,500 lb.-GVW double-trailer combinations to move under permit on Interstate Highway 15 between the Canadian border and a railroad connection in Montana that is about 35 miles away. In addition, there are statutory exceptions -- not valid on the Interstates -- that provide 20% increases in axle and bridge limits for agricultural products during harvest period and a special allowance for pole trailers carrying logs that permits them to reach 80,000 GVW without the length that would normally be required by the bridge formula.

New York

Discussions were conducted with representatives of the State Police (commercial vehicle enforcement), and the State Department of Transportation Safety Evaluation, Permit Operations, and Traffic Operations units. In general, for this report, only State-level authorities were asked for their views on weight compliance within their States. However, due to the significance of "downstate" weight citations in the total reported to FHWA by New York, supplementary discussions were conducted with representatives of the New York City Department of Transportation (parking and permits), and the New York City Police Department (truck enforcement).

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Opinions and observations of State representatives

Is the level of truck weight limit compliance considered satisfactory?
Truck weight compliance per se cannot be termed a major current public issue. While heavy truck traffic on particular routes has often caused community protest in New York City, for example, the complaint has been about the volume of large vehicles, regardless of whether or not they are over their legal weight.

The roughly 1.1% FY98 citation-to-weighing rate on the semi-portable scales than the State Police operate on Interstate highways and major State routes to check all passing loaded trucks is probably not a realistic indicator of the true level of compliance even on these routes, since extensions to early morning and evening of their usual Monday-Friday "normal business hours" operation have generated much higher violation rates, reaching up as high as 30% in extreme cases. The State Police's portable scales, typically employed with more pre-selection of likely violators, generated a roughly 8% citation-to-weighing rate for the whole of FY98.

As might be expected, overall weight limit compliance appears significantly higher among long-distance operators on through routes -- such as the New York State Thruway -- than local bulk truckers. Likewise, compliance among long-distance trucks operating to and from New York City appears "fairly good" and significantly better than that of vehicles operating within the tri-State metropolitan area.

The State Department of Transportation recently prepared for the administration as a possible legislative proposal a series of changes that would: (1) harmonize the State's fine schedule with the separate schedule that applies in New York City alone by increasing the limit on the State's axle overweight fines up to the higher City level and increasing the City-schedule gross vehicle weight fine limit up to the higher State level, (2) double fines for second offenses and (3) establish a uniform, half-way compromise between the State's and the City's fine-imposition tolerances for weight-permit violators. The State allows a 10,000-lb., 10% excess-weight tolerance before the fine for exceeding weight-permit limits is calculated from the pre-permit

level, and the City allows no tolerance at all for that purpose, a subject of complaint by New York City truckers. However, the proposal that the legislature was considering at the time of these discussions, and which was supported by the State trucking association, only established the compromise tolerance level for New York City alone and made no other changes.

Does the overweight penalization system significantly affect compliance behavior?
At the State level, it is believed that the New York enforcement/penalization regime has a significant effect on compliance behavior, at least in the bulk trucking sector. The particular evidence cited is that compliance in the construction industry appears to have improved from what might well have been close to zero up to perhaps 90% after the State shifted in 1986 from a flat $100 per overweight violation to its present system of graduated penalties. The higher fines had been instituted, however, in order to provide more severe penalties to accompany a revival of a divisible load permit system, the present version of which (see below) is now almost universally used for hauling construction aggregate and ready-mix cement, and also for logs and to some extent for gasoline. Moreover, since 1986, there has been a noticeable trend in the construction industry toward trucks -- including 4-axle straight trucks -- that permit higher overall loads to be carried in compliance with existing axle-spacing requirements.

Observation of the New York City situation has been somewhat complicated by fluctuations in enforcement effort occasioned by a recent shift of its transportation department's truck weight enforcement agents into its police department, but it appears that there currently exists significant non-compliance by vehicles operating locally within the metropolitan area. This concerns not only construction but also garbage hauling and even relatively small trucks making various kinds of food deliveries. Overweight permits similar to those available for the rest of the State have been issued by New York City authorities. However, they are currently limited in number and are thus not used by all carriers of commodities that can physically be loaded above regular weight limits. (While the axle and bridge limits applied generally within the City are the same as in the rest of the State, the gross vehicle weight limit is 73,280 lb, rather than 80,000 lb.)

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Fine severity and surveillance intensity
New York ranked fifth among Study States for severity of its basic (first-offense) 2,000 lb. GVW fine and seventh for 10,000 lb. (before court fee of $30 per charge up to a maximum of $60). It should be added, however, that the State's separate axle weight fine schedule, which is based on percentage excess weight, generates when applied to the federal Interstate Highway standard limits the highest basic penalty for a 4,000 lb. single axle and the second highest for a 7,000 lb. tandem axle overload, as shown in Table 1A. The State ranked ninth for reported weighings per estimated truck-mile on major rural roads (1997 data).

Load-shift/off-load policy
The stated policy is that inspectors may exercise discretion in requiring trucks to correct detected overloads before moving, taking into consideration safety conditions, type of cargo, degree of

overload, etc. Within New York City, cited overloaded vehicles are allowed to proceed unless deemed unsafe to move because of safety violations or the excess weight detected is particularly high.

Distinctive aspects of roadside enforcement practice
Permanent weigh stations -- which were used in New York State in the 1950's -- are no longer maintained at all. As noted above, semi-portable scales are set up by the State Police on high-volume Interstate and State routes, and all trucks are directed to stop for weighing. (Empties are separated out and not weighed.) As personnel are available, portable scales are used to block off of potential bypass routes.

Municipalities and counties also perform some weight-checking. As mentioned in Section (4), the municipal and county police, respectively, perform all such enforcement in New York City and the two counties on Long Island. In the City, Police Department Traffic Agent patrols equipped with portable scales rove through each borough to observe and stop trucks with apparent safety violations or that appear to be operating in an overloaded condition.

It is believed that State participation in an electronic truck inspection pre-clearance system, coupled with weighing-in-motion, would permit more effective and efficient surveillance of heavy truck traffic although more enforcement personnel could be required to implement it on a wide scale. An experiment with enforcement WIM is planned for somewhere on the New York State Thruway; choice of an appropriate location is still under consideration. The existence of a widely-used overweight permit system (see below) complicates the problems that would have to be resolved to employ WIM to pass all legal-weight trucks through weight-check points without their stopping.

Penalization of carriers or shippers
Weight violations are processed through the criminal justice system. Citations may be issued to either driver or vehicle registered owner, it is current State Police policy to cite the former. However, it the vehicle's registered owner who is ultimately liable for payment of the fine and could be summoned to court or have the registration suspended if the cited driver did not pay. In response to recent motions in court for exoneration of the driver on the grounds of the legal responsibility being the owner's, the State Police have suggested change in the law to make either driver or owner legally responsible.

Also, for State (but not New York City) permit holders, there is provision for a civil fine of up to $5,000 to be imposed administratively by the Transportation Department for permit misuse, in addition to the provision in State law for automatic one-year revocation in case of unauthorized operation on a prohibited road or bridge.

Adjudication of fines
It is estimated that a majority of criminal-system citations issued by the State Police are "pled out" by the fine being mailed in. (Within New York City, some citations issued by the Police

Department on vehicles also violating certain other laws applying to motor carriers must be returned to a general criminal, rather than a traffic court, requiring personal appearance.) In court, judges' discretion on overweight violations is limited in that they must impose the full schedule fine for any such count on which the violator is convicted and may not trade an overweight count for another alleged offense by the defendant without the agreement of the district attorney. Therefore, effective reduction of the fine schedule during the judicial process is not considered to be significant.

Although it could be usefully pursued somewhat further if more personnel were available, the State Transportation Department's power to impose civil fines or permit revocations is considered effective in providing a significant degree of administrative control over the compliance behavior of permit holders. It is departmental practice to conduct an informal conference with holders who have had multiple or serious violations, which typically ends with the permit being continued and an administrative fine being paid. In a year's period, perhaps 5-6% of holders are affected. Permit revocations (which can be imposed on grounds of vehicle safety as well as weight violations) are relatively rare and usually involve prohibited-bridge offenses. The department tries to educate local authorities to the need to exercise surveillance within their jurisdictions over permit holders, who at least in the past were known to ignore the requirement to obtain permission before bringing permitted extra-heavy vehicle onto local roads.

Above-federal-standard weight limits and divisible-load overweight permits
The State has somewhat higher single and tandem axle weight limits (subject to maximum tire rating) plus higher bridge limits at lower axle spacings than would otherwise be allowed by the federal standard for Interstate highways. The New York State Thruway allows twin-trailer LCVs up to 143,000 pounds GVW, to operate on the tolled portions of those highways under Thruway jurisdiction, subject to permits requiring equipment and driver certification.

In addition, an annual permit system is generally available -- grandfathered on the Interstates -- which allows roughly 27% weight increases above regular limits (subject to maximum ratings for tires, suspension, brakes, etc.). These permits can bring the allowable GVW of a three-axle straight truck to over 70,000 lb. and raise the regular 80,000-lb.GVW maximum to over 100,000 lb. They are not valid on local (non-State/US) roads without permission of the local authorities. As noted above, very similar permits are issued by the New York City transportation department for operation inside the City, but the total number outstanding there is limited by reference to those authorized as of the mid-1980's, and they may only be transferred by acquisition of the enterprise holding them. Import and export marine containers are treated as non-divisible loads for permit purposes.

South Dakota

Discussions were conducted with representatives of the Highway Patrol (motor carrier enforcement) and the State Department of Transportation.

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Opinions and observations of State representatives

Is the level of truck weight limit compliance considered satisfactory?
South Dakota provides the one case that came up in discussions with the nine Study States of a State administration officially expressing dissatisfaction with the level of truck weight limit compliance.

Concurrent with supporting a recent 4-cent State fuel tax increase in order to raise funds needed for the local share of federally-financed road improvement projects, South Dakota's governor conducted an extensive campaign to increase overweight fines, as well. This included sending a video describing road damage by overweight trucks to all registrants of commercial and agricultural vehicles, and also proposing that commercial scale operators be required to retain weight records, identified by vehicle license number, that could be used by State enforcement personnel to detect trucks loaded beyond legal limits. Supporting this proposal was State Patrol testimony before the legislature that the State's available enforcement personnel and portable scales were inadequate to effectively check on such trucks and noting the potential for trucker avoidance of its fixed-site weigh stations.

There was opposition to the weight record inspection proposal by legislators and by commercial grain elevator operators, who typically use scales. It was not included in a 1999 statute revision providing increases in the per-pound element of overweight fines that ranged from 5 cents/lb. for the 3001-4000 lb. bracket up to 50 cents/lb. (four times the increase for the 5-10,000 lb. bracket) for overweights above 10,000 lb. (Fines are assessed at a single rate according to the penalty for the highest weight violation.) However, a compromise was reached by which enforcement officers would be able to inspect scale tickets of trucks being used in connection with State or local road construction projects and report weight limit offenders to the Department of Commerce and Regulation.[31] In addition, the State's secretary of transportation is to review the performance of counties in enforcement of posted load limits and State weight limits and as to enforcement of State overweight fines in court "to the fullest extent possible... without plea

[31] See "South Dakota Wants Certified Scales' Help on Overweight Crackdown" and "South Dakota Legislature Passes Compromise Crackdown on Overweight Trucks," Truckstop/Travel Plaza Magazine, February 17 and March 9, 1999.

bargaining or reducing statutory fines or civil penalties."[32] Disbursement of federal and State highway funds to counties with enforcement performance certified by the Secretary to be unsatisfactory may be suspended.

Does the overweight penalization system significantly affect compliance behavior?
Even prior to the fine increase, South Dakota's fine schedule was relatively high (see below). Its past ineffectiveness in generating what the State considered adequate compliance -- especially on local roads -- appeared to be more a matter of insufficient attention to the weight requirements on the part of truckers in general, and some "cost-of-doing-business" behavior on the part of habitual violators, than chronic violation by any particular class of truckers such as construction material or agricultural commodity haulers. The State Patrol believes that an outreach campaign it is currently undertaking to increase weight limit awareness among truckers, farmers, etc. will result in a significant improvement in compliance under the State's newly-revised fine system.

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Fine severity and surveillance intensity
Prior to the July 1, 1999 increases (see above), South Dakota ranked first among Study States for severity of both its 2,000 lb. and 10,000 lb. GVW fines. (However, they included its court costs.) The State ranked eighth for reported weighings per estimated truck-mile on major rural roads (1997 data).

Load shift/off-load policy
Until recently, it was State practice to issue detected violators $100 one-way overweight permits to move from the inspection site. However, stated policy now is that all overloads must be corrected before movement except, as provided in statute, hazardous material, hazardous waste and livestock. In general, South Dakota roadsides allow ample room for safe load adjustment operations.

Distinctive aspects of roadside enforcement practice
The State is interested in the possibility of participating in truck electronic pre-clearance programs but is waiting on development of greater interoperability.

The Highway Patrol (which has a total of 110 officers in the whole State available for road duty of any type) puts considerable emphasis on the value for enforcement effectiveness of its seven "pro-active" truck weight/safety roving patrols. These portable scale-equipped vehicles are driven by a single motor carrier enforcement officer and circulate in traffic to detect possible

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[32] Source: South Dakota Senate Bill No. 59, Section 6. Legally, the per-pound element of South Dakota overweight fines -- to which is added (post-7/1/99) a $133 basic "Class 2 misdemeanor" fine --- is considered a civil penalty.

violators. It is estimated that roving patrols -- which are naturally more selective than are fixed-point teams -- typically detect weight offenses on 20% or more of those trucks that they weigh. They supplement the State's four permanent (State border) Interstate highway inspection stations and its eight two-person mobile road teams that set up temporary fixed inspection points, particularly on bypass routes or in overweight problem areas. As in other States, the planning of sites and times for such temporary points is assisted by analysis of output from the State's non-enforcement highway WIM installations.

Penalization of carriers or shippers
The administration has proposed replacing the present driver liability for overweight fines with a "joint and several liability" regime that would involve carriers and/or shippers. However, the legislature has not accepted such a change. As already noted, the legislature rejected the governor's proposal to introduce a record-inspection program by which carriers and shippers of overweight cargoes could be identified.

Adjudication of fines
Up until now, judicial discretion in reducing fines has been significant. The above-noted reference to fine reduction in the 1999 weight enforcement requirements imposed on counties was presumably a reaction to the perceived impact of such practice on compliance.

Above-federal-standard weight limits and divisible-load overweight permits
Off Interstate highways, South Dakota does not limit gross vehicle weights. GVW is thus limited by axle spacing formula. Under single-trip permit, LCVs, consisting of both double and triple trailer units, up to 129,000 lb. GVW are allowed on both Interstates and designated State highways. In addition, permits are available for divisible loads of any commodity that effectively allow the State GVW limits onto the Interstates under the grandfather-right provision of federal law. There are also general exceptions that grant certain percentage overweight tolerances to short-distance movements of hay, field crops, and solid waste, but these are not valid on the Interstates.

Washington

Discussions were conducted with representatives of the State Patrol (truck weight enforcement) and the State Department of Transportation Department, Office of Motor Carrier Services (truck weight permits).

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Opinions and observations of State representatives

Is the level of truck weight limit compliance considered satisfactory?
The level of compliance with truck weight limits cannot be characterized as a current public issue in Washington, which implies its effective acceptance as being satisfactory. 1997 weighings on the portable scales employed by Washington's roving enforcement patrols, which generated less than two percent of all static-scale weighings that year but are intended to be concentrated on areas of likely violation, showed a citation rate of 2.5%, in contrast to .3 % for all other (WIM and static) enforcement weighings. In 1996, the legislature raised overweight fines on the recommendation of the State's Transportation Department, supported by the State trucking association. It was contended that the then-current schedule, with its weight-variable element of only 3 cents per pound, was too low to serve as an effective deterrent given the risk of apprehension, and that fine payment was being treated by some operators as a "cost of doing business." The variable element of the new schedule runs from 3 cents per pound for the first 4,000 lb. up to 30 cents for excess weight above 20,000 lb.

Does the overweight penalization system significantly affect compliance behavior?
Significant improvement in compliance behavior subsequent to the fine increase has not been discernible to the State Patrol. Compared to that on secondary roads, more likely to be used by local bulk trucking such as for sand/gravel and farm commodities, compliance is definitely better on the Interstate highways. However, long-distance trucking on the Interstates is affected by the enforcement programs of other States as well as that of Washington, which maintains 24-hour border weigh stations supplemented by patrols on bypass routes. The current system of overweight penalization does not seem to be generating adequate compliance in the marine container sector, where it is widespread practice for ocean shipping companies to absorb overweight fines incurred. Log hauling is another problem sector; advent of the now-common on-board truck scales does not appear to have been accompanied by increased compliance.

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Fine severity and surveillance intensity
Washington ranked fourth among Study States for severity of its basic (first-offense) 2,000 lb. GVW fine and fifth for 10,000 lb. (Court and mandatory safety program fees totaling over $100 may be added.) The State ranked fourth for reported weighings per estimated truck-mile on major rural roads (1997 data).

Load-shift/off-load policy
The stated policy is to require correction of detected 10%-or-above overloads before the vehicle is moved (other than being moved, if necessary, under State Patrol escort to a safe place for such an operation.) Otherwise, the vehicle may, at the inspecting officer's discretion, be allowed to move to a destination that is not too distant. Washington law provides an exception for grain or perishables, which must be allowed to move unless the overload is greater than 10%.

Distinctive aspects of roadside enforcement practice
The State has equipped its busiest weighing (and safety inspection) station for electronic pre-clearance (Norpass) and has scheduled other such installations. However, it is the accompanying mainline WIM at that station, used to screen-weigh all trucks, that is significant for increasing the effective capacity of roadside weighing operations. Washington is also starting to install "scale platform pedestals" at certain sites that can be temporarily opened up for weighing by attachment of the appropriate scale equipment. The resulting installation weighs axles, but at a faster rate than the old "semi-permanent" scales that the pedestals have replaced. Pedestals may also serve as economical replacements for certain older permanent stations.

Penalization of carriers or shippers
At the discretion of the local inspection supervisor, a vehicle owner could be cited in addition to, or instead of, the driver, who is the person normally cited when overloads are detected. Citation of owners, which is rare, would normally be done only in frequent-violator cases.

Adjudication of fines
Most fines are mailed in, with no court appearance requested. In court, however, the extent to which scheduled fines are actually imposed is questionable even although State law restricts courts' power of fine suspension to the fine for 500 lb. per axle and 2000 lb. overall (with no suspension allowed after the first offense in a calendar year), and the State Patrol makes an effort to keep judges informed about the nature of truck weight enforcement. Reduction some years ago of the status of all overload violations to that of an "infraction" -- an effort to unburden the criminal justice system -- has eliminated the automatic court appearance of Patrol officers, which now is only normal practice in cases of gross violation.

Above-federal-standard weight limits and divisible-load overweight permits
A GVW of 105,500 lb. is allowed both on and off Interstate highways. LCVs are allowed in the form of twin trailers of up to 68' combined length, with lengths of over 61' requiring a permit. The principal overweight permit issued for divisible loads has been the "log tolerance," which accords an excess of approximately 10% up to a gross weight of 68,500 lb. Issuance is declining steadily, the allowance being advantageous for the older 3-axle straight trucks that were used in logging but not relevant to combination rigs and the 4-axle straight trucks that are increasingly employed in that industry.

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