



## Truck Shipments Across the Woodrow Wilson Bridge *Value and Tonnage in 1993*

The Woodrow Wilson Bridge, where Interstate 95 crosses the Potomac River just south of Washington, DC, carries significant amounts of freight to support economic activities in, around, and well beyond the nation's capitol. The Bureau of Transportation Statistics (BTS) estimates that, in 1993, the Wilson Bridge supported truck shipments by manufacturers, mining establishments, and wholesalers of over \$58 billion and 30 million tons, or 1.3 percent of the total value and 0.5 percent of the total tons of truck shipments by all U.S. manufacturers, mining establishments, and wholesalers.

BTS used 1993 Commodity Flow Survey (CFS) data to calculate these totals in response to a request from the Maryland Department of Transportation for estimates of truck shipments moving across the Wilson Bridge.

These estimates are limited by the coverage and detail of available data. Because the CFS does not include shipments by establishments classified as farms, forestry, fishing, construction, transportation, and most forms of retail, services, and government, and the estimates do not include the truck portions of parcel and postal delivery and intermodal shipments, the value and weight of all truck shipments across the Wilson Bridge are higher than the BTS estimates.

### Shipment Characteristics

The shipments by manufacturers, wholesalers, and mining establishments crossing the Wilson Bridge had a higher value-to-weight ratio as compared with shipments

across the rest of the country. The value of the Wilson Bridge shipments averaged \$2,169 per ton or \$1.08 per pound, which was about the same as truck-rail intermodal shipments (\$2,045 per ton), but about three times higher than the average value of \$690 per ton of all truck shipments in the 1993 CFS.

The top four commodities crossing the bridge by value were food and kindred products, transportation equipment, chemicals and allied products, and electrical machinery and equipment. The top four commodities by weight were food and kindred products, petroleum and coal products, pulp paper and allied products, and chemicals and allied products.

The average distance moved by shipments crossing the Wilson Bridge, measured in ton-miles per ton, was between 430 and 440 miles. This average is about the same for both northbound and southbound traffic. Southbound traffic represents about 55 percent of the value, with northbound traffic ranging between 40 and 42 percent. The balance is traffic of unknown direction. Northbound and southbound traffic were evenly divided by weight.

### Method

BTS estimated traffic going over the bridge by assigning CFS truck flows to most likely routes on major intercity highways. The routing models and the CFS data are not precise enough to distinguish long-haul through traffic among the three major river crossings in the Washington metropolitan area: the I-95 Wilson Bridge, the I-495

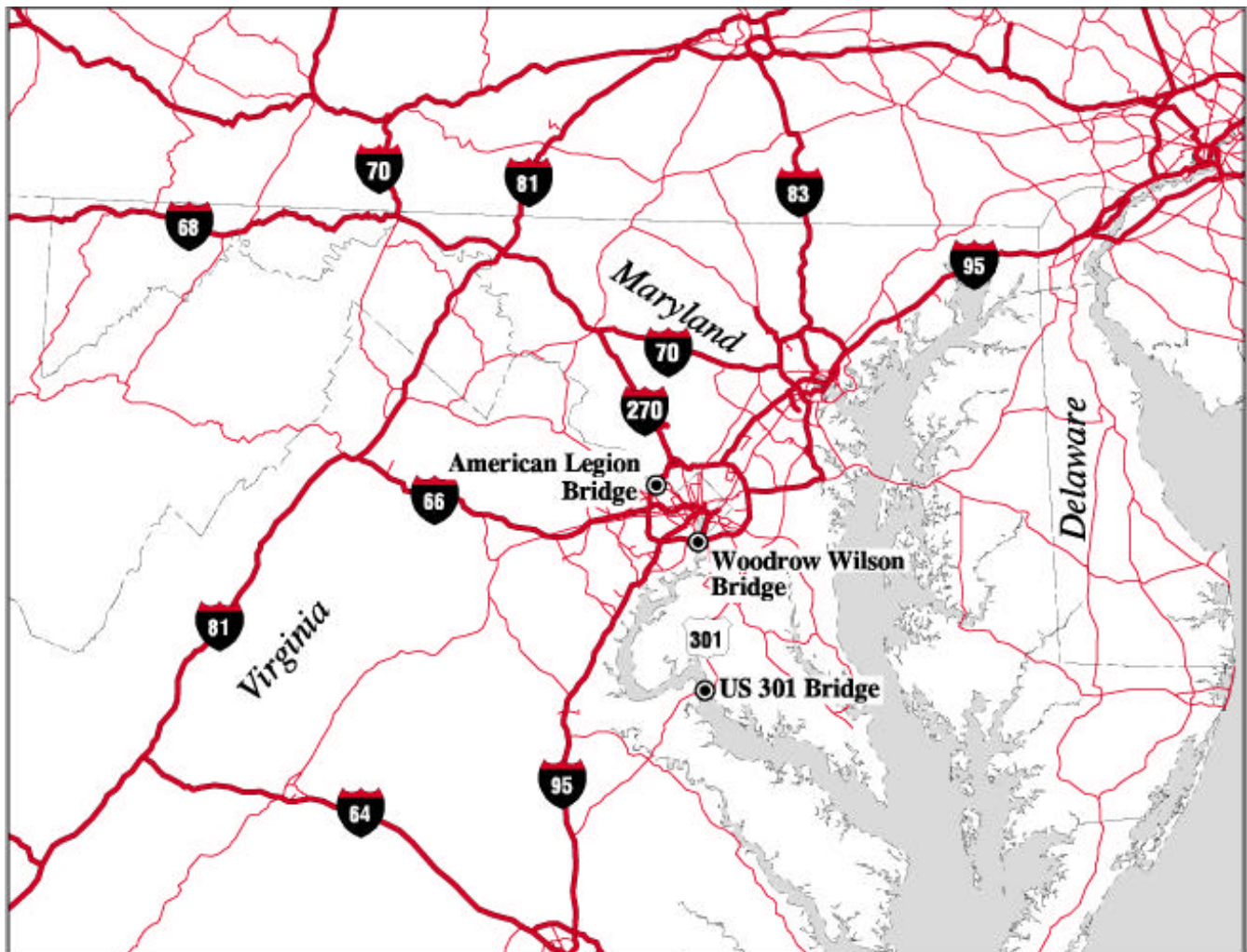
American Legion Bridge, and US 301 bridge. Oak Ridge National Laboratory calculated the value and weight of all CFS shipments crossing the Potomac on the three bridges as \$93.7 billion in value, weighing 43.2 million tons. The totals were then divided among the bridges in proportion to the number of trucks on each bridge.

According to the Maryland Department of Transportation, the average annual daily traffic (AADT) of trucks crossing the Wilson Bridge was about 18,000 in 1993, of which 11,000 were tractor-trailers. Truck traffic over the Wilson Bridge represented 56 percent of the trucks and 62 percent of the tractor-trailers for the three bridges in 1993. BTS assigned 62 percent of the value and weight of truck shipments crossing the

three bridges to the Wilson Bridge based on the assumption that tractor-trailers crossing the three bridges carry a similar commodity mix and that most truck traffic reflected in the CFS involves tractor-trailers.

#### Reliability of Estimates

The Bureau's estimates are subject to sampling errors in the CFS, and any nonsampling errors in the network routing model, in counting vehicles by type, and in the assumption that the mix of commodities carried are similar for the three bridges. To determine whether the results are reasonable, BTS examined the mix of commodities, the geography of the flows, and the implied average payloads.



The mix of commodities explains the high value-to-weight ratio of shipments across the bridge. The four top commodities by value are between two and four times the national averages for shipments moved by truck. The routing models have the potential to overestimate the Wilson Bridge traffic with flows not related to the I-95 corridor. Approximately 8 percent of the value and 6 percent of the weight of CFS shipments identified as crossing the bridges originated in states not served directly by I-95. Approximately 4 percent of the value and 3 percent of the weight of Cshipments identified as crossing the bridges were destined for states not served directly by I-95. Most of these uncertain shipments were from or destined for the Midwest (Ohio, Indiana, Illinois, and Wisconsin), and can be considered as traffic to or from Northern Virginia via I-270. The shipments to and from parts of the Southeast outside the I-95 corridor can be considered as traffic to or from DC and southern Maryland via I-81 and I-66.

If the Oak Ridge estimate of 43.2 million tons of truck shipments for the three bridges are divided by 6,442,250 tractor-trailers (17,650 AADT times 365 days), then the payload is 6.7 tons per truck. If up to half of those trucks represent empty backhauls and out-of-scope shipments from government and other shippers, then the payload could be up to twice as much — 13.4 tons per truck. These payloads are within a plausible range.

Based on the 1993 CFS estimates, less than 15 percent of the value and 25 percent of the weight of shipments crossing the bridge originates in or is destined to end up in the Washington metropolitan area. This suggests that local traffic is missing, which is not surprising given that farm, government, retail, and service establishments were not covered by the CFS.

Clearly, the estimated \$58 billion worth of goods weighing 30 million tons in 1993 is below the value and weight of all shipments crossing the Wilson Bridge today. Not only were some shipments not covered in 1993, but traffic on the I-95 corridor has grown since then.

Although the Bureau's estimate of \$58 billion of truck shipments over the Wilson Bridge in one year is very conservative, the figure nonetheless underscores the bridge's importance.

For more information on truck shipments from the Commodity Flow Survey, call Felix Ammah-Tagoe at 202-366-8926 or Russ Capelle at 202-366-5685. For additional copies of this publication, call 202-366-3282, or send your name and address to [orders@bts.gov](mailto:orders@bts.gov).