Congestion could shift loads to railroads

As automation and ride sharing tie up traffic, think trains, says **Mikhail Klimentov**

Congestion in U.S. cities is likely to grow in the near future as three factors align: urbanization, increased ride sharing, and the arrival of autonomous cars and trucks. The likely beneficiary? Rail.

Technology for autonomous trucking is advancing, and it's possible now for a group of trucks to travel together connected wirelessly, and for one driver to lead a fleet of autonomous trucks. If implemented, this technology could cut the cost of trucking by as much as 40 percent in the next 15 years, according to a report by Oliver Wyman.

This is likely to increase congestion, both in terms of time spent in traffic and in terms of how far congestion will spread outside of city centers. Deterioration of highways and key infrastructure would also contribute to traffic problems.

The report identifies two trends in particular that are likely to make urban areas more crowded. First, Americans are increasingly moving into cities and the suburbs surrounding metro areas. According to a Pew Research Center analysis of U.S. census data, "since 2000, more people left rural counties for urban, suburban or small metro counties than moved in from those areas." In that time, the total share of Americans living in rural communities has shrunk from 16 percent to 14 percent.

Second, e-commerce is growing. Therefore, we should expect more truck drivers out on the roads, delivering goods. Although e-commerce accounts for only 9.6 percent of total retail sales in the second quarter, according to the U.S. Commerce Department, that portion continues to rise.

The Oliver Wyman report is blunt about the impacts of these two trends: "As the number of cars and trucks grows, roads are going to get a lot more crowded in the near term."

These trends, coinciding with the advent of a number of private transit innovations, are likely to lead to increased congestion in urban centers.

As ride-hailing apps siphon away riders and revenue from public transit options, it's possible to envision a future in which demand for car rides over subway or bus transit increases even further. This is the environment in which autonomous trucks will likely begin their first trips en masse.

A huge increase in automobiles, especially trucks, on the road is likely to lead to serious wear and tear of roads and highways. "If you double the weight of a vehicle, the impact on the pavement is not double; it is exponentially higher than that," Cesar Quiroga, a senior research engineer at the Texas A&M Transportation Institute, told *Roads & Bridges*. "A lot of people do not realize how critical this is."

"Given how integrated supply chains are, given how distributed people's warehousing is, how much sourcing and manufacturing moves from one place to another where value is added, I'd have to say that urban congestion is going to affect pretty much everyone along the supply chain," said Allan Rutter, freight practice leader at the Texas A&M Transportation Institute.

And congestion is only on track to get worse. Oliver Wyman's report includes a series of maps

of major metropolitan areas, comparing congestion data in 2016 to projections of how congestion will look in 2045. The change is striking: Where the 2016 maps display a mix of reds, oranges, yellows and greens showing relative congestion problem areas, the 2045 maps are almost entirely red.

"I think that [cities in Texas] see 2045, they know what's coming," said Ginger Goodin, director of the Transportation Policy Research Center at the Texas A&M Transportation Institute. "They're trying to learn as much as they can learn as quickly as they can, so that as they understand how these new vehicles, these new systems, and these new data sources come online, they can begin to look at how they invest in infrastructure within the region to support that and how to avoid the red spiderweb map of 2045."

State and local action on infrastructure is picking up the slack, but ultimately, a big part of the problem is how little regulators and policymakers know about automation and its impacts. "I don't think our policymakers have, rightly so, really grasped what this is going to look like in the long term, what is it going to look like in the interim, in the ugly transition between less automated vehicles and full automated vehicles," Goodin said. "Until we have more demonstration and testing and we see pilots and we can measure performance and we can start to envision how that's going to work, I don't think that congestion strategies are specifically focused on how we prepare for automated vehicles."

A similar dynamic is playing out on the federal level. According to Rutter, federal automated vehicle legislation under consideration in

Congress doesn't address trucks at all.

If this congestion boosts the expense and undermines reliability of moving cargo via truck, companies that rely on logistics will shift to rail.

"We might see some platooning in specific areas and at specific times of day, and I think that will give road a cost advantage. But rail is already there," said Nicholas Little, the director of railway education at Michigan State University's Center for Railway Research and Education. "We have trains. We have our own right of way. We are much more flexible in the way we can actually spend money on our infrastructure, because we own our infrastructure. We can actually invest in what is necessary to meet changes in demand."

This could help make up for the loss of coal and oil shipping for railroads, which will be substantial as coal-fired power plants shut down and oil pipelines are built.

Little said it's up to railroads to grab this opportunity. "What the railways will have to do, and I think they are positioned to be able to do this, is to fight back for smaller consignments that they used to be the first choice to move over any sort of distance over about 300 miles each way," he said. "To do that, they've got to really reinvent themselves. The most important thing is that they have got to make themselves part of their customers' supply chains. They've really got to look at their business model, identify what their clear capabilities are, and who their customers are and what their customers need."

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