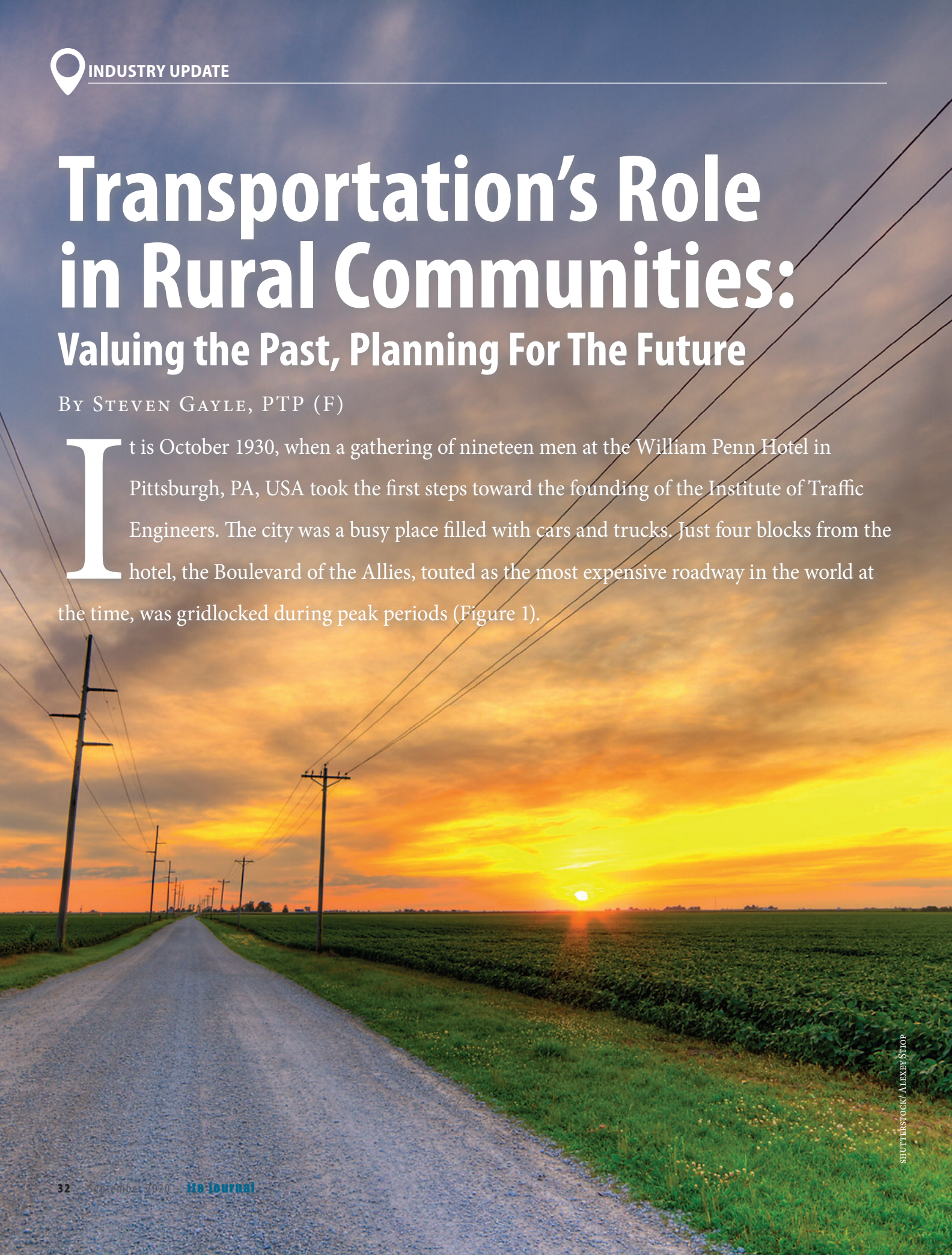
Transportation's Role in Rural Communities:

Valuing the Past, Planning For The Future

By Steven Gayle, PTP (F)

It is October 1930, when a gathering of nineteen men at the William Penn Hotel in Pittsburgh, PA, USA took the first steps toward the founding of the Institute of Traffic Engineers. The city was a busy place filled with cars and trucks. Just four blocks from the hotel, the Boulevard of the Allies, touted as the most expensive roadway in the world at the time, was gridlocked during peak periods (Figure 1).



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Brookline Connection

Figure 1. Boulevard of the Allies, 1930.

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Figure 2. Pinchot Road Historic Marker in York County, PA, USA.

Rural Pennsylvania was a very different story. In 1930, nearly 44 percent of the 137 million Americans lived in rural areas, just over half of those on farms. Farm-to-market transportation was often difficult as dirt roads were still commonplace. Deep ruts and mud could make them virtually impassable for both horse-drawn wagons and trucks used by farmers to bring their goods to the city. Pennsylvania Governor Gifford Pinchot made it a priority to "get the farmers out of the mud" and led the groundbreaking for the first Pinchot Road in York County, PA in July 1931 (Figure 2). This project was made possible by the rural road improvement program of the Pennsylvania Department of Highways Act. These roads were paved with bituminous asphalt over stone.

U.S. government agencies have different definitions of "rural." The Census Bureau defines it as any place outside an urban cluster of 2,500 or more people. FHWA uses a similar definition, but with a population of 5,000 or more. Regardless of the definition of what constitutes rural, these places vary widely from one another. A small New England village is different from a farm town in Kansas. A 5,000-acre ranch in Wyoming is nothing like a vineyard in the Finger Lakes of New York or a fishing town in Louisiana. One thing they all have in common is the important role that transportation plays.

Looking Back

Many rural towns grew up along the railroads, which they relied on for commerce and intercity travel. But by 1930, the automobile had become commonplace. As more rural residents acquired cars, traveling to town to conduct business or for leisure activities became easier than when they had to rely on horses. The horse and buggy trip may have taken at least a half day that the farmer would be hard pressed to spare from his farm work. The truck could carry more than a wagon, permitting the farmer to become more efficient in moving his products, sometimes accessing more distant markets. The farm itself was becoming mechanized, with tractors replacing horse drawn implements.

Main Street was both the commercial and social center of the small town. There was the bank on the corner, often with a stately clock that underscored the importance and stability of the institution. Dry goods and food stores, restaurants, and perhaps a hotel. By 1930, the street was paved wide enough for on-street parking, and with sidewalks (Figure 3). Some towns were described as sleepy, others as bustling. In either case, most of the traffic was local.

That began to change as people travelled further for both business and leisure. Rural places became places to stop on a trip, with gasoline stations, motor lodges, and diners. Commerce changed too, with more freight being moved by truck. The Motor Carrier Act passed by Congress in 1935 recognized the role trucking played in the nation's economy. It created the Interstate

MainStreet Deland Association

Figure 3. Main Street, Deland, FL, USA.

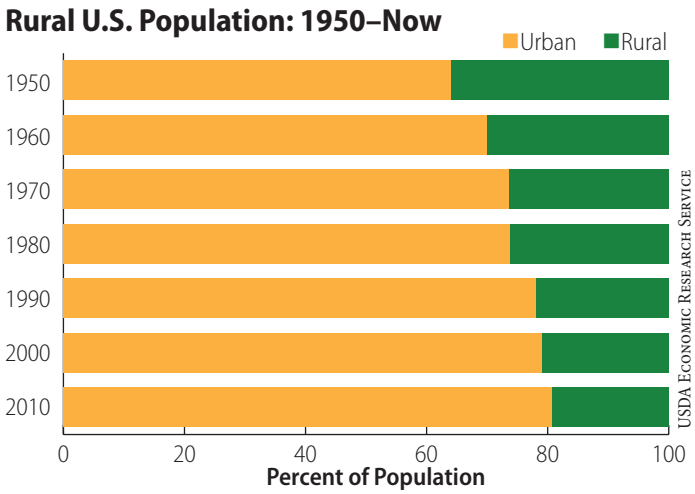

Figure 4. U.S. rural vs. urban population since 1950.

Commerce Commission to regulate the industry. Highways were improved even during the Great Depression as road projects were seen as a means of providing jobs for the unemployed. A network of two-lane highways, usually identified by a US Route number, provided interstate access across the country. Some of these had great transportation history attached: the National Road became US 40, and the Lincoln Highway became US 30.

While many associate e-commerce with the 21st century phenomenon of ordering consumer goods online for home delivery, this model really began more than 100 years earlier. Rural residents would look forward to the arrival of mail order catalogs from Sears, Roebuck, and Co., and Montgomery-Ward. Orders were sent by mail, and packages arrived by U.S. Parcel Post. You could even order a home from Sears, with all of the materials delivered by rail to the closest depot. The company sold more than 70,000 home kits between 1908 and 1940.[1]

Moving Toward the Present

As America prospered after World War II, the automobile became an accepted part of our culture. People expected safe and convenient travel whether on a short trip to the store or a cross-country adventure. That often had an impact on small towns, as Main Street became a state highway. While at first that contributed to the sense of importance of the place, there was inevitable growth in through traffic including trucks. Civic leaders who hoped to restore the quieter character of Main Street often asked their state transportation agency to build a bypass. When that happened, the bypass not only served through traffic, but attracted businesses as well. Stores in the center of town closed or moved out to a shopping center on the bypass route.

People were not staying in rural areas. On a near straight line trend (Figure 4), the 2010 U.S. Census shows that the U.S. rural population had shrunk to 19 percent, although the absolute number of rural residents has grown to more than 58 million. But of those, fewer than 3 million people live on farms. Farms were becoming larger and more mechanized.

According to the Federal Highway Administration (FHWA), 71 percent of the nation's roads by centerline miles are in rural areas, spanning functional classes from principal arterials to local roads.[2] Surprisingly, 45 percent of rural roads remain unpaved. Perhaps we still have not "gotten the farmer out of the mud," but modern vehicles are better able to cope with road conditions.

Rural road safety is a great concern. According to the National Highway Traffic Safety Administration (NHTSA), in 2016 crashes in rural areas accounted for 50 percent of fatalities.[3] As shown in Figure 5, the rural fatality rate has remained about 2.5 times higher than in urban areas. This is despite the fact that Interstate highways have the lowest fatality rate. This is a reminder that Vision Zero must not have an entirely urban focus.

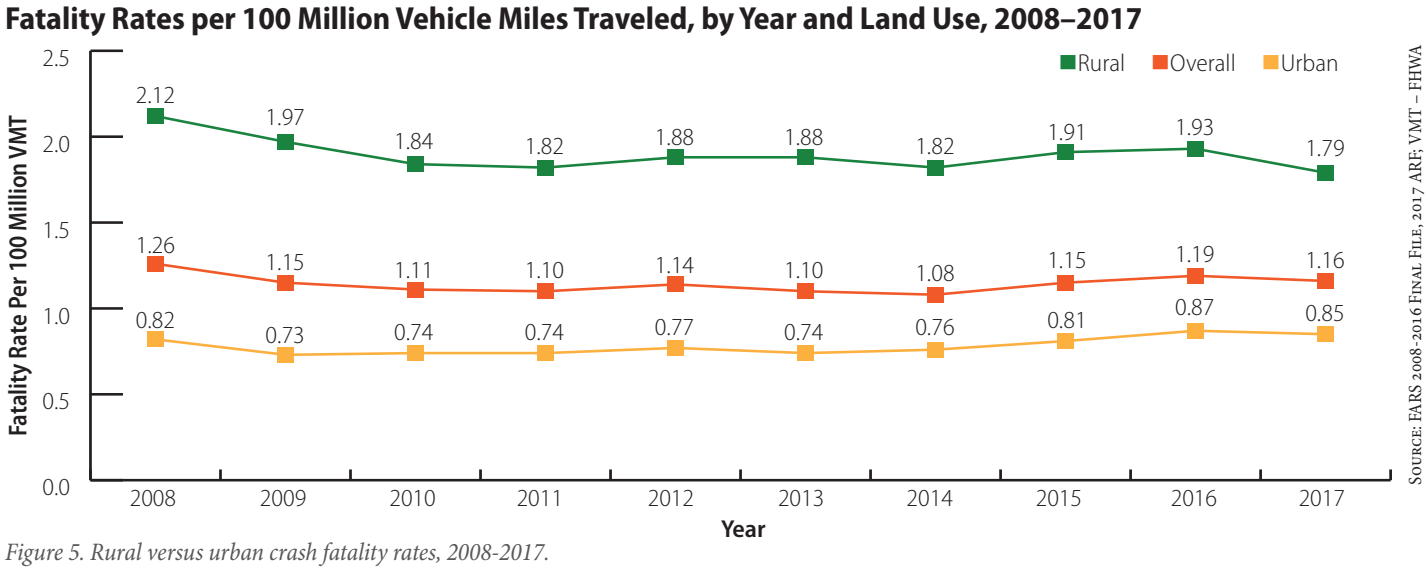

Figure 5. Rural versus urban crash fatality rates, 2008-2017.

Courtesy Alta Planning + Design

Figure 6. Complete Street elements on a small town Main Street.

Moving Toward the Future

What role will transportation play in the future of rural America? How will the diverse locations that we call rural fare in terms of factors ranging from population to technology?

Consider the key sectors of rural economies: agriculture, resource extraction, energy, manufacturing, and recreational tourism. Agriculture has become more concentrated in fewer larger farms in many parts of the country. At the same time, farm owners are getting older, averaging 57.5 years.[4] Nonmetropolitan employment has never fully recovered from the Great Recession. "By the second quarter of 2019, non-metro employment remained more than 1 percent below the pre-recession level, while metro employment exceeded the pre-recession level by more than 9 percent."[5] Personal income has declined, especially in rural counties dependent on agriculture and mining.[5] Recreational tourism has been a bright spot in rural economies until the COVID-19 pandemic, leaving future outcomes uncertain.

Despite these concerns, many rural communities have been looking to regain the character of their Main Streets. Applying complete streets design elements to reduce through lanes and slow traffic, and providing bicycle lanes and on-street parking creates an opportunity for human scale interaction that can support small businesses (Figure 6).

When viewed through the lens of emerging technology, options for personal mobility in rural regions are limited when compared to metropolitan areas. Trip length and low population density are both contributing factors. Private sector service providers, whether transportation network companies (TNC) or micromobility operators, require numerous customers to be successful. Rural residents may find using a TNC to be impractical, even if the service is available. Wait time is long because there are few drivers, and trip cost is high.

Access to cellular communications and the internet is the foundation for TNCs, bike and scooter share, and the future of connected vehicles (CV) and automated vehicles (AVs). The Federal Communications Commission found that internet service was available by fixed technology (cable, fiber optic) to only 73.6 percent of rural households.[6] Similarly, there are large areas that lack cell phone coverage. The Rural Utilities Service, an agency of the U.S. Department of Agriculture, oversees the Rural Broadband Program.[7] The intent is to make high speed internet available to rural residents and businesses through grants and loans. This in many ways mirrors the Rural Electrification Act of 1936 that brought electric service to unserved rural areas.

There are freight mobility applications that favor rural areas. Rural interstate highways are ideal for truck platooning supported by CV technology (Figure 7). As it is being currently tested, each truck in the platoon has a driver, making fuel savings the primary benefit. But the future may have a driver only in the lead truck followed by AV trucks. AV trucks are now being tested for rural portions of long haul trips. Drivers would be used for the first/final segments.

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Figure 7. Truck platooning concept.

E-commerce brings another opportunity for rural application. The United Parcel Service (UPS) is testing a truck mounted drone for rural delivery.[8] The forward portion of the roof of a standard delivery truck slides back, revealing a drone launch area. The parcel basket is accessible to the driver. An air delivery can made to a customer who has agreed to the service while the driver makes an in-person delivery and may proceed to the next stop. Rural areas do not have the airspace conflicts that may hamper urban drone delivery, but do have long route distances, creating an opportunity to improve the productivity of the driver.

The future of AVs may have interesting linkages with rural areas, bringing both benefits and challenges. AVs can provide mobility for those who cannot drive. According to a national rural health magazine, "Over 10,000 Americans turn 65 years old each day, and 1 in 4 of these seniors live in rural areas and small towns. Along with the many challenges that come with growing older, social isolation is a public health issue, particularly among rural-dwelling seniors."[9] An AV could be used to provide transport for a medical appointment or shopping trip.

If AVs become commonplace, there could be a significant impact on rural road safety. NHTSA research ascribes the critical reason for 94 percent of crashes to driver behavior.[10] While AVs would not eliminate all human-caused crashes, they would be much safer. While this is likely to be a distant future, it brings promise on the goal of Vision Zero.

Summary

During the 90 years that ITE has existed, both transportation and the nation's rural areas have evolved. There has been a rural-urban divide for a long time, but its character is changing. While the country is much more urban, mechanization has allowed for more efficient production of food and energy resources. Reliance on motor vehicles for the mobility of people and goods has changed less. Both are subject to the benefits of automation. Bringing the benefits to rural areas will depend on the universal provision of high-speed broadband.

Public policy created transportation programs that got the farmers out of the mud. Public policy created programs that electrified rural America. Public policy is in place, but not yet fulfilled to bring our rural regions up-to-date communications and open the way for advanced transportation technology and services. **itej**

References

1. Sears Archives, March 21, 2012. http://www.searsarchives.com/homes/index.htm (Accessed July 30, 2020).
2. Congressional Research Service. "Rural Highways." July 5, 2018. https://www.everycrsreport.com/reports/R45250.html#Content (Accessed July 30, 2020).
3. NHTSA, "Traffic Safety Facts, 2016 Data, Rural/Urban Comparison of Traffic Fatalities." 2018.
4. USDA Economic Research Service, 2017 Census of Agriculture.
5. USDA Economic Research Service. "Rural America at a Glance, 2019 Edition." November 2019, p. 2-5.
6. Federal Communications Commission, "2019 Broadband Deployment Report." May 2019.
7. 7 CFR 1738, 1739. Rural Broadband Loans, Loan/Grant Combinations, and Loan Guarantees. March 12, 2020.
8. Burns, Stephen. "Drone meets delivery truck." February 22, 2017. UPS. https://www.ups.com/us/es/services/knowledge-center/article.page?kid=cd18bdc2 (Accessed July 30, 2020).
9. Curti, Deborah, "Social Isolation Poses Health Risks to Rural Seniors." Rural Health Quarterly, July 15, 2020.
10. NHTSA. "Critical Reasons for Crashes Investigated in the National Motor Vehicle Crash Causation Survey." Traffic Safety Facts, February 2015.

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