Kentucky Highway District 4

ROAD AND BRIDGE CONDITIONS, TRAFFIC SAFETY, TRAVEL TRENDS, AND NEEDS

FEBRUARY 2018

PREPARED BY

TRIP
a national transportation research group

WWW.TRIPNET.ORG

Founded in 1971, TRIP ® of Washington, DC, is a nonprofit organization that researches, evaluates and distributes economic and technical data on surface transportation issues. TRIP is sponsored by insurance companies, equipment manufacturers, distributors and suppliers; businesses involved in highway and transit engineering and construction; labor unions; and organizations concerned with efficient and safe surface transportation.

The quality of life and economic health of a community is closely tied to the reliability, safety and physical condition of its transportation system. An efficient, safe and well-maintained transportation system provides economic and social benefits by providing individuals access to employment, housing, healthcare, education, goods and services, recreation and social activities, while connecting businesses to suppliers, markets and employees.

A lack of adequate transportation funding can result in deteriorated road and bridge conditions, diminished traffic safety and reduced access, all of which hamper business productivity, limit economic development opportunities, increase vehicle operating costs and reduce a region's overall quality of life.

Providing a safe, efficient and well-maintained 21st century transportation system, which will require long-term, sustainable funding, is critical to supporting economic growth, improved safety and quality of life.

TRIP has prepared the following report on travel trends, traffic safety, and road and bridge conditions in Kentucky's Highway District 4, which is located in the north-central portion of the state and includes the following 11 counties: Breckinridge, Grayson, Green, Hardin, Hart, Larue, Marion, Meade, Nelson, Taylor and Washington.

Sources of information for the report include a survey of county governments by the Kentucky Magistrates & Commissioners Association (KMCA), the Kentucky Office of Highway Safety and the Federal Highway Administration (FHWA).

Population and Travel Trends

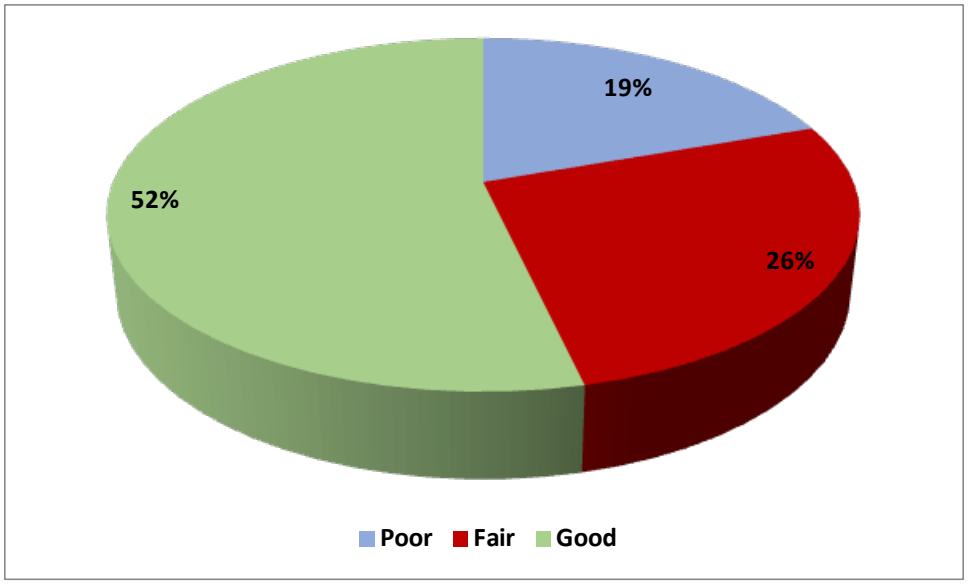
The 11 counties that comprise District 4 were home to 328,000 residents in 2016, based on estimates by the U.S. Census Bureau. Vehicle travel in District 4 totaled 3.9 billion miles in 2016, an increase of three percent from 2014 (based on data provided to TRIP by the Kentucky Office of Highway Safety).

Pavement Conditions

The life cycle of Kentucky's roads is greatly affected by the state and local governments' ability to perform timely maintenance and upgrades to ensure that road and highway surfaces last as long as possible.

Based on results of a TRIP survey completed by members of KMCA, TRIP has calculated the share of county maintained roads in poor, fair or good condition in Highway District 4. Survey responses indicated 19 percent of county maintained roads are in poor condition, 26 percent are in fair condition and 52 percent are in good condition (conditions for three percent of roadways were unreported).

CHART 1: Share of county maintained roads in poor, fair or good condition in Highway District 4.



Roads rated poor may show signs of deterioration, including rutting, cracks and potholes. In some cases, poor roads can be resurfaced but often are too deteriorated and must be reconstructed. Roads rated in fair condition may show signs of significant wear and may also have some visible pavement distress. Most pavements in fair condition can be repaired by resurfacing, but some may need more extensive reconstruction to return them to good condition.

Pavement failure is caused by a combination of traffic, moisture and climate. Moisture often works its way into road surfaces and the materials that form the road's foundation. Road surfaces at intersections are even more prone to deterioration because the slow-moving or standing loads occurring at these sites subject the pavement to higher levels of stress. It is critical that roads are fixed before they require major repairs because reconstructing roads costs approximately four times more than resurfacing them.

The KMCA survey of county governments found that 22 percent of Highway District 4's county-maintained roads are in need of resurfacing, but current funding levels will only allow for the resurfacing of four percent of county-maintained roads in 2017. The survey also found that nine percent of Highway District 4's county-maintained roads are in need of reconstruction, but current funding will only allow for the reconstruction of one percent of county-maintained roads in 2017.

Bridge Conditions:

Highway District 4 has 1,092 bridges that are at least 20 feet long and are included in the Federal Highway Administration's National Bridge Inventory (NBI). According to NBI data, in 2016, 67 of these bridges (six percent) were rated as structurally deficient. Thirty-one of the 67 structurally deficient bridges in Highway District 4 are posted with weight restrictions, which limits them to carrying lighter vehicles.

A bridge is structurally deficient if there is significant deterioration of the bridge deck, supports or other major components. Bridges that are structurally deficient may be posted for lower weight limits or closed if their condition warrants such action. Deteriorated bridges can have a significant impact on daily life. Restrictions on vehicle weight may cause many vehicles – especially emergency vehicles, commercial trucks, school buses and farm equipment – to use alternate routes to avoid weight-restricted bridges. Redirected trips also lengthen travel time, waste fuel and reduce the efficiency of the local economy.

The following chart provides information on the 25 most heavily traveled structurally deficient bridges in Highway District 4.

CHART 2: Most heavily traveled structurally deficient bridges in Highway District 4

Rank	County	City	Route Carried	Feature Intersected	Location	Year Built	Avg. Daily Traffic
1	Hardin		US-31W	CSX RR & P&L RR	1 MI N OF S-JCT KY 835	1942	19,963
2	Larue		KY-210	NORTH FORK NOLIN RIVER	.1 MI N OF N-JCT US 31E	1926	5,188
3	Hardin		KY-2179	POOR FK CUMBERLAND RVR	.1 MI SW OF JCT KY 160	1978	4,295
4	Nelson		US-62	HINKLE CRK	.03 MI E OF N-JCT KY 55	1930	3,925
5	Nelson		KY-48	E FK SIMPSON CR @BLOOMFL	.1 MI W-JCT US62 & KY55	1930	3,802
6	Taylor		WEST MAIN STREET	BUCKHORN CRK.	.1 MI W-COLUMBIA-KY 3183	1922	3,540
7	Hardin		OLD HWY 119	POOR FK CUMBERLAND RVR	.80 MI W OF LETCHER CO LN	1928	3,342
8	Hardin		KY-38	LIGES BRANCH	3.8 MI EAST OF JCT KY 215	1950	3,164
9	Larue		KY-61	SOUTH FORK BRANCH	.50 MI N.W. OF JCT KY 584	1926	2,937
10	Hardin		KY-215	YOCUM CREEK	.10 MI SE OF JCT KY 2429	1967	2,897
11	Hardin		KY-72	POOR FK CUMBERLAND RVR	.05 MI NW OF JCT US 421	1978	2,809
12	Hardin		KY-522	CSX RAILROAD	.3 MI NE OF JCT US 119	1928	2,800
13	Green		US-68	CLOVER LICK CREEK	.1 MI SW OF S-JCT KY 61	1929	2,517
14	Hardin		KY-72	CLOVER FK CUMBERLAND RVR	@ KY 38	1945	2,491
15	Washington		KY-528	ROAD RUN BRANCH	.10 MI SOU. OF JCT US 150	1923	2,489
16	Hardin		KY-1254	POOR FK CUMBERLAND RVR	.05 MI NE OF JCT KY 160	1928	2,401
17	Larue		KY-61	SOUTH FORK BRANCH	.5 MI N. JCT KY 1906	1926	2,104
18	Hardin		KY-1601	JONES CREEK	.42 MI SOU. OF JCT KY 38	1968	1,975
19	Nelson		KY-52	MONKS CREEK	.8 MI W OF N-JCT KY 457	1930	1,600
20	Marion		KY-84	HARDINS CREEK	2.0 MI WEST OF JCT KY 49	1932	1,508
21	Washington	Springfield	Armory Hill	Road Run Creek	_	1955	1,410
22	Taylor	Campbellsville	SOUTH JACKSON ST	BUCKHORN CREEK	300 SE OF L&N RR	1968	1,356
23	Hardin		US-421	MILLS BRANCH	1.0 MI EAST OF JCT KY 568	1934	1,306
24	Washington		KY-55	SEIBERT CREEK	1.1 MI SOU. OF JCT KY 438	1933	1,306
25	Hardin		KY-72	CLOVER FK CUMBERLAND RVR	.10 MI S.W. OF JCT KY 421	1925	1,130

Indicates bridge is currently closed

Indicates bridge is restricted to only lower-weight vehicles

Source: TRIP analysis of Federal Highway Administration National Bridge Inventory data.

The following chart provides information on the 25 structurally deficient bridges in Highway District 4 (carrying a minimum of 100 vehicles per day) with the lowest average rating for deck, substructure and superstructure. Each major component of a bridge is rated on a scale of zero to nine, with a score of four or below indicating poor condition. If a bridge receives a rating of four or below for its deck, substructure or superstructure, it is rated as structurally deficient.

CHART 3: Structurally deficient bridges with lowest average rating for deck, substructure and superstructure.

Rank	County	City	Route Carried	Feature Intersected	Location	Year Built	Avg. Daily Traffic
1	Hardin		KY-72	CLOVER FK CUMBERLAND RVR	.10 MI S.W. OF JCT KY 421	1925	1,130
2	Hardin		BLUE LN	PATH FK OF PUCKETT CREEK	W @JCT KY 2005	1979	200
3	Nelson		FREDERICKTOWN RD	BEECH FK @WASHINGTON CL	0.5 MI SE OF JCT US 150	1904	120
4	Nelson		KY-48	E FK SIMPSON CR @BLOOMFL	.1 MI W-JCT US62 & KY55	1930	3,802
5	Hardin		KY-1254	POOR FK CUMBERLAND RVR	.05 MI NE OF JCT KY 160	1928	2,401
6	Nelson		KY-52	MONKS CREEK	.8 MI W OF N-JCT KY 457	1930	1,600
7	Hardin		KY-219	WALLINS CREEK	3.6 MI S OF JCT KY 2007	1961	752
8	Hardin		KY-72	CATRON CREEK	.10 MI S OF JCT KY 1216	1964	544
9	Hardin		BLAIR ST	LOONEY CREEK	700 NE OF MAIN ST-KY 160	1955	200
10	Hardin		KENTUCKY AV	MARTINS FK CUMBERLAND RV	300 W OF JCT US 421	1950	200
11	Hardin		KY-2179	POOR FK CUMBERLAND RVR	.1 MI SW OF JCT KY 160	1978	4,295
12	Taylor		WEST MAIN STREET	BUCKHORN CRK.	.1 MI W-COLUMBIA-KY 3183	1922	3,540
13	Hardin		KY-522	CSX RAILROAD	.3 MI NE OF JCT US 119	1928	2,800
14	Hardin		KY-72	CLOVER FK CUMBERLAND RVR	@ KY 38	1945	2,491
15	Nelson		KY-509	FROMAN CREEK	.85 MI WEST OF JCT US 31E	1938	1,053
16	Nelson	Bloomfield	DEPOT ST	SIMPSON CREEK	.4 MI N. JCT KY 48	1940	456
17	Washington		KY-53	CHAPLIN RIVER	.8 MI N OF JCT KY 1586	1938	358
18	Hardin		KY-3451	EWING CREEK	.5 MI SE-RIVR RD-CR 5307	1975	351
19	Hardin		KY-179	FUGETT CREEK	.10 MI NOR. OF JCT KY 38	1973	249
20	Hardin		NEAR 18 MP	CLOVER FK CUMBERLAND RVR	.1 MI SW OF JCT KY 38	1946	200
21	Nelson		KING RD	E FK COX CR @SPENCER CL	150 FT S OF JCT KY 48	1935	111
22	Hardin		STRETCHNECK HOLLOW	YOCUM CREEK	.05 MI S OF JCT KY 215	1970	100
23	Hardin		CHAD LEWIS RD	GREASY CREEK	0.1 MI. W. OF KY 221	1982	100
24	Hardin		CR-1218	PUCKETT CREEK	.1 MI. S. KY 72	1985	100
25	Hardin		US-31W	CSX RR & P&L RR	1 MI N OF S-JCT KY 835	1942	19,963

Indicates bridge is currently closed

Indicates bridge is restricted to only lower-weight vehicles

Source: TRIP analysis of Federal Highway Administration National Bridge Inventory data.

Traffic Safety:

Three major factors are associated with vehicle crashes: driver behavior, vehicle characteristics and roadway features. It is estimated that roadway features are likely a contributing factor in approximately one-third of fatal traffic crashes. Roadway features that impact safety include the number of lanes, lane widths, lighting, lane markings, rumble strips, shoulders, guard rails and other shielding devices, median barriers, and intersection design.

Improving safety on Kentucky's roadways can be achieved through further improvements in vehicle safety; improvements in driver, pedestrian, and bicyclist behavior; and, a variety of improvements in roadway safety features.

The severity of serious traffic crashes could be reduced through roadway improvements, where appropriate, such as adding turn lanes, removing or shielding obstacles, adding or improving medians, widening lanes, widening and paving shoulders, improving intersection layout, and providing better road markings and upgrading or installing traffic signals. Roads with poor geometry, with insufficient clear distances, without turn lanes, lacking or having narrow shoulders for the posted speed limits, or poorly laid out intersections or interchanges, pose greater risks to motorists, pedestrians and bicyclists.

Based on TRIP analysis of data provided by the Kentucky Office of Highway Safety, during the three-year period of 2014 to 2016, there were 229 traffic fatalities in Highway District 4, an average of 76 fatalities per year. Fifty-two percent of traffic fatalities in Highway District 4 during this period were as a result of a vehicle leaving the roadway. During the three-year period of 2014 to 2016, there were 747 serious injuries as a result of traffic crashes in Highway District 4, an average of 249 serious injuries per year.

According to TRIP analysis of data provided by the Kentucky Office of Highway Safety, the traffic fatality rate in Highway District 4 during the three-year period of 2014 to 2016 was 1.98 deaths per 100 million miles of vehicle travel. This compares with a statewide average of 1.54 deaths per 100 million vehicle miles of travel and a national average of 1.08.

Top Transportation Needs in Highway District 4:

As part of KMCA's survey of its members, local government officials were asked to indicate their three greatest transportation needs. The three greatest needs indicated by survey respondents in Highway District 4 were, in order:

1. need for additional capacity for economic development;
2. need for additional road rehabilitation and repair; and,
3. need for additional roadway safety improvements.