



Railway Association
of Canada



RAIL TRENDS | 2017

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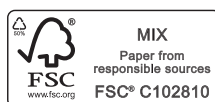


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MEMBER COMPANIES

2016

6CL	6970184 Canada	LMRY	Last Mountain Railway
AMT	Agence métropolitaine de transport	GO	Metrolinx
AP	Alberta Prairie Railway Excursions	NBSR	New Brunswick Southern Railway
AMTK	Amtrak	NCRC	Nipissing Central Railway
AMIC	ArcelorMittal Infrastructure Canada	NS	Norfolk Southern Railway
BCRY	Barrie-Collingwood Railway	ONTC	Ontario Northland Transportation Commission
BRRY	Battle River Railway	OSR	Ontario Southland Railway
BCRP	BCR Properties	OBRY	Orangeville Brampton Railway
BSRY	Big Sky Rail Corp	OVRR	Ottawa Valley Railway
BNSF	BNSF	PDCR	Prairie Dog Central Railway — Vintage Locomotive Society
BTRC	Boundary Trail Railway	CFQG	Québec Gatineau Railway
CBNS	Cape Breton & Central Nova Scotia Railway	QNSL	Québec North Shore and Labrador Railway Company
CR	Capital Railway	RS	Roberval and Saguenay Railway Company
CTRW	Carlton Trail Railway	CFRR	Romaine River Railway Company
CMQR	Central Maine & Québec Railway	SFG	Société du chemin de fer de la Gaspésie
CEMR	Central Manitoba Railway	SSR	South Simcoe Railway
CN	CN	SORR	Southern Ontario Railway
CFL	Compagnie du Chemin de Fer Lanaudière	SRY	Southern Railway of British Columbia
CP	CP	SLQ	St. Lawrence & Atlantic Railroad (Québec)
CSXT	CSX Transportation	SSR	Stewart Southern Railway
EMRC	Eastern Maine Railway	SCR	Sydney Coal Railway
ETR	Essex Terminal Railway	TTR	Toronto Terminals Railway Company
GEXR	Goderich-Exeter Railway	TTCI	Train Touristique de Charlevoix
GCRC	Great Canadian Railtour Company	TRC	Trillium Railway Co.
GSR	Great Sandhills Railway	TRT	Tshiuétin Rail Transportation
GWR	Great Western Railway	UP	Union Pacific Railroad Company
HBRY	Hudson Bay Railway	VIA	VIA Rail Canada
HCRY	Huron Central Railway	WCE	West Coast Express
KRC	Keewatin Railway	WP&YR	White Pass and Yukon Route Railroad
KFR	Kettle Falls International Railway		
KLT	Knob Lake and Timmins Railway		

ASSOCIATE MEMBERS

2016

Absopulse Electronics	Dominion Railway Services	RailTerm
Accuworx	Drain-All	RB&C Maintenance of Way
Acrow Limited	Elbow River Marketing	Red River College
Alexander Holburn Beaudin + Lang LLP	Entretien ferroviaire Boivin Inc	Réparations ferroviaires K.L.N.
Almita Piling	Envirotec Services Incorporated	Resolute Forest Products
Amsted Rail	Flood Risk Canada	RTC Rail Solutions
Atlantic Industries Limited	Forma-Train	Sait Polytechnic
AvL Construction Group	GATX Rail Canada Corporation	Sandy Cooke Consulting
Bayside Canadian Railway	Gaz Propane Rainville	Saskatchewan Grain Car Corporation
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British Columbia Institute of Technology	Gestion AFM-Séma	SLR Consulting (Canada)
CAD Railway Industries	HDR Corporation	Société du port ferroviaire de Baie- Comeau - Haute-Rive
Canada Heavy Haul Railway United Technologies	Hewitt Equipement	Soulanges Railway Services
Canadian Heartland Training Railway Services	IBI Group	Stantec
Canadian Rail Research Laboratory	Kenneth Peel	Suncor Energy Products Partnership
Canadian Urban Transit Association	Kevin McKinnon	Supco Canada Railway Supply Group
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CentrePort Canada	Marathon Drilling Co.	Tervita
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Contrans Flatbed Group	Mecfor	TTX Railcar Canada
CPCS Transcom Limited	Montréal Port Authority	Vidal Street Industrial Park
Crescent Point Energy	NARSTCO	Wabtec Corporation
CSTP	North American Rail Safety	Whiting Equipment Canada
Davanac	Ontario Steel Haulers	X-Rail Signalisation
Dillon Consulting Limited	PNR Railworks	
	Power Drives	
	Quantum Murray LP	
	Rail Cantech	
	Rail Technology International	

FOREWORD

This is the 25th edition of *Rail Trends*, the Railway Association of Canada's (RAC) annual report on the performance of Canada's railway industry. This publication contains a rolling 10-year review of financial and statistical results, reflecting multiple aspects of railway performance in Canada.¹

The data in *Rail Trends* is reported by RAC member companies: Class 1 and shortline freight railways, as well as tourist, intercity and commuter passenger rail service providers. Canadian Class 1 freight railways (CN and CP) account for the majority of freight rail activity in Canada. For that reason, most of the data presented in *Rail Trends* reflects Class 1 railway performance. While RAC represents the vast majority of non-Class 1 railways in Canada, it does not represent that entire sector.

A detailed profile of railway industry performance by province is available upon request.²

The data in *Rail Trends* is categorized into the following sub-sections:

- Safety
- Freight traffic
- Passenger transportation
- Financial information, investments and taxes
- Employment
- Track and equipment

Data reflects performance in Canada only. Figures may not add up to totals due to rounding. A glossary of railway terms appears in Appendix A, conversion factors can be found in Appendix B and safety-specific definitions are provided in Appendix C.

1 In some cases, relative variations reflect a change in the way certain members report data.

2 Contact Enrique Rosales (erosales@railcan.ca).

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EXECUTIVE SUMMARY

While Canada's railways operated in a challenging economic environment in 2016, the industry achieved its safest and greenest year ever.

Among freight carriers, the accident rate in 2016 was the lowest on record, while passenger railways maintained a level of less than one accident per million travellers for the fifth consecutive year. In addition, the rate of accidents involving dangerous goods, and the number roadway-railway crossing accidents, were at all-time lows. Nothing is more important to Canada's railways than safety, and the industry's performance in this area speaks to this commitment.

Despite economic conditions that weighed on freight traffic, Canada's railways delivered record results in a number of areas, reflecting the industry's commitment to performance and service. For example, railways originated a record number of carloads – more than 4.8 million – and reduced freight rates, enabling rail customers to compete in the global marketplace. Moreover, railways invested \$1.5 billion into their Canadian networks and paid nearly \$1.7 billion in taxes, a record high.

Canada's railways also set new marks for fuel economy. By investing in fuel-efficient locomotives, and introducing innovative operating practices and technologies, freight operators consumed their lowest amount of fuel since 2011 and reported their best fuel efficiency on record. By producing fewer emissions as a result of their improved fuel efficiency, Canada's railways continued to demonstrate their ability to be part of the climate change solution.

Passenger carriers also played a key role in helping the rail industry contribute to Canada's environmental wellbeing. Railways transported a record-high number of people in 2016, as more commuters and intercity passengers travelled by rail year over year. By shifting more passengers to rail, the industry continues to play a key role in driving down transportation-related emissions and reducing road congestion.

The following table provides a statistical summary of Canada's railway industry performance in 2016, compared to the previous year and 10 years ago.

STATISTICAL SUMMARY

(year-over-year and 10-year comparisons)

	2007	2015	2016
Freight traffic			
Revenue ton-miles (RTM) (millions)	247,709	283,188	275,485
Revenue tonne-kilometres (RTK) (millions)	361,619	413,414	402,167
Gross ton-miles (GTM) (millions)	463,356	544,791	523,071
Gross tonnes-kilometres (GTK) (millions)	676,433	795,315	763,607
Freight train-miles (thousands)	74,100	68,044	61,584
Freight train-kilometres (thousands)	119,253	109,506	99,110
Carloads originated (thousands)	4,196	4,831	4,846
Tons originated (thousands)	337,989	361,342	373,108
Tonnes originated (thousands)	306,623	327,809	338,483
Tons per carload	81	75	77
Tonnes per carload	73	68	70
Total intermodal units (thousands)	2,436	3,205	3,139
Average length of haul – Class 1 (miles)	807	943	937
Average length of haul – Class 1 (kilometres)	1,299	1,517	1,508
Average length of haul – Shortline (miles)	151	87	80
Average length of haul – Shortline (kilometres)	243	140	128
Average cars per freight train	81	102	108
Freight revenue per RTM (cents)	3.84	4.69	4.59
Freight revenue per RTK (cents)	2.63	3.21	3.15
Productivity (RTM per employee)	8,045	9,839	9,356
Gallons of fuel consumed (millions)	492.0	469.9	440.6
Litres of fuel consumed (millions)	2,237.0	2,136.0	2,002.9
RTM per gallon of fuel consumed	529	642	668
RTK per gallon of fuel consumed	170	206	215
Passenger transportation			
Total passengers carried (thousands)	68,249	81,767	84,185
Financial information			
Operating expenses (\$ millions)	8,495	10,468	9,641
Operating revenues (\$ millions)	10,704	14,679	14,113
Operating income (\$ millions)	2,209	4,211	4,473
Investments			
Investments (\$ millions)	1,399	1,801	1,500
Taxes			
Taxes paid (\$ millions)	989	1,442	1,667
Employment			
Employees	34,938	32,958	31,103
Average wage per employee (\$)	73,440	96,445	93,896
Track and equipment			
Miles of track operated	29,713	27,428	27,069
Kilometres of track operated	47,816	44,141	43,562
Freight cars	92,373	59,509	55,230
Locomotives	3,165	2,400	2,315

SAFETY

The safety data presented in *Rail Trends* is calculated using statistics from the Transportation Safety Board of Canada (TSB) and RAC. It reflects the performance of RAC's federally and provincially regulated freight and passenger member railways. The TSB maintains a database of safety performance statistics for federally regulated railways, as well as provincially regulated railways that voluntarily report their data. The safety data found in *Rail Trends* is an aggregate of railway statistics from the TSB and information provided to RAC by provincially regulated member companies that aren't required to report safety data to the TSB. Each organization uses the same safety definitions, and the data reflects railway operations in Canada only.

Excluding crossing and trespassing accidents, non-main-track collisions and derailments accounted for more than three-quarters of all railway accidents in 2016. Most non-main-track accidents are minor and occur during switching operations at speeds of less than 10 miles per hour. Main-track collisions and derailments represented less than 7 per cent of accidents in 2016.

Safety summary (year-over-year and 10-year comparisons)

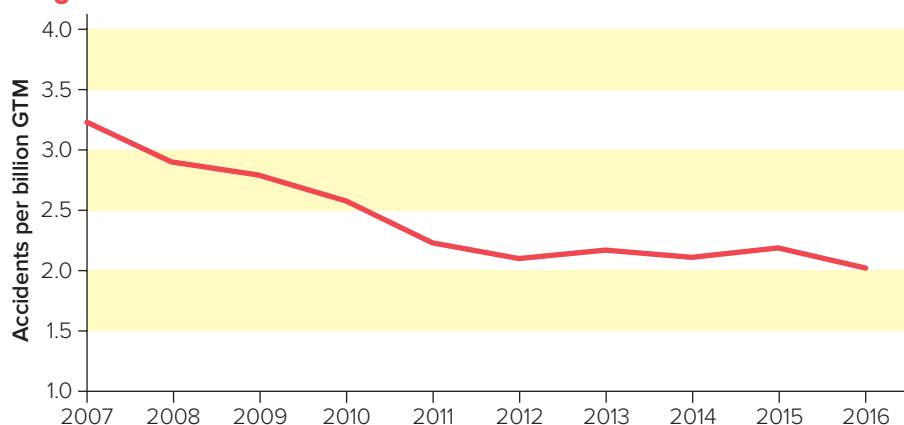
	2007	2015	2016
Main-track collisions	9	4	7
Main-track derailments	179	80	67
Crossing accidents	246	180	147
Non-main track collisions	104	95	74
Non-main track derailments	745	679	569
Collisions/derailments involving track units	34	53	40
Employee/passenger accidents	36	15	27
Trespassing accidents	132	52	73
Fires/explosions	34	32	41
Other accident types	50	63	78
Total Accidents	1,569	1,253	1,123

FREIGHT

In 2016, Canada's freight rail sector's accident rate decreased by 4.4 per cent from the previous year to a record-low 2.02 accidents per billion gross ton-miles (GTM).³ This accident rate was 3.5 per cent lower than the 2011-2015 average of 2.16.

	Freight accidents	GTM (billions)	Accident rate
2007	1497	463.4	3.23
2008	1304	449.9	2.90
2009	1104	397.3	2.78
2010	1155	447.1	2.58
2011	1057	473.3	2.23
2012	1060	503.9	2.10
2013	1149	529.4	2.17
2014	1191	564.3	2.11
2015	1187	544.8	2.18
2016	1054	523.1	2.02

Freight accident rate



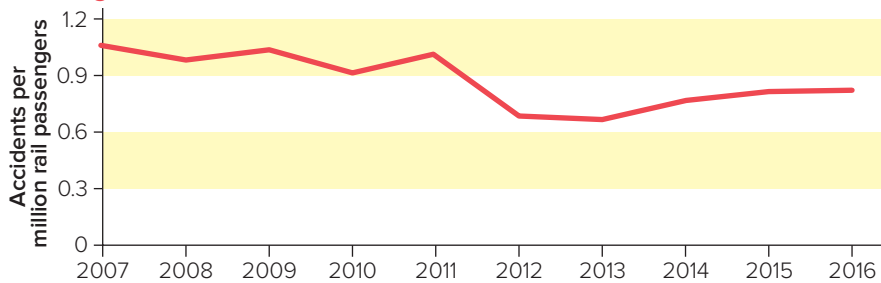
³ The freight rail sector's accident rate is calculated by dividing the number of reportable freight rail accidents by the freight sector's workload in gross ton-miles.

PASSENGER

In 2016, the passenger rail sector's accident rate was 0.82 accidents per million passengers, up 1.5 per cent from 2015 and up 4.3 per cent from the five-year average.⁴

	Accidents involving passenger trains	Passengers (000)	Accident Rate
2007	72	68,249	1.06
2008	71	72,303	0.98
2009	73	70,675	1.03
2010	67	73,261	0.91
2011	74	73,080	1.01
2012	52	75,982	0.68
2013	51	76,466	0.67
2014	61	80,366	0.76
2015	66	81,767	0.81
2016	69	84,185	0.82

Passenger accident rate

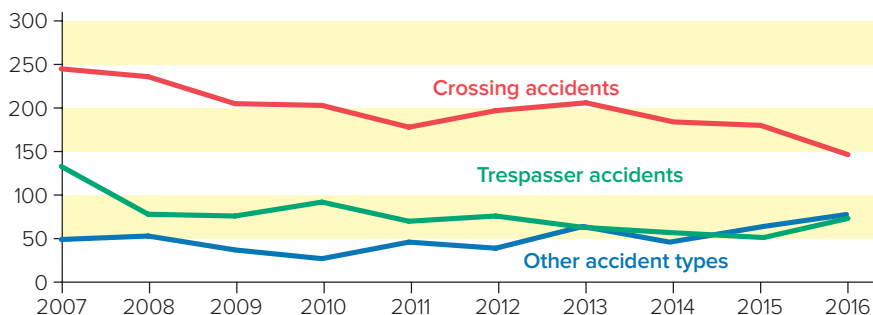


⁴ The passenger rail sector's accident rate is calculated by dividing the number of accidents involving passenger trains by the total number of intercity and tourist passengers and rail commuters.

CROSSING AND TRESPASSING

Each year, crossing and trespassing accidents account for roughly one-fifth of all rail accidents in Canada. In 2016, there were 147 accidents at roadway-railway crossings. This total represents an 18.3 per cent decrease from the previous year and a 22.4 per cent decline from the 2011-2015 average. In addition, 74 accidents occurred as a result of illegal trespassing on railway property in 2016, up 42.3 per cent compared to 2015 and up 17.8 per cent versus the five-year average.

	Crossing accidents	Trespassing accidents	Other accident types
2007	246	132	50
2008	237	77	54
2009	206	75	38
2010	204	91	28
2011	179	69	47
2012	198	75	40
2013	206	62	65
2014	184	56	47
2015	180	52	63
2016	147	73	78

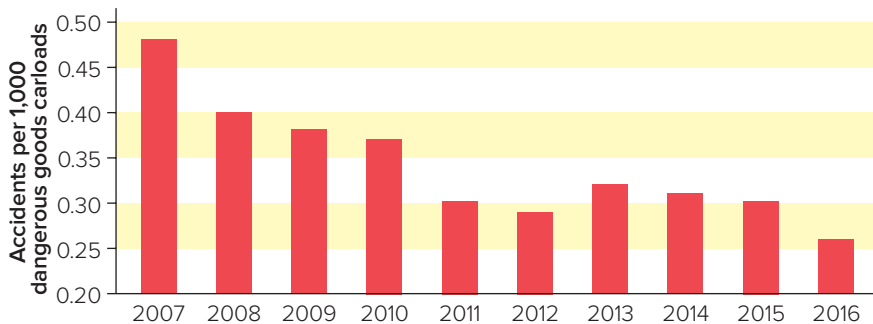


ACCIDENTS INVOLVING DANGEROUS GOODS

In 2016, the freight rail sector's accident rate involving dangerous goods decreased by 13.3 per cent, both from the previous year and from the 2011–2015 average, to a record-low 0.26 accidents per 1,000 dangerous goods carloads.⁵

	Accidents involving dangerous goods	Dangerous goods carloads	Accident rate (accidents per 1,000 dangerous goods carloads)
2007	206	426,789	0.48
2008	170	422,764	0.40
2009	145	379,650	0.38
2010	149	400,318	0.37
2011	129	425,124	0.30
2012	124	428,660	0.29
2013	157	493,360	0.32
2014	179	576,226	0.31
2015	147	491,802	0.30
2016	112	436,053	0.26

Accidents involving dangerous goods



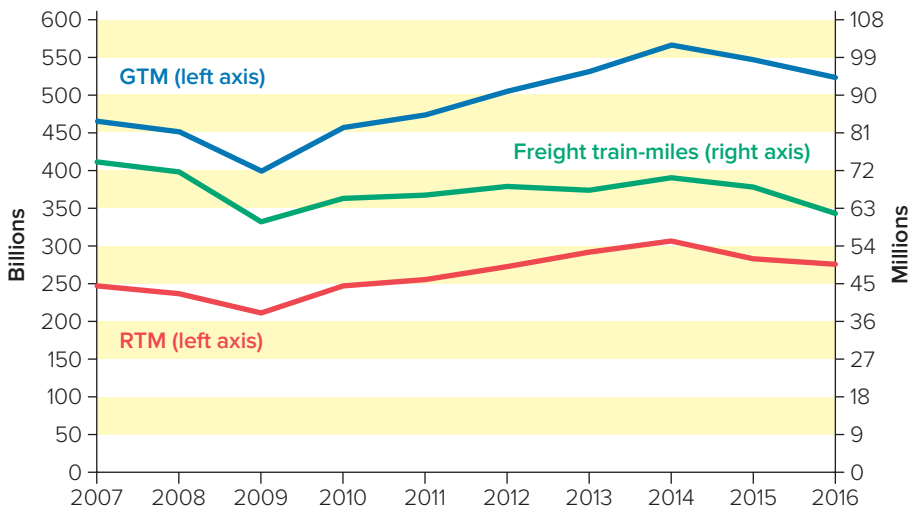
⁵ The freight rail sector's accident rate involving dangerous goods is calculated by dividing total accidents involving dangerous goods by the number of dangerous goods carloads moved by Canada's railways.

FREIGHT TRAFFIC

REVENUE TON-MILES, GROSS TON-MILES AND FREIGHT TRAIN-MILES

In 2016, freight rail traffic, measured by revenue ton-miles (RTM), decreased by 2.7 per cent from 2015 and by 2.3 per cent compared to the 2011–2015 average. Year over year, the freight rail sector's workload, measured by GTM, fell by 4 per cent. Workload was roughly in line with the five-year average. The distance travelled by Canada's freight trains, measured by freight train-miles, fell by 9.5 per cent to 61.6 million in 2016 versus 2015.

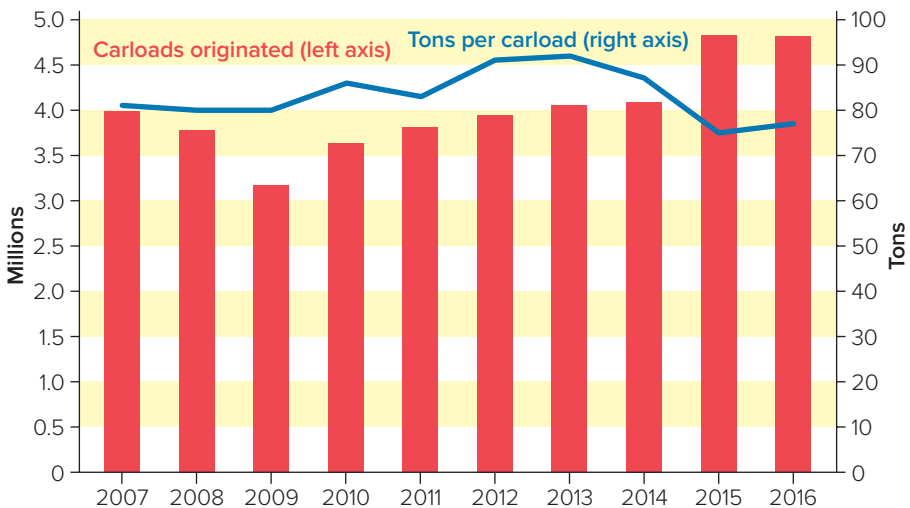
	RTM (millions)	RTK (millions)	GTM (millions)	GTK (millions)	Freight train miles (000)	Freight train kilometres (000)
2007	247,709	361,619	463,356	676,433	74,100	119,253
2008	237,323	346,457	449,922	656,821	71,712	115,409
2009	210,898	307,880	397,293	579,990	59,576	95,877
2010	247,154	360,809	455,047	664,303	65,157	104,859
2011	255,001	372,264	473,312	690,960	66,082	106,348
2012	273,504	399,275	503,879	735,590	68,145	109,668
2013	291,172	425,069	529,379	772,816	67,207	108,160
2014	306,282	447,127	564,313	823,815	70,313	113,157
2015	283,188	413,414	544,791	795,315	68,044	109,506
2016	275,485	402,167	523,071	763,607	61,584	99,110



CARLOADS

In 2016, the number of carloads that originated in Canada increased by 0.3 per cent to a record-high 4.8 million, led by machinery and motor vehicle shipments. Consequently, the overall weight of goods transported by RAC members increased by 3.3 per cent, as railways carried more heavy commodities such as coal and minerals. As a result, the tonnage per carload grew by 2.9 per cent from the previous year.⁶ Compared to the 2011-2015 average, the number of carloads originated in Canada increased by 12.9 per cent in 2016, while tonnage increased by 1.8 per cent.

	Carloads originated (000)	Tons originated (000)	Tonnes originated (000)	Tons per carload ⁶	Tonnes per carload
2007	4,196	337,989	306,623	81	73
2008	3,984	318,688	289,114	80	73
2009	3,367	269,028	244,062	80	73
2010	3,872	334,264	303,258	86	78
2011	4,044	337,074	305,793	83	76
2012	4,113	375,780	340,907	91	83
2013	4,234	388,621	352,557	92	83
2014	4,238	368,970	334,730	87	79
2015	4,831	361,342	327,809	75	68
2016	4,846	373,108	338,483	77	70



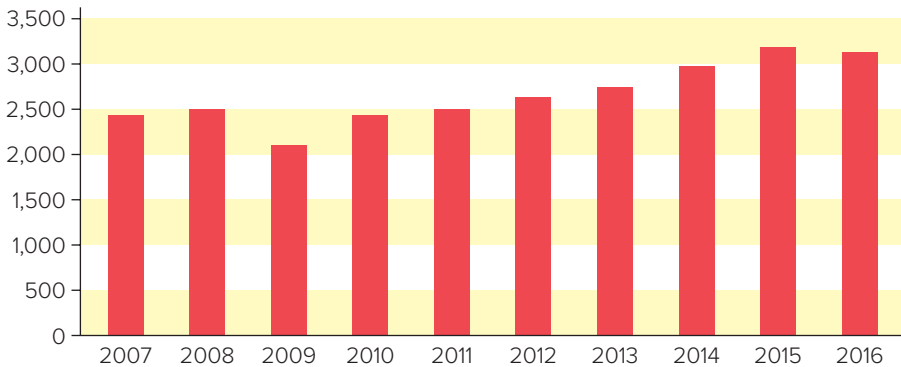
⁶ 6 Tons (tonnes) per carload is calculated by dividing tons (tonnes) originated by carloads originated.

INTERMODAL TRAFFIC

In 2016, intermodal traffic that originated in Canada decreased by 2.1 per cent from 2015 as Canadian Class 1 railways transported fewer trailers and containers.⁷ The 2016 total was 11.5 per cent higher than the 2011–2015 average of 2.8 million intermodal units.

	Trailers (000)	Containers (000)	Total (000)
2007	102	2,334	2,436
2008	101	2,396	2,497
2009	83	2,033	2,116
2010	81	2,361	2,442
2011	80	2,424	2,504
2012	98	2,540	2,638
2013	118	2,628	2,746
2014	93	2,883	2,978
2015	73	3,132	3,205
2016	55	3,084	3,139

Intermodal units originated (000) (containers & trailers)



⁷ Total intermodal traffic originated in Canada reflects both the Canadian and U.S. operations of Canadian Class 1 railways. Intermodal units are actual counts of trailers and containers, regardless of size, and are not "twenty-foot equivalent units (TEUs)."

CARLOADS BY COMMODITY

In 2016, intermodal goods, fuels and chemicals, and agricultural products were the largest groupings of carloads transported by Canada's railways, accounting for 64 per cent of all carloads. Based on the number of carloads moved, the largest increases among commodity groupings in 2016 (according to each grouping's year-over-year increase) were machinery and automotive (+12%), forest products (+8.1%), and food products (+6.9%). The largest declines were reported in the manufactured and miscellaneous goods (-11.3%) and agricultural (-4.9%) groupings.

RAC tracks 11 commodity groupings moved by freight railways in Canada. Not all RAC member companies report carloads originated by commodity grouping. As a result, the total number of carloads originated by commodity grouping is lower than the total number of carloads originated (page 9). The intermodal total is estimated by multiplying the number of intermodal units by an average load factor to determine the equivalent number of carloads.

Statistics Canada provides monthly statistics of commodity movements in Canada in its Railway Carloadings dataset. This dataset offers a brief analysis, along with tables showing carloadings and tonnes carried for 63 commodity groupings.

Carloads originated by commodity grouping

	Agriculture	Coal	Minerals	Forest products	Metals	Machinery & automobile
2007	454,034	349,983	609,422	317,158	359,982	234,830
2008	430,292	324,931	574,645	253,279	369,475	195,308
2009	474,980	277,048	368,631	182,395	273,800	148,123
2010	462,445	327,419	703,270	205,120	160,895	185,962
2011	466,305	348,556	790,520	228,448	160,827	186,522
2012	472,474	353,201	805,952	209,654	161,541	220,216
2013	465,340	383,013	810,750	215,254	150,906	199,068
2014	547,122	336,632	676,865	213,980	157,086	193,294
2015	537,013	303,932	854,186	235,169	150,273	178,429
2016	510,764	309,403	861,721	254,290	150,243	199,927
	Fuels & chemicals	Paper products	Food products	Manufactured & miscellaneous	Intermodal	Total
2007	470,876	252,150	41,822	65,923	832,663	3,988,843
2008	443,125	228,072	42,365	75,160	847,647	3,784,299
2009	401,141	175,693	42,232	79,445	741,807	3,165,295
2010	419,905	170,823	52,240	92,949	847,832	3,628,860
2011	432,657	157,780	54,948	94,935	890,168	3,811,666
2012	479,669	149,740	60,906	93,129	946,223	3,952,706
2013	539,566	150,029	56,405	103,605	987,186	4,061,122
2014	593,186	139,110	61,993	101,733	1,072,278	4,093,278
2015	579,131	131,571	64,512	112,194	1,683,988	4,830,398
2016	565,480	132,124	68,951	99,473	1,669,892	4,822,268

FREIGHT REVENUE BY COMMODITY

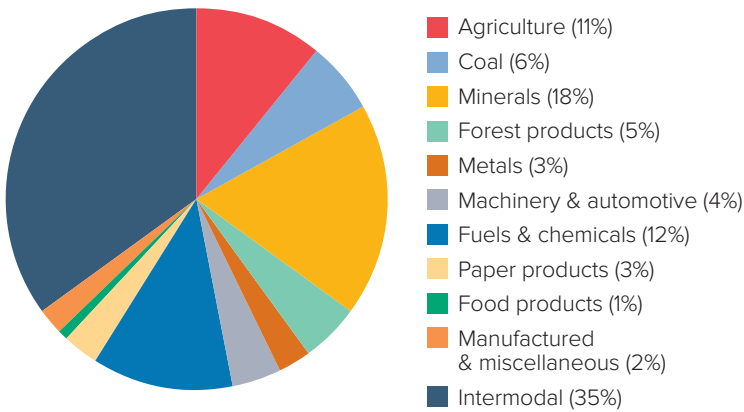
In 2016, the freight rail sector's revenue decreased by 5.6 per cent to \$10.1 billion. Similar to the previous year, freight railways generated most – 55 per cent in 2016 – of their revenue from transporting intermodal goods, agricultural products, and fuels and chemicals. On a revenue basis, the largest changes among commodity groupings (based on each grouping's year-over-year change) were minerals (-20.5%), metals (-12.1%) and fuels and chemicals (-11.1%). Compared to 2015, railways earned more revenue from transporting forest products (+11.0%) and food products (+9.9%).

Not all RAC member companies record revenue from carloads originated by commodity grouping. The data in this section reflects reported freight revenue from originated carloads grouped by commodity grouping. As a result, total freight revenue from carloads originated by commodity grouping is lower than total freight operating revenue (page 20).

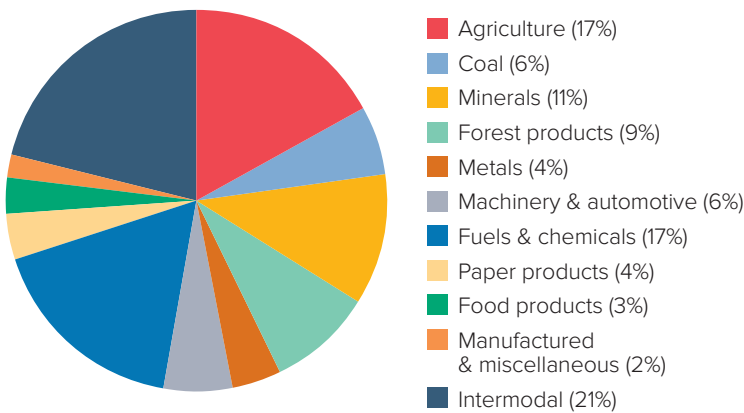
Revenue from carloads originated by commodity grouping (\$ millions)

	Agriculture	Coal	Minerals	Forest products	Metals	Machinery & automotive
2007	1,157	709	819	780	476	445
2008	1,161	706	833	646	531	443
2009	1,259	502	525	478	317	337
2010	1,221	598	772	500	381	394
2011	1,297	713	898	564	424	381
2012	1,374	749	926	611	455	508
2013	1,433	833	973	660	448	481
2014	1,725	760	1,030	702	501	481
2015	1,871	632	1,336	857	487	541
2016	1,730	628	1,062	951	428	567
	Fuels & chemicals	Paper products	Food products	Manufactured & miscellaneous	Intermodal	Total
2007	837	541	81	116	2,452	8,413
2008	902	531	89	126	2,702	8,672
2009	818	423	94	113	2,273	7,139
2010	853	437	128	130	2,592	8,006
2011	928	427	146	133	1,893	7,805
2012	1,155	411	161	153	1,997	8,499
2013	1,420	406	155	174	2,019	9,001
2014	1,756	393	181	177	2,162	9,869
2015	1,934	426	235	192	2,171	10,682
2016	1,719	423	258	181	2,135	10,083

The chart below illustrates carloads originated by commodity groupings as a percentage of all commodity carloads in 2016.



The chart below illustrates revenues by commodity grouping as a percentage of all revenues in 2016.

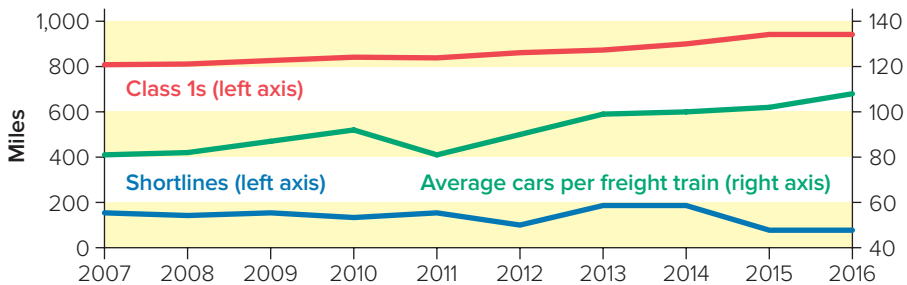


AVERAGE LENGTH OF HAUL AND AVERAGE CARS PER FREIGHT TRAIN

In 2016, each separate shipment transported by Canada's Class 1 railways (CN and CP) travelled an average distance of 937 miles (1,508 kilometres), down 0.6 per cent from the record-high length of haul reported in 2015.⁸ Shipments carried by Canada's shortline railways travelled an average distance of 80 miles (128 kilometres), down 8.2 per cent from the previous year. Freight sector-wide, the average number of railcars per train increased by 6 per cent to a record high of 108.⁹

	Average miles (kilometres) hauled by Class 1 railways (CN and CPR)		Average miles (kilometres) hauled by shortline railways		Average cars per freight train
	Miles	Kilometres	Miles	Kilometres	Cars
2007	807	1,299	151	243	81
2008	818	1,316	146	235	82
2009	830	1,336	159	256	87
2010	850	1,368	138	163	92
2011	849	1,366	170	274	81
2012	868	1,396	99	159	90
2013	871	1,402	186	300	99
2014	908	1,462	190	306	100
2015	943	1,517	87	140	102
2016	937	1,508	80	128	108

Average length of haul



⁸ Length of haul is calculated by dividing RTM (RTK) by revenue tons (revenue tonnes).

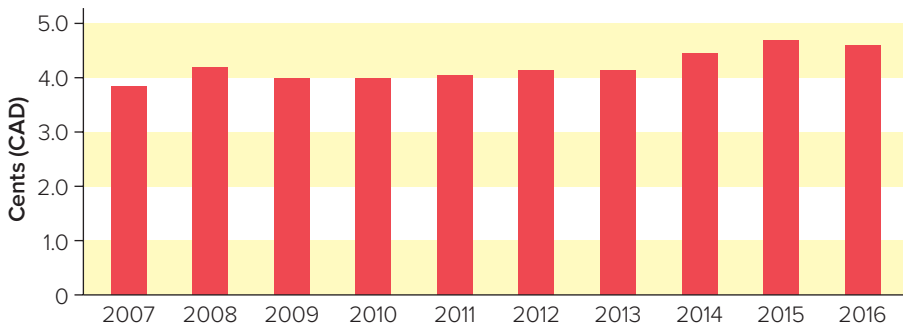
⁹ Average cars per freight train is calculated by dividing loaded and empty car-miles (car-kilometres) by train-miles (train-kilometres).

FREIGHT RATES

Freight revenue per RTM is often viewed as a proxy for railway rates because it shows the level of revenue collected by railways for moving goods over a certain distance.¹⁰ In 2016, freight operating revenue decreased by 4.7 per cent from 2015, while freight rail traffic decreased by 2.7 per cent. As a result, freight revenue per RTM decreased by 2 per cent to 4.59 cents. The decrease was the first since 2013. Between 2011 and 2015, freight revenue per RTM increased by an average of 3.5 per cent each year.

	Freight revenue (cents) per		Freight revenue per RTM index	Commodity price index ¹¹
	RTM	RTK	2001 = 100	2001 = 100
2007	3.84	2.63	117.4	196.7
2008	4.20	2.87	128.4	238.5
2009	4.00	2.74	122.3	160.6
2010	3.99	2.74	122.0	194.9
2011	4.04	2.77	123.5	229.9
2012	4.14	2.84	126.6	215.5
2013	4.13	2.83	126.5	214.6
2014	4.46	3.06	136.5	210.3
2015	4.69	3.21	143.3	134.1
2016	4.59	3.15	140.4	121.4

Freight revenue per RTM



¹⁰ Freight revenue per RTM is calculated by dividing freight operating revenue by RTM (RTK).

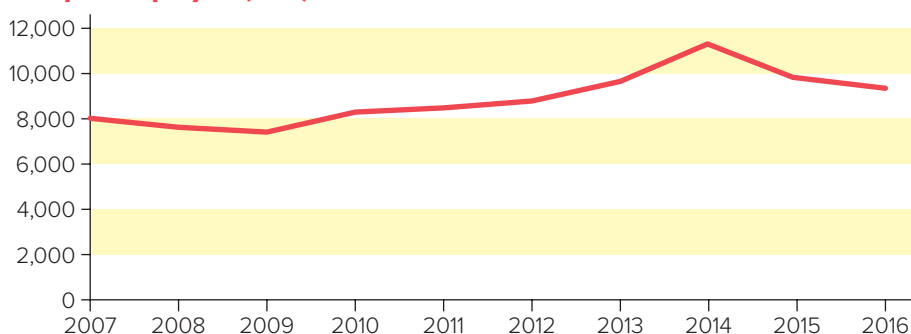
¹¹ Source: Bank of Canada data.

PRODUCTIVITY

The best measure of freight railway labour productivity is the rate of RTM per employee.¹² By this measure, employee productivity decreased by 4.9 per cent in 2016 from the previous year, as traffic fell and the freight railway workforce shrunk. Railway labour productivity in 2016 was down 2.6 per cent from the five-year average.

	RTM per employee (000)	RTK per employee (000)	Road miles per employee	Road kilometres per employee
2007	8,045	11,745	0.96	1.54
2008	7,625	11,132	0.94	1.51
2009	7,404	10,809	0.98	1.58
2010	8,287	12,098	0.96	1.54
2011	8,496	12,402	0.90	1.46
2012	8,772	12,806	0.86	1.39
2013	9,608	14,026	0.91	1.47
2014	11,302	16,499	0.84	1.35
2015	9,839	14,363	0.83	1.34
2016	9,356	13,658	0.88	1.41

RTM per employee (000)



¹² Freight rail labour productivity is calculated by dividing the annual sum of revenue-producing tonnage by the average number of freight railway employees.

FUEL CONSUMPTION AND COST

In 2016, freight railways consumed 440.6 million gallons (2 billion litres) of fuel, down 6.2 per cent, while also moving 2.7 per cent less traffic than the previous year. As a result, the freight railway sector's fuel efficiency improved by 4.1 per cent to 668 RTM per gallon of fuel consumed.¹³ The cost of diesel fuel in 2016 decreased by 12.6 per cent to \$3.02 per gallon (\$0.66 per litre), the lowest level reported since 2009.¹⁴

	Total fuel consumed		RTM per gallon of fuel consumed	RTK per litre of fuel consumed	Cost of diesel fuel	
	gallons (000)	litres (000)			per gallon (\$)	per litre (cents)
2007	492,125	2,237,237	529	170	3.07	67.6
2008	480,661	2,185,120	520	167	4.23	93.0
2009	411,612	1,871,221	545	175	2.94	64.8
2010	450,782	2,049,289	562	182	3.25	71.40
2011	436,558	1,984,178	621	202	4.25	93.46
2012	471,912	2,145,346	615	198	4.24	93.33
2013	464,275	2,110,651	664	214	4.44	97.63
2014	484,572	2,202,872	667	215	4.83	106.21
2015	469,855	2,135,996	642	206	3.46	76.01
2016	440,587	2,002,939	668	215	3.02	66.41

¹³ Freight rail fuel efficiency is calculated by dividing total RTM (RTK) by the total volume of fuel consumed.

¹⁴ This total includes fuel expenses and gallons (litres) consumed by both freight and passenger railways.

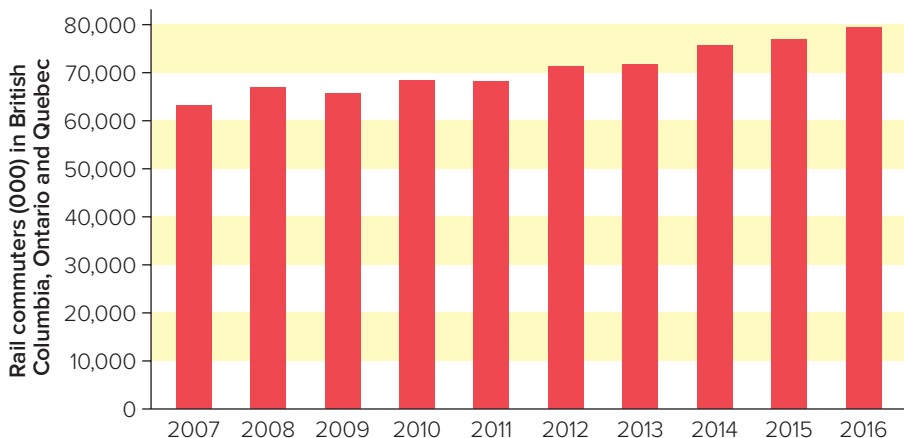
PASSENGER TRANSPORTATION

COMMUTER RAIL

In 2016, commuter railways in British Columbia, Ontario and Quebec transported a record-high 79.6 million passengers, up 3.1 per cent from the previous year and up 9.1 per cent from the 2011–2015 average.

The average number of commuters per train in 2016 edged up by 0.6 per cent from the previous year to its highest level since 2012. In addition, commuter passenger-miles rose by 4.4 per cent year over year.¹⁵

	Commuter passenger		Commuter train		Average rail commuters per train	Rail commuters (000) in British Columbia, Ontario and Quebec ¹⁶
	miles (000)	kilometres (000)	miles (000)	kilometres (000)		
2007	247,066	397,615	2,808	4,518	339	63,393
2008	256,123	412,190	2,832	4,558	340	67,052
2009	245,942	395,806	2,876	4,628	301	65,962
2010	256,134	412,209	3,008	4,841	310	68,562
2011	278,244	447,791	3,171	5,103	255	68,427
2012	288,161	463,752	4,356	7,011	342	71,522
2013	320,596	515,950	4,477	7,205	287	72,002
2014	326,969	526,206	4,610	7,419	276	75,901
2015	400,666	644,810	4,022	6,473	297	77,233
2016	418,334	673,243	4,448	7,159	298	79,626



¹⁵ Commuter passenger-miles (commuter passenger-kilometres) statistics before 2013 exclude GO Transit, which began reporting this data to RAC in 2013.

¹⁶ Rail commuter totals from 2012-2014 have been revised.

INTERCITY PASSENGER RAIL

In 2016, intercity passenger railways transported 4.2 million people, up 1.7 per cent from 2015 and slightly above the five-year average.

In the intercity passenger rail sector, passenger-miles and passenger train-miles increased by 2.1 and 1 per cent, respectively, year over year. The average number of intercity passengers per train grew by 1.1 per cent to 128, while the average length of journey increased by 1.4 per cent to 216 miles (348 kilometres).

	Passenger cars in service	Number of passengers (000)	Passenger	
			miles (millions)	kilometres (millions)
2007	538	4,478	912	1,468
2008	540	4,899	986	1,588
2009	559	4,538	894	1,439
2010	545	4,477	877	1,412
2011	544	4,461	888	1,428
2012	542	4,246	871	1,402
2013	552	4,186	861	1,386
2014	552	4,094	834	1,343
2015	551	4,171	857	1,380
2016	527	4,241	876	1,409

	Passenger train		Passenger car	
	miles (000)	kilometres (000)	miles (000)	kilometres (000)
2007	7,330	11,796	48,708	78,388
2008	7,414	11,932	49,140	79,083
2009	7,334	11,803	47,290	76,106
2010	7,331	11,799	46,275	74,472
2011	7,273	11,705	48,239	77,633
2012	7,075	11,386	48,725	78,415
2013	6,809	10,958	43,673	70,285
2014	6,720	10,814	41,587	66,928
2015	6,781	10,913	43,843	70,559
2016	6,850	11,024	44,884	72,234

	Average intercity passengers per train	Average length of journey		Average passenger load factor (%)	On-time performance (%)
		miles	kilometres		
2007	124	209	336	55	77
2008	133	206	332	59	75
2009	122	203	327	57	83
2010	120	204	328	57	82
2011	122	204	328	55	84
2012	123	213	342	54	82
2013	126	214	344	56	82
2014	124	213	342	60	76
2015	126	213	343	56	71
2016	128	216	348	54	73

FINANCIAL INFORMATION, INVESTMENTS AND TAXES

OPERATING EXPENSES, REVENUES AND INCOME

In 2016, Canada's railways' operating expenses decreased by 7.9 per cent to \$9.6 billion. Lower expenses for fuel, maintenance-of-way and structures outweighed higher costs for transportation and equipment maintenance.¹⁷

Year over year, operating revenues decreased by 3.9 per cent to \$14.1 billion, as lower freight revenues outweighed an increase in passenger revenues.¹⁸

As a result, the operating income of Canada's railways in 2016 was a record-high \$4.5 billion.¹⁹

	Operating income (\$ millions)			Operating revenues (\$ millions)		
	Total operating revenues	Total operating expenses	Total operating income	Freight	Passenger ¹⁸	Other
2007	10,704	8,495	2,209	9,516	624	564
2008	11,197	9,167	2,030	9,957	661	579
2009	9,599	8,352	1,247	8,433	627	539
2010	10,768	9,171	1,598	9,551	673	544
2011	11,533	9,774	1,760	10,305	668	561
2012	12,633	10,575	2,058	11,322	674	637
2013	13,330	10,380	2,948	12,040	668	622
2014	14,653	11,431	3,218	13,287	687	679
2015	14,679	10,468	4,211	13,265	727	680
2016	14,112	9,641	4,471	12,649	783	680

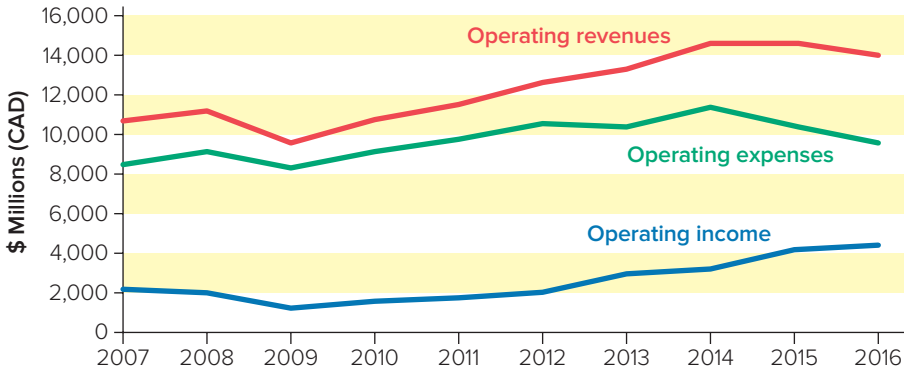
Operating expenses (\$ millions)

	Transportation	Fuel	Maintenance of equipment	Maintenance-of-way and structures	General and administrative	Total
2007	2,337	1,513	1,634	1,549	1,462	8,495
2008	2,376	2,032	1,564	1,718	1,477	9,167
2009	2,065	1,212	1,555	1,612	1,908	8,352
2010	2,195	1,464	1,452	1,766	2,294	9,171
2011	2,381	1,854	1,570	1,910	2,059	9,774
2012	2,534	2,002	1,549	1,873	2,617	10,575
2013	2,521	2,061	1,698	1,968	2,132	10,380
2014	2,976	2,340	1,876	2,109	2,131	11,431
2015	2,508	1,624	1,870	2,315	2,153	10,468
2016	2,591	1,330	1,958	2,013	1,749	9,641

¹⁷ Transportation costs are expenses incurred through the movement of rolling stock (locomotives, railcars, etc.) that are not reported under other operating expense categories.

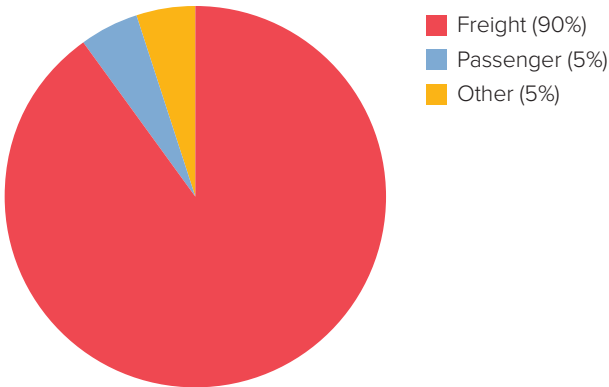
¹⁸ Federal, provincial and municipal funding of \$435 million in 2009 for intercity passenger and commuter services is excluded.

¹⁹ Operating income reflects earnings before interest and taxes.

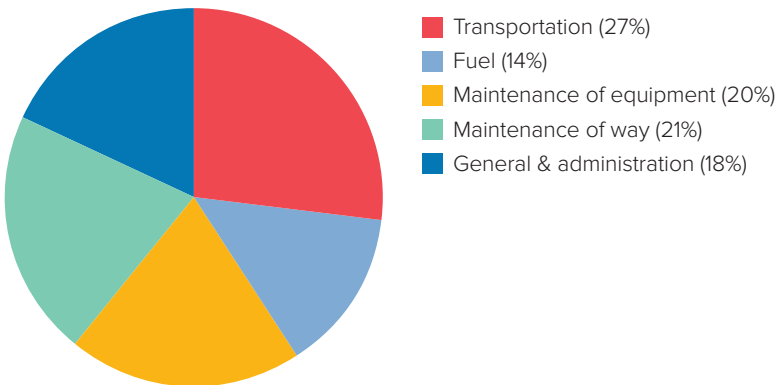


The charts below illustrate operating revenues and expenses by category as a percentage of RAC member railway totals in 2016.

Operating revenues



Operating expenses



INVESTMENTS

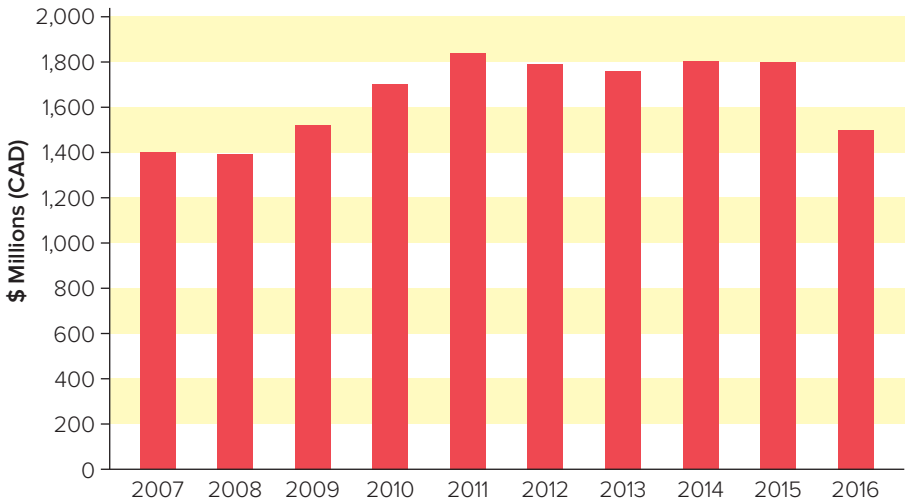
Canada's railways invested \$1.5 billion into their Canadian networks in 2016, down 16.7 per cent from the previous year and down 16.8 per cent from the 2011-2015 average. Track and roadway reflected the majority (51%) of capital expenditures in 2016.

Investments (\$ millions)

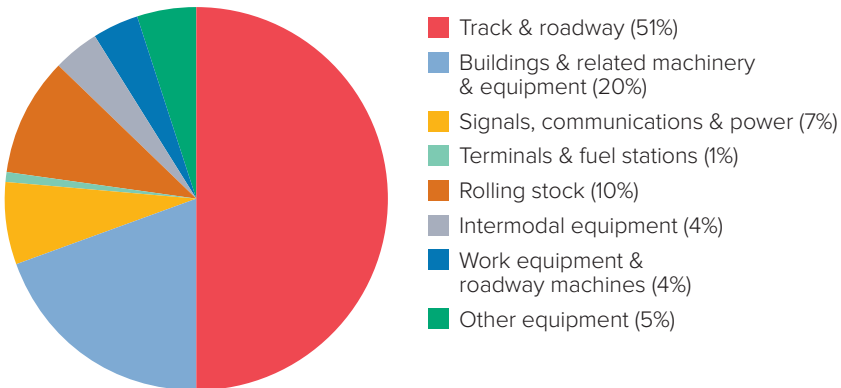
	Track & roadway	Buildings & related machinery & equipment	Signals, communications & power	Terminals & fuel stations
2007	618	255	44	43
2008	688	189	79	26
2009	706	257	72	24
2010	804	231	109	16
2011	971	314	108	15
2012	961	269	122	41
2013	892	357	100	32
2014	982	287	93	10
2015	888	309	130	26
2016	771	298	102	8

	Rolling stock	Intermodal equipment	Work equipment & roadway machines	Other equipment	Total investments
2007	350	30	41	18	1,399
2008	290	29	68	22	1,391
2009	317	34	42	72	1,524
2010	427	15	49	55	1,706
2011	307	11	53	64	1,844
2012	255	22	49	77	1,795
2013	239	17	50	77	1,764
2014	230	53	48	102	1,806
2015	233	61	92	62	1,801
2016	145	53	55	70	1,500

Investments



The chart below illustrates investments by category as a percentage of all investments made by RAC member railways in 2016.

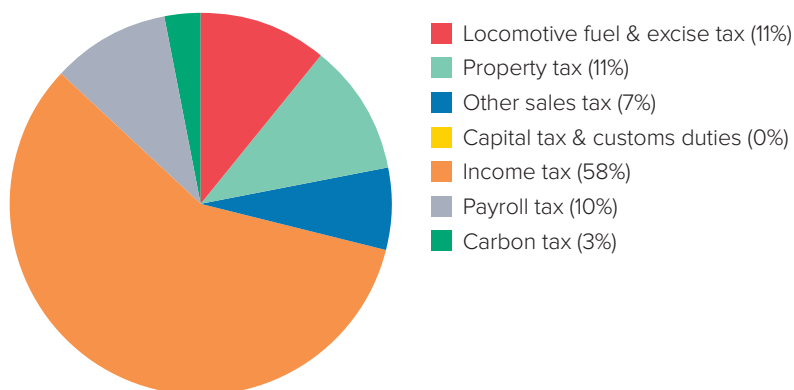


TAXES

In 2016, Canada's railways paid a record-high \$1.67 billion in taxes, up 15.6 per cent from the previous year. The main contributor to this increase was a 26 per cent – more than \$201 million – increase in the total income tax paid by railways from the previous year.

Taxes by category (\$ millions)

	Locomotive fuel & excise tax	Property tax	Other sales tax	Capital tax & customs duties	Income tax	Payroll taxes	Carbon tax	Total
2007	188	154	97	15	381	154	n/a	989
2008	187	152	99	14	323	155	n/a	930
2009	177	152	97	14	265	148	n/a	853
2010	195	150	96	14	185	147	n/a	787
2011	204	153	70	0	372	158	n/a	957
2012	220	158	70	0	159	170	n/a	777
2013	219	169	43	1	629	150	n/a	1,209
2014	186	179	65	1	462	154	44	1,091
2015	159	168	115	3	775	178	45	1,442
2016	187	180	114	1	976	167	43	1,667



Payroll taxes (\$ millions)

	Canada/Quebec Pension Plan	Unemployment insurance	Health taxes	Total
2007	75	33	46	154
2008	77	33	45	155
2009	74	30	44	148
2010	73	31	43	147
2011	77	34	47	158
2012	84	37	49	170
2013	75	32	43	150
2014	77	37	40	154
2015	82	36	53	171
2016	79	37	50	167

Taxes by jurisdiction (\$000)

	Locomotive fuel & excise tax		Fuel tax per litre (cents)	Property tax	
	2015	2016	2016	2015	2016
Alberta	6,944	17,827	5.5	17,769	19,020
British Columbia	15,425	15,393	10.7	43,947	46,610
Manitoba	11,421	10,046	6.3	15,549	15,407
Nfld. & Labrador	0	0	21.5	33	145
New Brunswick	1,252	1,279	4.3	1,184	1,091
Nova Scotia	0	0	15.4	3,017	3,021
Ontario	25,889	23,052	4.5	30,162	32,327
Quebec	6,706	3,296	3.0	36,102	40,780
Saskatchewan	40,442	38,976	15.0	20,655	21,537
Northwest Territories	22	16	11.4	80	79
Federal	50,769	76,685	4.0	0	0
Total	158,871	186,570		168,497	180,016

	Other sales tax		Capital tax & customs duties		Income tax	
	2015	2016	2015	2016	2015	2016
Alberta	0	85	0	1	66,715	87,457
British Columbia	36,443	38,809	0	0	23,435	34,057
Manitoba	21,986	17,732	132	99	8,820	10,162
Nfld. & Labrador	143	143	0	0	0	0
New Brunswick	0	0	0	0	0	0
Nova Scotia	0	0	0	0	0	412
Ontario	1,785	1,282	0	0	63,694	93,927
Quebec	16,573	17,599	0	10	28,428	31,910
Saskatchewan	11,261	9,081	65	77	16,466	19,419
Northwest Territories	0	0	0	0	0	0
Federal	26,723	28,936	2,422	1,016	567,329	698,681
Total	114,914	113,667	2,619	1,203	774,888	976,026

EMPLOYMENT

In 2016, the Canadian railway industry's workforce shrunk by 5.6 per cent year over year, while compensation decreased by 5.8 per cent.²⁰ As a result, the average annual wage per employee decreased by 2.6 per cent to \$93,896.

	Total compensation (\$ millions)	Average number of employees	Average annual wage per employee (\$)
2007	2,566	34,938	73,440
2008	2,633	35,208	74,790
2009	2,439	32,337	75,415
2010	2,584	32,565	79,346
2011	2,797	33,624	83,163
2012	2,870	34,629	82,883
2013	2,924	33,167	88,153
2014	3,023	32,681	92,491
2015	3,101	32,958	96,445
2016	2,920	31,103	93,896



²⁰ Compensation includes salaries and compensation paid, but excludes company paid benefits such as the Canada/Quebec Pension Plan, unemployment insurance and health taxes.

TRACK AND EQUIPMENT

In 2016, Canadian freight railways operated 27,069 miles (43,562 kilometres) of track, down 1.3 per cent from the previous year.²¹ The industry's freight car fleet shrunk by 7.2 per cent in 2016, mainly due to railways owning fewer railcars. The number of locomotives in service fell by 3.5 per cent year over year.

	Miles	Kilometres	Index 2000 = 100	Freight cars in service	Locomotives in service
2007	29,713	47,816	102.6	92,373	3,165
2008	29,366	47,258	101.4	83,984	3,046
2009	28,163	45,323	97.3	75,836	2,742
2010	27,654	44,501	95.5	71,788	2,954
2011	27,102	43,617	93.6	71,750	2,977
2012	26,923	43,328	93.0	64,485	3,063
2013	27,270	43,887	94.2	59,395	3,043
2014	27,304	43,942	94.3	58,577	2,696
2015	27,428	44,141	94.7	59,509	2,400
2016	27,069	43,562	93.5	55,230	2,315

Track operated, by provinces and territories

	2015		2016	
	Miles	Kilometres	Miles	Kilometres
Alberta	3,988	6,418	3,940	6,341
British Columbia	4,218	6,788	4,170	6,710
Manitoba	2,847	4,582	2,816	4,532
Nfld. & Labrador	175	282	175	282
New Brunswick	720	1,159	720	1,159
Nova Scotia	419	674	416	670
Ontario	6,271	10,092	6,222	10,013
Quebec	3,662	5,893	3,694	5,944
Saskatchewan	5,053	8,132	4,841	7,790
Northwest Territories	75	121	75	121
Total	27,428	44,141	27,069	43,562
Intercity passenger trains ²²	7,922	12,749	7,767	12,500
Commuter and tourist trains ²³	2,955	4,736	3,024	4,867
Segments terminating in the U.S. ²⁴	152	244	152	244
Grand total	38,457	61,870	38,012	61,174

21 Miles (kilometres) of track operated includes rail over which a railway has operating rights. Segments of track acquired by non-RAC-member railways would have the effect of reducing the total track mileage reported in *Rail Trends*.

22 Reflects intercity passenger railways' track and operating rights over track owned by other railways.

23 Reflects commuter and tourist railways' track and operating rights over track owned by other railways.

24 Reflects railway subdivisions that begin in Canada and terminate in the United States.

APPENDIX A

GLOSSARY

Class 1 railway: A railway with annual operating revenues exceeding \$250 million for two consecutive years.

Container: A large, weatherproof box designed for shipping and/or transferring freight between rail, truck or marine modes. Specialized containers are equipped with heating and cooling capabilities for perishable products.

Dangerous goods: Explosives, gases, flammable and combustible liquids, flammable solids, oxidizing substances, organic peroxides, poisonous (toxic) and infectious substances, nuclear substances, corrosives, or miscellaneous products, substances or organisms considered by the Governor in Council to be dangerous to life, health, property or the environment when handled, offered for transport or transported.²⁵

Fuel efficiency: The output one gets for a unit amount of fuel input, such as “RTM per gallon” for rail.

Gross ton-mile: The movement of total train weight over a distance of one mile. Total train weight is comprised of the freight cars, their contents and any inactive locomotives. It excludes the weight of the locomotives pulling the trains.

Intermodal service: The movement of trailers or containers by rail and at least one other mode of transportation. Import and export containers generally are shipped via marine and rail. Domestic intermodal service usually involves truck and rail.

On-time performance: The ability to meet customer requirements as to pick-up and delivery schedules.

Passenger-mile: The movement of a passenger the distance of one mile. Passenger-miles are used to measure the volume of passenger traffic.

Revenue ton-mile: The movement of one revenue-producing ton of freight over a distance of one mile.

Shortline railway: A railway with annual operating revenues of less than \$250 million.

Track operated: The first main track over which a railway operates. This excludes second and other main track, passing tracks and crossovers, industrial tracks, spurs and yard tracks. Excludes track used by intercity passenger trains, commuter and tourist trains, and segments of track terminating in the U.S.

Train-mile: The movement of a train the distance of one mile.

²⁵ Source: *Canadian Transportation of Dangerous Goods Regulations*, section 1.4.

APPENDIX B

CONVERSION FACTORS

Miles to kilometres	1.6093
Tons (short) to metric tonnes	0.9072
Gallons to litres	4.5461
RTM to RTK	1.4599
Kilometres to miles	0.6214
Metric tonnes to tons (short)	1.1023
Litres to gallons	0.2200
RTK to RTM	0.6850

APPENDIX C

SAFETY DEFINITIONS

The following definitions apply to railway occurrences that are required to be reported pursuant to the *Canadian Transportation Accident Investigation and Safety Board Act* and the associated regulations.

Reportable railway accident

An incident in which:

1. a person is killed or sustains a serious injury as a result of
 - (i) getting on or off or being on board the rolling stock, or
 - (ii) coming into contact with any part of the rolling stock or its contents;
2. the rolling stock or its contents
 - (i) are involved in a collision or derailment,
 - (ii) sustain damage that affects the safe operation of the rolling stock,
 - (iii) cause or sustain a fire or explosion, or
 - (iv) cause damage to the railway that poses a threat to the safe passage of rolling stock or to the safety of any person, property or the environment.

Dangerous goods involvement

“Dangerous goods” has the same meaning as in section 2 of the *Transportation of Dangerous Goods Act, 1992*. An accident is considered to have dangerous goods involvement if any of a train’s cars carrying (or having last contained) a dangerous good derails, strikes or is struck by any other rolling stock or object. It does not mean that there was any release of product. Also included are crossing accidents in which the motor vehicle involved (e.g., tanker truck) is carrying a dangerous good.

Crossing accident

A crossing accident is when a locomotive or railcar is involved in a collision with a motor vehicle or pedestrian at a railway crossing, resulting in death, serious injury or property damage.

Trespassing accident

Trespassing accidents occur when people – primarily pedestrians who are not authorized to be on railway rights-of-way – are struck by locomotives or railway cars anywhere other than at railway crossings.

Other accident types

Other accident types include, but are not limited to, trespassing, collisions/derailments involving track units, rolling stock collisions with objects, or employee/passenger accidents.