

classes), and the results were analyzed to determine accident frequency for one of two cases: (1) yard accidents and (2) mainline accidents. The values are summarized in Table 5 for accidents and derailments from this data.

Table 5. Analysis of train accidents from FRA data.

	Statistic	2011-2015	1995-2015
Yard Accidents	Total Accidents	6,907	36,742
	Total Derailments	4,812	26,204
	% of All Accidents	54.0%	52.4%
	Probability that Derailment Occurs	69.7%	71.3%
Mainline, Speed < 25mph	Total Accidents	4,007	22,817
	Total Derailments	2,527	15,709
	% of All Accidents	31.3%	32.6%
	Probability that Derailment Occurs	63.1%	68.8%
Mainline, Speed = 25mph	Total Accidents	128	899
	Total Derailments	79	652
	% of All Accidents	1.0%	1.3%
	Probability that Derailment Occurs	61.7%	72.5%
Mainline, Speed from ≥ 25 to ≤ 60 mph	Total Accidents	1,640	9,189
	Total Derailments	712	5,149
	% of All Accidents	12.8%	13.1%
	Probability that Derailment Occurs	43.4%	56.0%

The raw accident numbers were then divided by train mileage to develop accident frequency estimates for the QRA. Operational data tables provided by the FRA were used to determine the total number of yard and mainline²² train miles for the period from 1995-2015 for all classes of railroad represented in the data.²³ The operational data tables did not subdivide the mainline train miles according to track speed; thus, a single train accident frequency value was applied to all mainline train movements regardless of train speed. Using the total accident and total mileage values, the accident frequency (on a per train mile basis) were then calculated. The average accident frequencies were found to be 1.98×10^{-5} and 2.47×10^{-6} (accidents/train mile) for

²² All “Non-yard” miles were assumed to be mainline miles for the purpose of this analysis.

²³ FRA Office of Safety Analysis, Report 1.02 – Operational Data Tables.