



# What Causes Most US Rail Accidents?

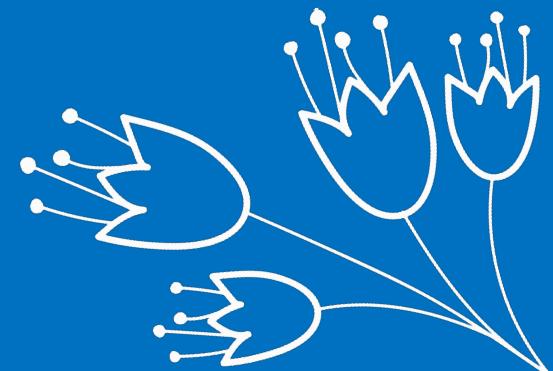
By: David Calin





- ✓ Brief Introduction
- ✓ Data Cleaning
- ✓ Data Visualization
- ✓ Bayesian Reasoning
- ✓ Conclusion
- ✓ Limitations

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# Source of Data

- “Rail Equipment Accidents”
- Published by the Federal Railroad Administration (**FRA**):  
<https://catalog.data.gov/dataset/highway-rail-grade-crossing-accident-data>
- Rich, Granular Dataset **With 215,000+ tuples**
- From January 1975 - September 2022



U.S. Department of Transportation  
**Federal Railroad Administration**

## **RAIL EQUIPMENT ACCIDENT/INCIDENT REPORT**

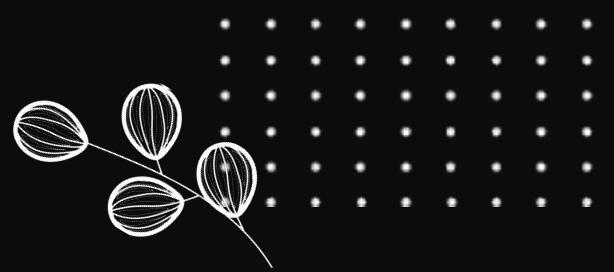
OMB No. 2130-0500

|  |  |  |  |   |   |  |   |                          |      |
|--|--|--|--|---|---|--|---|--------------------------|------|
| 1. Name of Reporting Railroad  |  |  |  | 1a. Alphabetic Code   |   |  | 1b. Railroad Accident/Incident No.  |                          |      |
| 2. Name of Other Railroad or Other Entity with Consist Involved                      |  |  |  | 2a. Alphabetic Code   |   |  | 2b. Railroad Accident/Incident No.  |                          |      |
| 3. Name of Railroad or Other Entity Responsible for Track Maintenance (single entry) |  |  |  | 3a. Alphabetic Code   |   |  | 3b. Railroad Accident/Incident No.  |                          |      |
| 4. U.S. DOT Grade Crossing Identification Number                                     |  |  |  | 5. Date of Accident/Incident<br>month day year                            |   |  | 6. Time of Accident/Incident<br>AM <input type="checkbox"/> PM <input type="checkbox"/> |                          |      |
| 7. Type of Accident/<br>Incident (single<br>entry in code box)                       | 1. Derailment<br>2. Head on collision<br>3. Rear end collision                               | 4. Side Collision<br>5. Raking collision<br>6. Broken train collision  | 7. Hwy-rail crossing<br>8. RR grade crossing<br>9. Obstruction   | 10. Explosion-detonation<br>11. Fire/violent rupture<br>12. Other impacts | 13. Other<br>(describe in<br>narrative) |  |   | Code                     |      |
| 8. Cars Carrying<br>HAZMAT   | 9. HAZMAT Cars<br>Damaged/Derailed   | 10. Cars Releasing<br>HAZMAT   |  | 11. People<br>Evacuated   | 12. Subdivision                         |  |   |                          |      |
| 13. Nearest City/Town  |  | 14. Milepost (to<br>nearest tenth)   |  | 15. State<br>Abbr.  | Code                                    | 16. County   |   |                          |      |
| 17. Temperature (F)<br>(Specify if minus)<br>° F                                     | 18. Visibility<br>(single entry)   | Code   | 19. Weather (single entry)   | Code  | Code                                    | 20. Type of Track  |   |                          | Code |
|  | 1. Dawn<br>2. Day  | 3. Dusk<br>4. Dark   | 1. Clear<br>2. Cloudy<br>3. Rain<br>4. Fog<br>5. Sleet<br>6. Snow  |   |   | 1. Main<br>2. Yard   | 3. Siding<br>4. Industry  |                          |      |
| 21. Track Name/<br>Number  |  | 22. FRA Track<br>Class (1-9, X)  | Code   | 23. Annual Track<br>Density (gross<br>tons in millions)                   |   | 24. Time Table Direction   |   |                          | Code |
|  |  |  |  |   |   | 1. North<br>2. South   | 3. East<br>4. West  |                          |      |
| 25. Type of Equipment<br>Consist<br>(single entry)                                   | 1. Freight Train<br>2. Passenger Train-Pulling<br>3. Commuter Train-Pulling<br>4. Work train | 5. Single Car<br>6. Cut of cars<br>7. Yard/switching<br>8. Light loco(s)   | 9. Maint./Inspect. Car<br>A. Spec. MoW Equip.<br>B. Passenger Train-Pushing<br>C. Commuter Train-Pushing | D. EMU<br>E. DMU  | Code                                    | 26. Was Equipment<br>Attended?<br>1. Yes<br>2. No  |   | 27. Train Number/Symbol  |      |
| 28. Speed (recorded speed,<br>if available)  | Code   | 30. Type of Territory (enter code(s) that apply)<br>Signalization (Mandatory)<br>1. Signaled 2. Not Signaled   |  |   |   | 30a. Remotely Controlled Locomotive?<br>0 = Not a remotely controlled operation<br>1 = Remote control portable transmitter<br>2 = Remote control tower operation<br>3 = Remote control portable transmitter -<br>more than one remote<br>control transmitter |   |                          | Code |
| R - Recorded<br>E - Estimated  | MPH  |  |  |   |   |  |   |                          |      |
| 29. Trailing Tons (gross tonnage,<br>excluding power units)                          |  | Method of Operation/Authority for Movement (Mandatory)<br>1. Signal Indication 2. Direct Train Control 3. Yard/Limited<br>4. Block Register Territory 5. Other Than Main Track |  |   |   |  |   |                          |      |
|  |  | Supplemental/Adjunct Codes (Mandatory)<br>* Mandatory to the extent that all applicable codes are entered  |  |   |   | <input type="checkbox"/>   | <input type="checkbox"/>  | <input type="checkbox"/> |      |

|   |  |  |           |                      |           |                        |   |  |          |                            |          |            |  |  |  |
|---|--|--|-----------|----------------------|-----------|------------------------|---|--|----------|----------------------------|----------|------------|--|--|--|
| 11. Principal Car/Unit  |  | a. Initial and Number                      |           | b. Position in Train |           | c. Loaded (yes/no)     |   | 32. If railroad employee(s) tested for drug/alcohol use, enter the number that were positive in the appropriate box. |          | Alcohol                    |          | Drugs      |  |  |  |
| (1) First Involved (derailed, struck, etc.)   |  |  |           |                      |           |                        |   |  |          |                            |          |            |  |  |  |
| (2) Causing (if mechanical, cause reported)   |  |  |           |                      |           |                        |   | 33. Was this consist transporting passengers? (y/n)  |          |                            |          |            |  |  |  |
| 14. Locomotive Units (Exclude EMU, DMU, and Cab Car Locomotives.)   |  | a. Head End                                | Mid Train |                      | Rear End  |                        | 35. Cars (Include EMU, DMU, and Cab Car Locomotives.) |  | Loaded   |                            | Empty    |            |  |  |  |
|   |  | b. Manual                                  | c. Remote | d. Manual            | e. Remote |                        | (1) Total in Equipment Consist                        | a. Freight   | b. Pass. | c. Freight                 | d. Pass. | e. Caboose |  |  |  |
| 1) Total in Train   |  |  |           |                      |           |                        | (2) Total Derailed                                    |  |          |                            |          |            |  |  |  |
| 2) Total Derailed   |  |  |           |                      |           |                        |   |  |          |                            |          |            |  |  |  |
| 36. Equipment Damage This Consist   |  | 37. Track, Signal, Way, & Structure Damage |           |                      |           | 38. Primary Cause Code |   | 39. Contributing Cause Code  |          |                            |          |            |  |  |  |
|   |  |  |           |                      |           |                        |   |  |          | Length of Time on Duty     |          |            |  |  |  |
| 40. Engineers/ Operators  |  | 41. Firemen                                |           | 42. Conductors       |           | 43. Brakemen           |   | 44. Engineer/Operator Hrs:   |          | 45. Conductor Hrs:         |          | Mins:      |  |  |  |
| Casualties to:  |  | 46. Railroad Employees                     |           | 47. Train Passengers |           | 48. Others             |   | 49a. Special Study Block A   |          | 49b. Special Study Block B |          |            |  |  |  |
| Fatal   |  |  |           |                      |           |                        |   |  |          |                            |          |            |  |  |  |
| Nonfatal  |  |  |           |                      |           |                        |   |  |          |                            |          |            |  |  |  |
| 50. Latitude  |  |  |           |                      |           | 51. Longitude          |   |  |          |                            |          |            |  |  |  |
| 52. Narrative Description (Be specific, and continue on separate sheet if necessary)  |  |  |           |                      |           |                        |   |  |          |                            |          |            |  |  |  |
| 3. Typed/Printed Name & Title of Preparer   |  |  |           |                      |           |                        |   | 54. Signature  |          |                            |          | 55. Date   |  |  |  |
| NOTE: This report is part of the reporting railroad's accident report pursuant to the accident reports statute and, as such shall not "be admitted as evidence or used for any purpose in any suit or action for damages growing out of any matter mentioned in said report..." 49 U.S.C. 2093. See 49 C.F.R. 225.7 (b).  |  |  |           |                      |           |                        |   |  |          |                            |          |            |  |  |  |
| This collection of information is mandatory under 49 CFR 225, and is used by FRA to monitor national rail safety. Public reporting burden is estimated to average 2 hours per response, including the time for reviewing instructions, searching existing databases, gathering and maintaining the data needed, and completing and reviewing the collection of information. The information collected is a matter of public record, and no confidentiality is promised to any respondent. Please note that an agency may not conduct or sponsor, and a person is not required to respond to a collection of information unless it displays a currently valid OMB control number. The OMB control number for this collection is 2130-0500. |  |  |           |                      |           |                        |   |  |          |                            |          |            |  |  |  |

**This Form Is Filled Out By The Railroad Companies Involved, & Is Updated By The FRA and NTSB Once They Have Completed Their Investigations**

# Data Cleaning



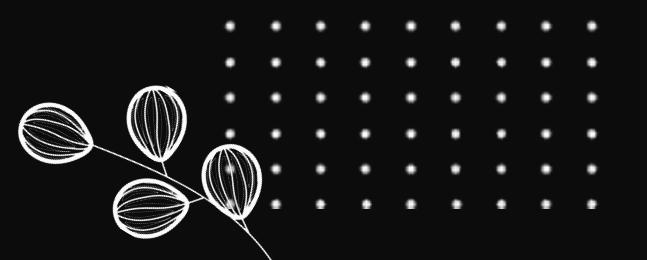
```
> str(RailDS)
'data.frame': 215434 obs. of 159 variables:
```

```
#Columns of Interest For Testing Correlations & Possibly As Potential Predictors:
RailDS$Reporting.Railroad.Code
RailDS>Date
RailDS$Time
RailDS$Accident.Type
RailDS$State.Abbreviation
RailDS$County.Name
RailDS$Temperature
RailDS$Visibility
RailDS$Weather.Condition
RailDS$Track.Type
RailDS$Track.Class #Based on Speed Limit At Accident site... will Make Another column to signify This
RailDS$Equipment.Type
RailDS$Gross.Tonnage
RailDS$Train.Speed
RailDS$Accident.Cause
```

Instead of Removing all NA values...

# Data Cleaning (Cont.)

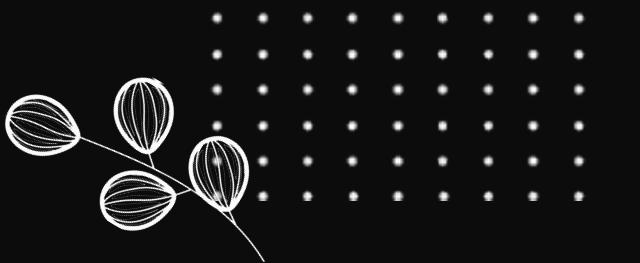
```
#I Had To Replace Missing Values of "" as NA values Because R Would Not Recognize Them
library(dplyr)
RailDS = RailDS %>%
  mutate(Reporting.Railroad.Code = replace(Reporting.Railroad.Code, Reporting.Railroad.Code == "", NA)) %>%
  mutate(Date=replace(Date,Date=="",NA)) %>%
  mutate(Time=replace(Time,Time=="",NA)) %>%
  mutate(Accident.Type=replace(Accident.Type,Accident.Type=="",NA)) %>%
  mutate(State.Abbreviation=replace(State.Abbreviation,State.Abbreviation=="",NA)) %>%
  mutate(County.Name=replace(County.Name,County.Name=="",NA)) %>%
  mutate(Temperature=replace(Temperature,Temperature=="",NA)) %>%
  mutate(Visibility=replace(Visibility,Visibility=="",NA)) %>%
  mutate(Weather.Condition=replace(Weather.Condition,Weather.Condition=="",NA)) %>%
  mutate(Track.Type=replace(Track.Type,Track.Type=="",NA)) %>%
  mutate(Track.Class=replace(Track.Class,Track.Class=="",NA)) %>%
  mutate(Train.Speed=replace(Train.Speed,Train.Speed=="",NA)) %>%
  mutate(Total.Damage.Cost=replace(Total.Damage.Cost,Total.Damage.Cost=="",NA)) %>%
  mutate(Loaded.Passenger.Cars=replace(Loaded.Passenger.Cars,Loaded.Passenger.Cars=="",NA)) %>%
  mutate(Empty.Passenger.Cars=replace(Empty.Passenger.Cars,Empty.Passenger.Cars=="",NA)) %>%
  mutate(Primary.Accident.Cause.Code=replace(Primary.Accident.Cause.Code,Primary.Accident.Cause.Code=="",NA))
```



```
RailCleanDS = RailcleanDS %>%
  drop_na(Track.Speed.Limit)
str(RailCleanDS)
View(RailCleanDS)
```

```
library(tidyr)
RailCleanDS = RailDS %>%
  drop_na(Reporting.Railroad.Code) %>%
  drop_na(Date) %>%
  drop_na(Time) %>%
  drop_na(Accident.Type) %>%
  drop_na(State.Abbreviation) %>%
  drop_na(County.Name) %>%
  drop_na(Temperature) %>%
  drop_na(Visibility) %>%
  drop_na(Weather.Condition) %>%
  drop_na(Track.Type) %>%
  drop_na(Track.class) %>%
  drop_na(Equipment.Type) %>%
  drop_na(Train.Speed) %>%
  drop_na(Accident.Cause) %>%
  drop_na(Total.Damage.Cost) %>%
  drop_na(Loaded.Passenger.Cars) %>%
  drop_na(Empty.Passenger.Cars) %>%
  drop_na(Primary.Accident.Cause.Code)
str(RailCleanDS)
View(RailCleanDS)
```

# Data Cleaning (Cont.)



- I then focused on **the primary cause for the accident** as determined by the FRA and NTSB, by importing the dataset “**Appendix C**” from [railroads.dot.gov](http://railroads.dot.gov)

Appendix C - Train Accident Cause Codes.xls (69 KB)

| Code | Description                              | Category                               | Title                              |
|------|--|--|------------------------------------|
| E51C | Broken or bent axle between wheel        | Axles and Journal Bearings             | Mechanical and Electrical Failures |
| E51L | Broken or bent axle between wheel        | Axles and Journal Bearings             | Mechanical and Electrical Failures |
| E52C | Journal (plain) failure from overheating | Axles and Journal Bearings             | Mechanical and Electrical Failures |
| E52L | Journal (plain) failure from overheating | Axles and Journal Bearings             | Mechanical and Electrical Failures |
| E53C | Journal (roller bearing) failure from    | Axles and Journal Bearings             | Mechanical and Electrical Failures |
| E53L | Journal (roller bearing) failure from    | Axles and Journal Bearings             | Mechanical and Electrical Failures |
| E54C | Journal fractured, new cold break        | Axles and Journal Bearings             | Mechanical and Electrical Failures |
| E54L | Journal fractured, new cold break        | Axles and Journal Bearings             | Mechanical and Electrical Failures |
| E55C | Journal fractured, cold break            | Axles and Journal Bearings             | Mechanical and Electrical Failures |
| E55L | Journal fractured, cold break            | Axles and Journal Bearings             | Mechanical and Electrical Failures |
| E59C | Other axle and journal bearing defects   | Axles and Journal Bearings             | Mechanical and Electrical Failures |
| E59L | Other axle and journal bearing defects   | Axles and Journal Bearings             | Mechanical and Electrical Failures |
| E32L | Coupler drawhead broken or defective     | Coupler and Draft System               | Mechanical and Electrical Failures |
| E33C | Coupler retainer pin/cross key missing   | Coupler and Draft System               | Mechanical and Electrical Failures |
| E34C | Draft gear/mechanism broken or           | Coupler and Draft System               | Mechanical and Electrical Failures |
| E35L | Coupler carrier broken or defective      | Coupler and Draft System               | Mechanical and Electrical Failures |
| E80C | Box car plug door open                   | Doors                                  | Mechanical and Electrical Failures |
| E81C | Box car plug door, attachment            | Doors                                  | Mechanical and Electrical Failures |
| E82C | Box car plug door, locking lever not in  | Doors                                  | Mechanical and Electrical Failures |
| E83C | Box car door, other than plug, open      | Doors                                  | Mechanical and Electrical Failures |
| E84C | Box car door, other than plug,           | Doors                                  | Mechanical and Electrical Failures |
| E85C | Bottom outlet car door open              | Doors                                  | Mechanical and Electrical Failures |
| E86C | Bottom outlet car door attachment        | Doors                                  | Mechanical and Electrical Failures |
| E89C | Other car door defects (Provide detail)  | Doors                                  | Mechanical and Electrical Failures |
| E99C | Other mechanical and electrical          | General Mechanical Electrical Failures | Mechanical and Electrical Failures |
| E99L | Other mechanical and electrical          | General Mechanical Electrical Failures | Mechanical and Electrical Failures |
| E70L | Running gear failure (LOCOMOTIVE)        | Locomotives                            | Mechanical and Electrical Failures |
| E71L | Traction gear failure (LOCOMOTIVE)       | Locomotives                            | Mechanical and Electrical Failures |
| E72L | Crank case or air box explosion          | Locomotives                            | Mechanical and Electrical Failures |
| E73L | Oil or fuel fire (LOCOMOTIVE)            | Locomotives                            | Mechanical and Electrical Failures |
| E74L | Electrically caused fire                 | Locomotives                            | Mechanical and Electrical Failures |

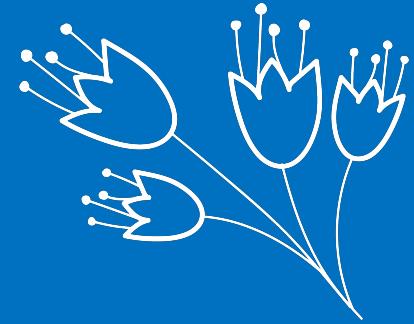
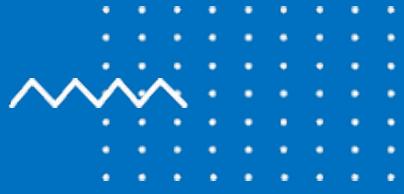
- Next, I omitted:
- ◆ Cause codes **M599, M505, M707**
  - ◆ Rows with cause categories **not defined by Appendix C**
  - ◆ All new NA values

```
#Cleaning: Primary Accident Cause Codes That We Cannot Analyze:  
#According To The Manual, "M599" Signifies A Primary Accident Cause Not Defined By Them & Is Explained Under "Narrative" Column.  
OtherCause<-subset(RailCleanDS,RailCleanDS$Primary.Accident.Cause.Code=="M599")  
str(OtherCause)  
#We Must Also Omit "M505" As It Is An Accident Still Under Investigation.  
UICause<-subset(RailCleanDS,RailCleanDS$Primary.Accident.Cause.Code=="M505")  
str(UICause)  
#We must also omit "M507" as it is an accident with an undetermined cause although the investigation is completed.  
NoKnownCause<-subset(RailCleanDS,RailCleanDS$Primary.Accident.Cause.Code=="M507")  
str(NoKnownCause)  
RailCleanDS = RailCleanDS %>%  
  mutate(Primary.Accident.Cause.Code=replace(Primary.Accident.Cause.Code,Primary.Accident.Cause.Code=="M599",NA)) %>%  
  mutate(Primary.Accident.Cause.Code=replace(Primary.Accident.Cause.Code,Primary.Accident.Cause.Code=="M505",NA)) %>%  
  mutate(Primary.Accident.Cause.Code=replace(Primary.Accident.Cause.Code,Primary.Accident.Cause.Code=="M507",NA))
```

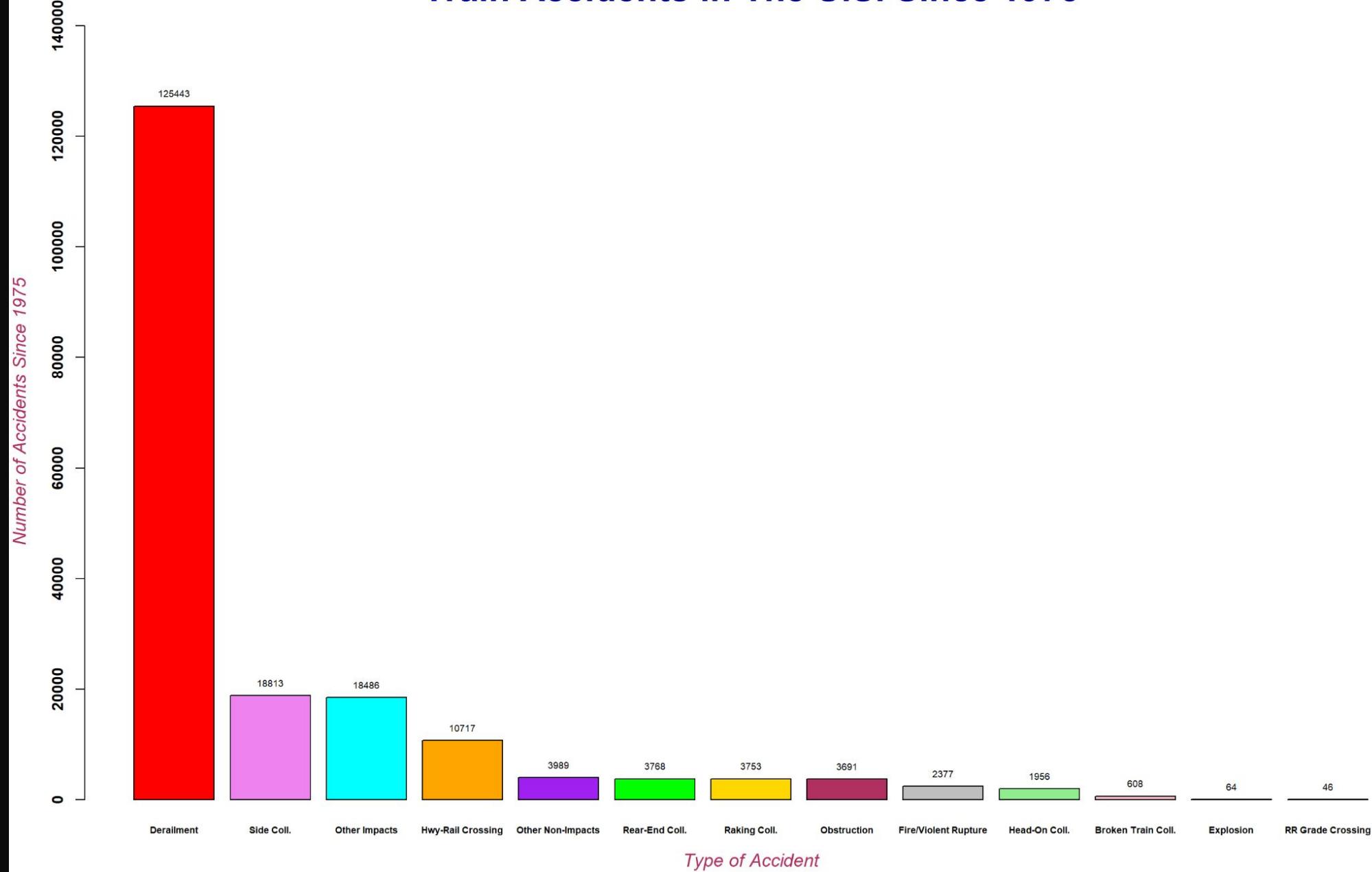
```
View(RailCleanDS)  
emptyCode<-subset(RailCleanDS,RailCleanDS$Primary.Accident.Cause.Code==NA)  
View(emptyCode)  
is.na(RailCleanDS$Primary.Accident.Cause.Code)  
RailCleanDS = RailCleanDS[!is.na(RailCleanDS$Primary.Accident.Cause.Code),]  
is.na(RailCleanDS$Primary.Accident.Cause.Code)  
str(RailCleanDS)  
View(RailCleanDS)
```

```
#Cleaning: Removing NA Values That Don't Fit Into the Categories of Codes Identified  
View(RailCleanDS)  
is.na(RailCleanDS$Primary.Accident.Cause.Category)  
RailCleanDS = RailCleanDS[!is.na(RailCleanDS$Primary.Accident.Cause.Category),]  
is.na(RailCleanDS$Primary.Accident.Cause.Category)  
str(RailCleanDS)  
View(RailCleanDS)
```

# Data Visualization



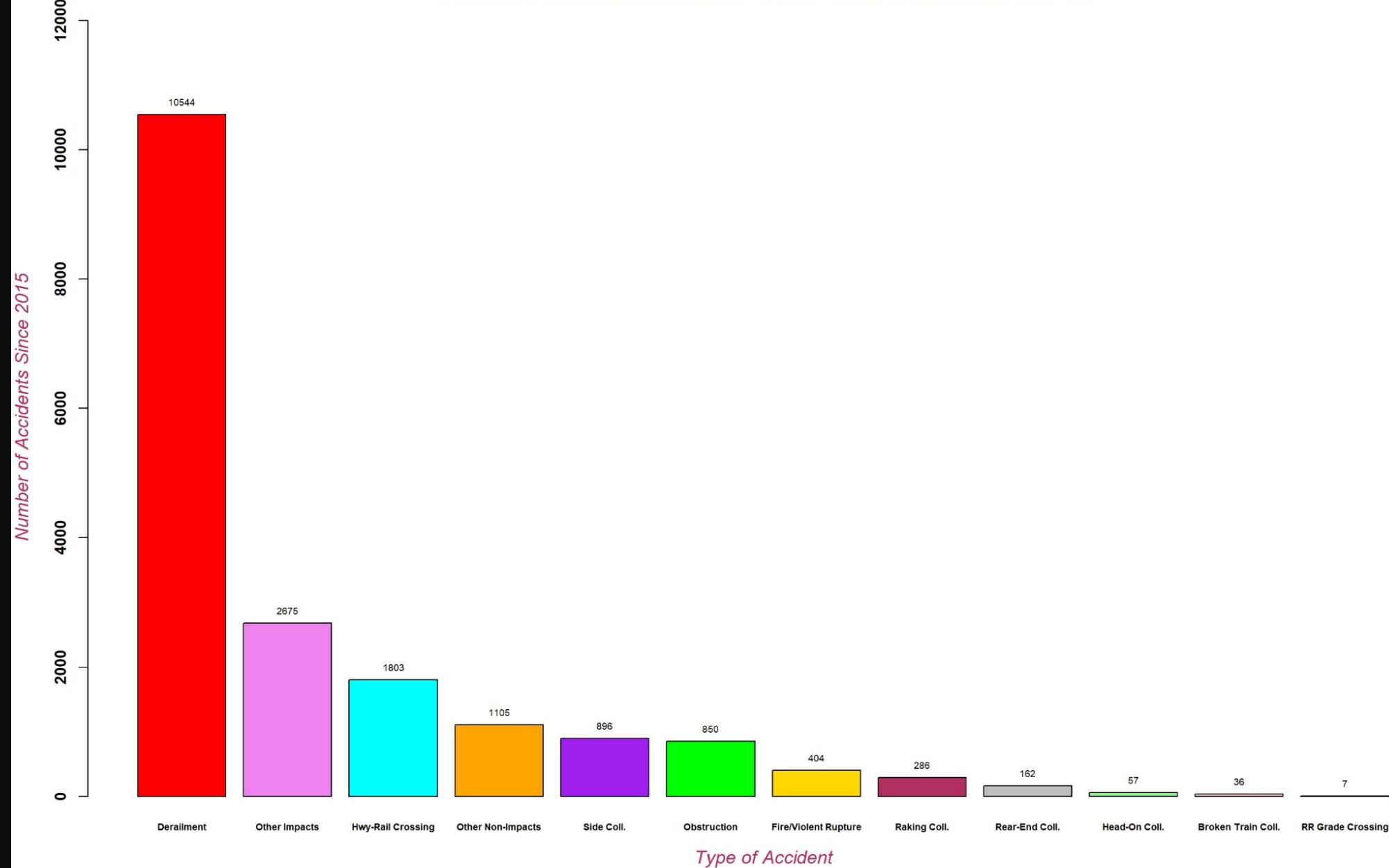
# Train Accidents in The U.S. Since 1975



→ Derailments  
are the most  
common  
accident  
type

→ What about  
starting  
from 2015?

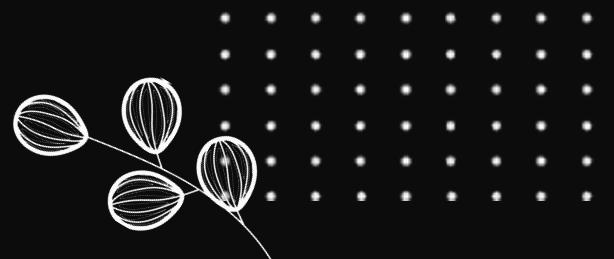
# Train Accidents in The U.S. Since 2015



- Derailments are still the most common accident type
- Okay, but why?
- What causes them?



# What if a train was speeding?

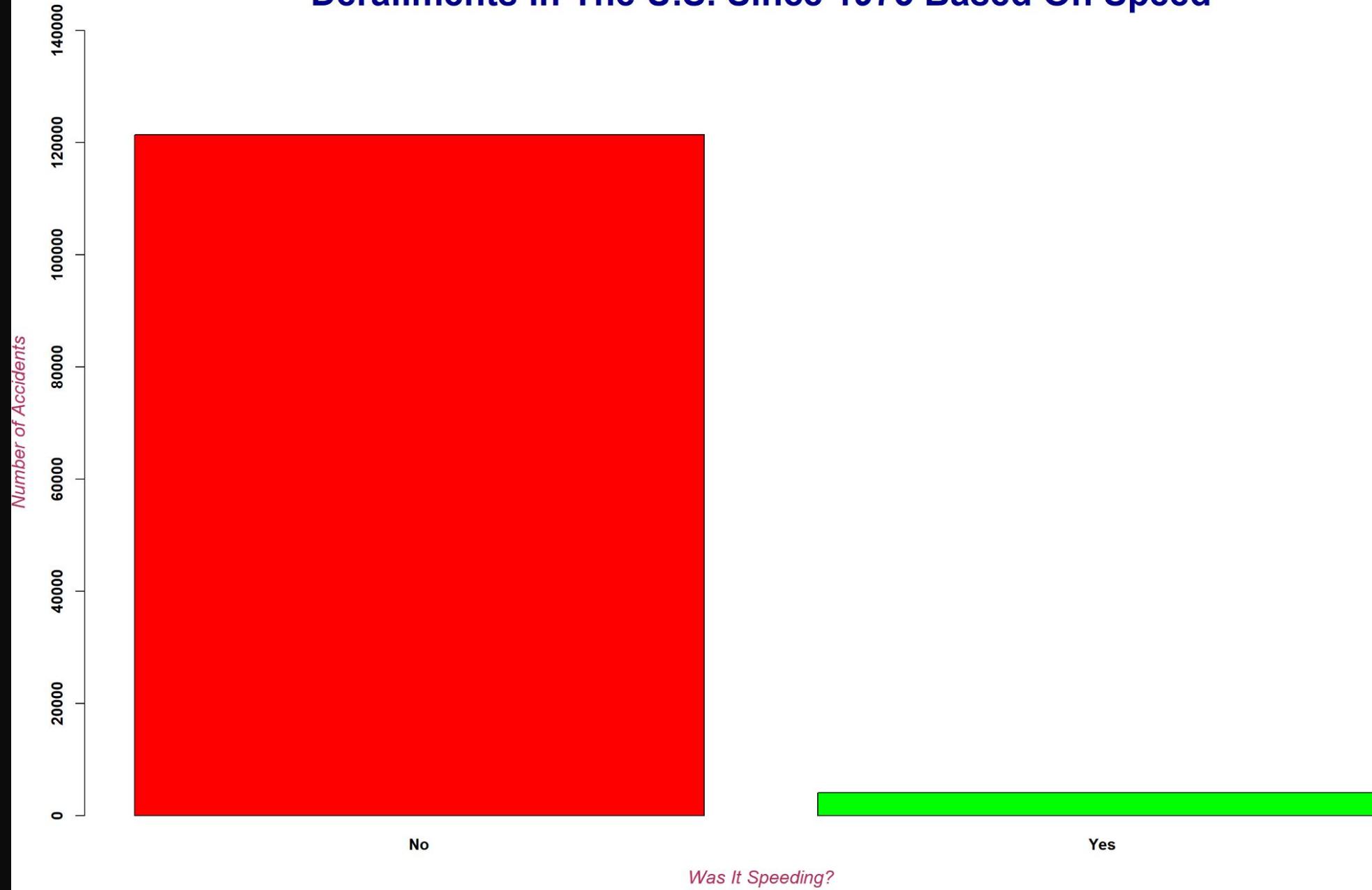


- By reading [Form F 6180.54](#) I discovered that "Rail.Class" codes corresponded to **speed limits**
- So, I imported data from [§ 213.9](#) and [§ 213.307](#) of federal codes
- I then created a column with the difference of: **train speed - limit**
- If the difference:
  - ◆ > 0, then speeding
  - ◆ <= 0, then not speeding

| Over track that meets all of the requirements prescribed in this part for -    | The maximum allowable operating speed for freight trains is -    | The maximum allowable operating speed for passenger trains is - |
|--|--|---|
| Excepted track   | 10   | N/A   |
| Class 1 track  | 10   | 15  |
| Class 2 track  | 25   | 30  |
| Class 3 track  | 40   | 60  |
| Class 4 track  | 60   | 80  |
| Class 5 track  | 80   | 90  |
| Over track that meets all of the requirements prescribed in this subpart for - | The maximum allowable operating speed for trains is <sup>1</sup> |   |
| Class 6 track  | 110 m.p.h.   |   |
| Class 7 track  | 125 m.p.h.   |   |
| Class 8 track  | 160 m.p.h. <sup>2</sup>  |   |
| Class 9 track  | 220 m.p.h. <sup>2</sup>  |   |

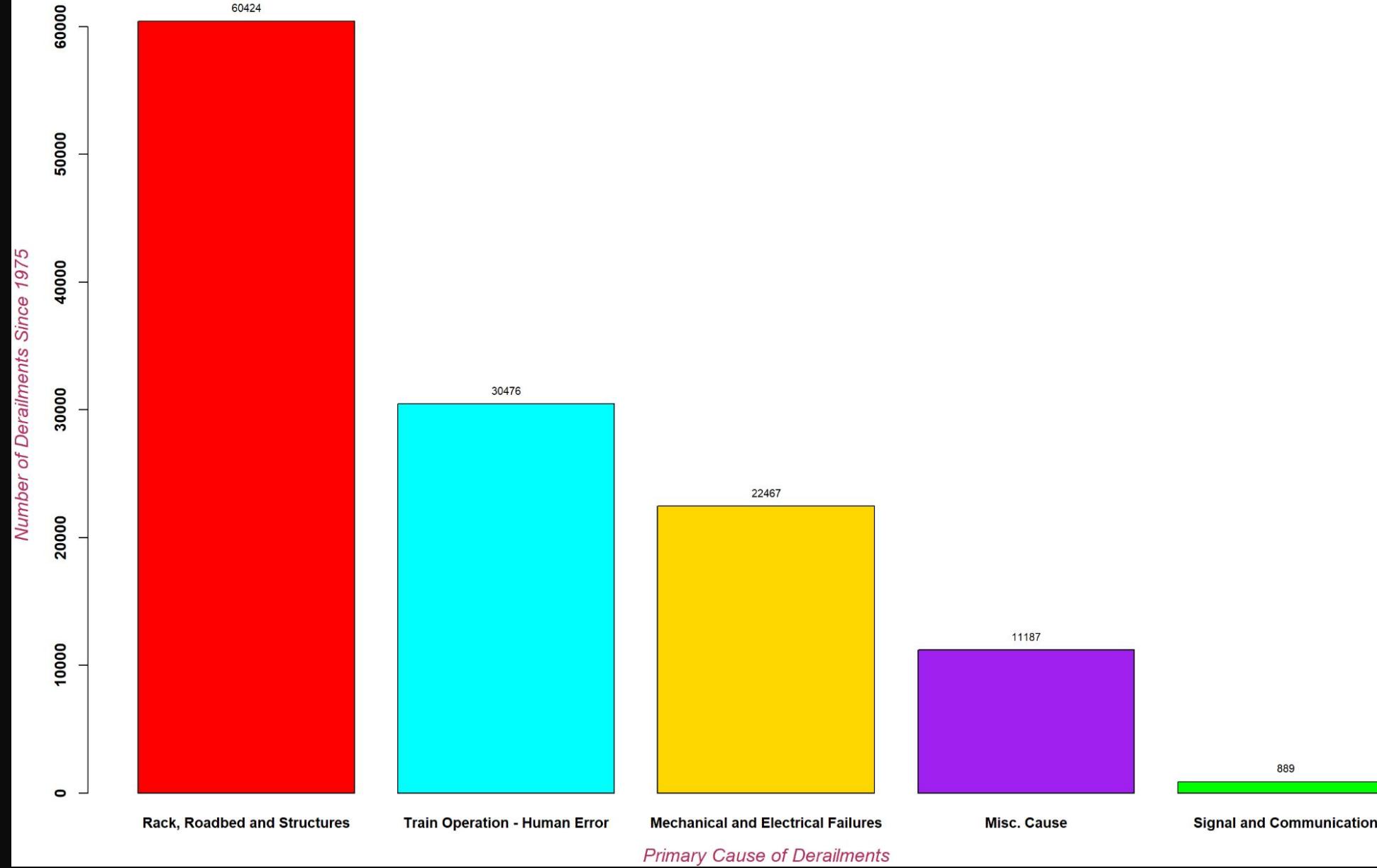
```
typeof(RailCleanDS$Track.Speed.Limit)
typeof(RailCleanDS$Train.Speed)
RailCleanDS$Speed.Under.Over.Limit=(RailCleanDS$Train.Speed-as.integer(RailCleanDS$Track.Speed.Limit))
View(RailCleanDS)
#Adding New Column: Assigning a Binary Option Potentially For Conditional Trees Later On...
RailCleanDS$Was.It.Speeding=with(RailCleanDS,ifelse((RailCleanDS$Speed.Under.Over.Limit>0),"Yes","No"))
#Subsetting By "Yes" To "Speeding" To See How Many Are Speeding:
Speeding=subset(RailCleanDS,RailCleanDS$Was.It.Speeding=="Yes")
str(Speeding) #Turned Out To Be A Very Small Minority (6296/194759 = 3.323%)
```

## Derailments in The U.S. Since 1975 Based On Speed



- Most derailments do not involve a speeding train
- So what causes them?

## Primary Cause of Derailments in The U.S. Since 1975



→ Most derailments are caused by problems with “Rack, Roadbed and Structures”

→ These are issues with the railroad itself

→ So what?

# Bayesian Reasoning

What Is The Probability That  
The Primary Cause is A  
Structural Rail Problem (Rack,  
Roadbed and Structures) Given  
Accident Type was a  
Derailment?



$$P(H | E) = P(E | H) * P(H) / P(E)$$

$P(H) = P(\text{Rack.Roadbed.Structures})$

$P(E) = P(\text{Derailment})$

```
str(RailCleanDS$Primary.Accident.Cause.Title)
table(RailCleanDS$Accident.Type)
PE=125443/193711
table(RailCleanDS$Primary.Accident.Cause.Title)
PH=60424/193711
RRS=subset(RailCleanDS,RailCleanDS$Primary.Accident.Cause.Title=="Rack, Roadbed and Structures")
DerailGivenStructures=count(RRS,RRS$Accident.Type=="Derailment")
DerailGivenStructures
PE.H=60424/(60424+3224)
PH.E=PE.H*PH/PE
PH.E*100
#45.72858% chance that the primary cause is structural rail problem given it was derailment.
```

# What If We Also Knew If The Train Was Speeding?



$$P(H | E) = P(E | H) * P(H) / P(E)$$

$P(H) = P(\text{Rack.Roadbed.Structures})$

$P(E) = P(\text{Derailment} + \text{Speeding})$

```
str(RailCleanDS$Primary.Accident.Cause.Title)
Derail.Speed=subset(RailCleanDS,(RailCleanDS$Accident.Type=="Derailment")&(RailCleanDS$Was.It.Speeding=="Yes"))
str(Derail.Speed)
PE2=4072/193711
PH
DerailGivenStrucutres.Speed=count(RRS,(RRS$Accident.Type=="Derailment"&RRS$Was.It.Speeding=="Yes"))
DerailGivenStrucutres.Speed
PE.H2=1473/(1473+62175)
PH.E2=PE.H2*PH/PE2
PH.E2*100
#34.34153% chance that the primary cause is structural given it was derailment and the train was speeding.
```

# Conclusion

- These findings are important because with just **2 pieces** of information, we can find **the probability** of the most common cause of train accidents occurring
- So, we can **alert the FRA** by email that the most probable way of having a derailment occur is with faulty rail structures
  - ◆ We can **encourage more maintenance of railroads** or ask for **more regular replacement** with new infrastructure
- Since this is the leading cause of derailments, paying attention to “Rack, Roadbed, and Structure” of railroads **may decrease derailments, which may lead to less long-term cost, and may lead to less casualties**



# Limitations

- It typically takes several months for the FRA and SBTM to complete their investigations (as shown by me omitting NA values of recent accidents in Slide 7)
- So, we could also use this information in the future to build a classification tree (since a categorical variable) that predict the primary cause of an accident

## Six to nine months

A major train accident or incident investigation typically takes **six to nine months** to complete, and no portions of reports are made public until an investigation is finalized. An up-to-date listing of all active, open and ongoing investigations will also be posted online.

[FRA Train Accident Investigation Reports Now Available Online](#)

**Thank You!**