

Agency Analysis

Quarto

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Running Code

When you click the **Render** button a document will be generated that includes both content and the output of embedded code. You can embed code like this:

```
library(dplyr)
```

Warning: package 'dplyr' was built under R version 4.3.3

Attaching package: 'dplyr'

The following objects are masked from 'package:stats':

```
filter, lag
```

The following objects are masked from 'package:base':

```
intersect, setdiff, setequal, union
```

```
library(tidyr)  
library(lubridate)
```

Warning: package 'lubridate' was built under R version 4.3.3

Attaching package: 'lubridate'

The following objects are masked from 'package:base':

date, intersect, setdiff, union

```
library(fixest) # for fixed effects regression analysis
```

Warning: package 'fixest' was built under R version 4.3.3

```
df <- read.csv("ALL RULES 11_13_2023_to_01_19_2025.csv", stringsAsFactors = FALSE)

# Convert publication_date from dd/mm/yyyy to Date format
df$publication_date <- as.Date(df$publication_date, format = "%m/%d/%Y")
```

You can add options to executable code like this

```
# Create a new variable representing the month (aggregating by month)
df_long <- df_long %>%
  mutate(month = floor_date(publication_date, "month"))
```

```
# Aggregate the data to get a monthly total count of rules per agency
monthly_counts <- df_long %>%
  group_by(agency_names, month) %>%
  summarise(n_rules = n(), .groups = "drop")
```

```
# Define the cutoff for the RD analysis (June 29, 2024)
cutoff <- as.Date("2024-06-29")
```

```
# Since we aggregate by month (with the month representing the first day), we treat months
monthly_counts <- monthly_counts %>%
  mutate(post = if_else(month >= as.Date("2024-07-01"), 1, 0))
```

```
# Create a 'distance' variable: difference in days between the month and the cutoff.
# This variable serves as the running variable in an RD design.
```

```

monthly_counts <- monthly_counts %>%
  mutate(distance = as.numeric(month - cutoff))

# Run the RD analysis using a fixed effects regression with agency and month fixed effects

monthly_counts <- monthly_counts %>% filter(month < as.Date("2025-01-01"))

model <- feols(n_rules ~ post * distance | agency_names, data = monthly_counts)
summary(model)

```

```

OLS estimation, Dep. Var.: n_rules
Observations: 980
Fixed-effects: agency_names: 154
Standard-errors: Clustered (agency_names)

              Estimate Std. Error   t value Pr(>|t|)
post          -0.768386    0.361426  -2.125986 0.035109 *
distance         0.005350    0.002523   2.120416 0.035584 *
post:distance    0.003130    0.004628   0.676434 0.499786
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
RMSE: 3.41236      Adj. R2: 0.896244
                Within R2: 0.019822

```

```

model_lm <- lm(n_rules ~ post * distance + factor(agency_names), data = monthly_counts)
summary(model_lm)

```

```

Call:
lm(formula = n_rules ~ post * distance + factor(agency_names),
    data = monthly_counts)

```

```

Residuals:
    Min       1Q   Median       3Q      Max
-20.532  -0.938  -0.083   0.689  33.500

```

```

Coefficients:

```

```

(Intercept)
post
distance

```

factor(agency_names)Agricultural Marketing Service	1
factor(agency_names)Agriculture Department	7
factor(agency_names)Alcohol and Tobacco Tax and Trade Bureau	-0
factor(agency_names)Alcohol, Tobacco, Firearms, and Explosives Bureau	-0
factor(agency_names)Animal and Plant Health Inspection Service	-0
factor(agency_names)Architectural and Transportation Barriers Compliance Board	-0
factor(agency_names)Bureau of the Fiscal Service	-1
factor(agency_names)Centers for Medicare & Medicaid Services	2
factor(agency_names)Children and Families Administration	-0
factor(agency_names)Coast Guard	29
factor(agency_names)Commerce Department	27
factor(agency_names)Committee for Purchase From People Who Are Blind or Severely Disabled	-1
factor(agency_names)Commodity Credit Corporation	-0
factor(agency_names)Commodity Futures Trading Commission	-0
factor(agency_names)Community Development Financial Institutions Fund	-1
factor(agency_names)Community Living Administration	-0
factor(agency_names)Comptroller of the Currency	-0
factor(agency_names)Consumer Financial Protection Bureau	1
factor(agency_names)Consumer Product Safety Commission	-0
factor(agency_names)Copyright Office, Library of Congress	-0
factor(agency_names)Copyright Royalty Board	0
factor(agency_names)Corporation for National and Community Service	-0
factor(agency_names)Council on Environmental Quality	-1
factor(agency_names)Defense Acquisition Regulations System	1
factor(agency_names)Defense Department	5
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factor(agency_names)Delaware River Basin Commission	-1
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factor(agency_names)Education Department	0
factor(agency_names)Election Assistance Commission	-1
factor(agency_names)Employee Benefits Security Administration	0
factor(agency_names)Employment and Training Administration	-0
factor(agency_names)Energy Department	3
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factor(agency_names)Environmental Protection Agency	27
factor(agency_names)Equal Employment Opportunity Commission	-0
factor(agency_names)Executive Office for Immigration Review	-1
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factor(agency_names)Farm Credit System Insurance Corporation	0
factor(agency_names)Farm Service Agency	-0
factor(agency_names)Federal Aviation Administration	49
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factor(agency_names)Federal Deposit Insurance Corporation	-0
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factor(agency_names)Federal Energy Regulatory Commission	-0
factor(agency_names)Federal Highway Administration	-0
factor(agency_names)Federal Housing Finance Agency	-0
factor(agency_names)Federal Labor Relations Authority	-0
factor(agency_names)Federal Maritime Commission	0
factor(agency_names)Federal Mediation and Conciliation Service	-0
factor(agency_names)Federal Motor Carrier Safety Administration	-0
factor(agency_names)Federal Railroad Administration	-0
factor(agency_names)Federal Register Office	-0
factor(agency_names)Federal Reserve System	0
factor(agency_names)Federal Retirement Thrift Investment Board	0
factor(agency_names)Federal Trade Commission	-0
factor(agency_names)Federal Transit Administration	-0
factor(agency_names)Financial Crimes Enforcement Network	-0
factor(agency_names)Financial Research Office	-1
factor(agency_names)Financial Stability Oversight Council	-0
factor(agency_names)Fiscal Service	-0
factor(agency_names)Fish and Wildlife Service	2
factor(agency_names)Food and Drug Administration	3
factor(agency_names)Food and Nutrition Service	0
factor(agency_names)Food Safety and Inspection Service	-0
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factor(agency_names)Foreign Assets Control Office	3
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factor(agency_names)General Services Administration	3
factor(agency_names)Government Accountability Office	-1
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factor(agency_names)Gulf Coast Ecosystem Restoration Council	-1
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factor(agency_names)Health Data, Technology, and Interoperability: Certification Program	-0
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factor(agency_names)Housing and Urban Development Department	1
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factor(agency_names)Industry and Security Bureau	2
factor(agency_names)Interior Department	6
factor(agency_names)Internal Revenue Service	2
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factor(agency_names)Justice Department	1
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factor(agency_names)Library of Congress	0
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factor(agency_names)National Institute of Standards and Technology	-0
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factor(agency_names)Personnel Management Office	0
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factor(agency_names)United States Mint
factor(agency_names)Veterans Affairs Department
factor(agency_names)Wage and Hour Division
factor(agency_names)Workers' Compensation Programs Office
post:distance

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distance
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factor(agency_names)Agriculture Department
factor(agency_names)Alcohol and Tobacco Tax and Trade Bureau
factor(agency_names)Alcohol, Tobacco, Firearms, and Explosives Bureau
factor(agency_names)Animal and Plant Health Inspection Service
factor(agency_names)Architectural and Transportation Barriers Compliance Board
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factor(agency_names)Committee for Purchase From People Who Are Blind or Severely Disabled
factor(agency_names)Commodity Credit Corporation
factor(agency_names)Commodity Futures Trading Commission
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factor(agency_names)Comptroller of the Currency
factor(agency_names)Consumer Financial Protection Bureau
factor(agency_names)Consumer Product Safety Commission
factor(agency_names)Copyright Office, Library of Congress
factor(agency_names)Copyright Royalty Board
factor(agency_names)Corporation for National and Community Service
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factor(agency_names)Defense Acquisition Regulations System
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factor(agency_names)Defense Nuclear Facilities Safety Board
factor(agency_names)Delaware River Basin Commission
factor(agency_names)Drug Enforcement Administration

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 factor(agency_names)Engineers Corps
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 factor(agency_names)Nuclear Regulatory Commission

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factor(agency_names)Occupational Safety and Health Administration
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factor(agency_names)Rural Utilities Service
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factor(agency_names)Social Security Administration
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factor(agency_names)Surface Transportation Board
factor(agency_names)Susquehanna River Basin Commission
factor(agency_names)Tennessee Valley Authority
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factor(agency_names)Transportation Security Administration
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factor(agency_names)U.S. Customs and Border Protection
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factor(agency_names)United States Agency for Global Media
factor(agency_names)United States Mint
factor(agency_names)Veterans Affairs Department
factor(agency_names)Wage and Hour Division
factor(agency_names)Workers' Compensation Programs Office
post:distance

(Intercept)
post

```

distance	0.0
factor(agency_names)Agricultural Marketing Service	0.4
factor(agency_names)Agriculture Department	0.0
factor(agency_names)Alcohol and Tobacco Tax and Trade Bureau	0.7
factor(agency_names)Alcohol, Tobacco, Firearms, and Explosives Bureau	0.8
factor(agency_names)Animal and Plant Health Inspection Service	0.8
factor(agency_names)Architectural and Transportation Barriers Compliance Board	0.8
factor(agency_names)Bureau of the Fiscal Service	0.0
factor(agency_names)Centers for Medicare & Medicaid Services	0.2
factor(agency_names)Children and Families Administration	0.9
factor(agency_names)Coast Guard	<
factor(agency_names)Commerce Department	<
factor(agency_names)Committee for Purchase From People Who Are Blind or Severely Disabled	0.7
factor(agency_names)Commodity Credit Corporation	0.8
factor(agency_names)Commodity Futures Trading Commission	0.8
factor(agency_names)Community Development Financial Institutions Fund	0.7
factor(agency_names)Community Living Administration	0.7
factor(agency_names)Comptroller of the Currency	0.8
factor(agency_names)Consumer Financial Protection Bureau	0.4
factor(agency_names)Consumer Product Safety Commission	0.9
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factor(agency_names)Copyright Royalty Board	0.8
factor(agency_names)Corporation for National and Community Service	0.7
factor(agency_names)Council on Environmental Quality	0.7
factor(agency_names)Defense Acquisition Regulations System	0.8
factor(agency_names)Defense Department	0.0
factor(agency_names)Defense Nuclear Facilities Safety Board	0.8
factor(agency_names)Delaware River Basin Commission	0.7
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factor(agency_names)Employment and Training Administration	0.8
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factor(agency_names)Engineers Corps	0.0
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factor(agency_names)Farm Service Agency	0.8
factor(agency_names)Federal Aviation Administration	<
factor(agency_names)Federal Communications Commission	5.7

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factor(agency_names)Federal Deposit Insurance Corporation	0.9
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factor(agency_names)Federal Maritime Commission	0.9
factor(agency_names)Federal Mediation and Conciliation Service	0.9
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factor(agency_names)Gulf Coast Ecosystem Restoration Council	0.7
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factor(agency_names)Health Data, Technology, and Interoperability: Certification Program	0.8
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factor(agency_names)Internal Revenue Service	0.7
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 factor(agency_names)Labor Department
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 factor(agency_names)Mine Safety and Health Administration
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 factor(agency_names)National Transportation Safety Board
 factor(agency_names)Natural Resources Conservation Service
 factor(agency_names)Natural Resources Revenue Office
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 factor(agency_names)Ocean Energy Management Bureau
 factor(agency_names)Office of Inspector General
 factor(agency_names)Office of the Secretary
 factor(agency_names)Office of the Secretary of the Treasury
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 factor(agency_names)Peace Corps
 factor(agency_names)Pension Benefit Guaranty Corporation
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factor(agency_names)Surface Transportation Board	0.8
factor(agency_names)Susquehanna River Basin Commission	0.7
factor(agency_names)Tennessee Valley Authority	0.6
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factor(agency_names)Transportation Security Administration	0.7
factor(agency_names)Treasury Department	9.8
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factor(agency_names)U.S. Customs and Border Protection	0.8
factor(agency_names)U.S. Immigration and Customs Enforcement	0.8
factor(agency_names)United States Agency for Global Media	0.1
factor(agency_names)United States Mint	0.7
factor(agency_names)Veterans Affairs Department	0.5
factor(agency_names)Wage and Hour Division	0.8
factor(agency_names)Workers' Compensation Programs Office	0.7
post:distance	0.4
(Intercept)	
post	
distance	*
factor(agency_names)Agricultural Marketing Service	
factor(agency_names)Agriculture Department	**
factor(agency_names)Alcohol and Tobacco Tax and Trade Bureau	
factor(agency_names)Alcohol, Tobacco, Firearms, and Explosives Bureau	
factor(agency_names)Animal and Plant Health Inspection Service	
factor(agency_names)Architectural and Transportation Barriers Compliance Board	
factor(agency_names)Bureau of the Fiscal Service	
factor(agency_names)Centers for Medicare & Medicaid Services	
factor(agency_names)Children and Families Administration	
factor(agency_names)Coast Guard	**
factor(agency_names)Commerce Department	**
factor(agency_names)Committee for Purchase From People Who Are Blind or Severely Disabled	
factor(agency_names)Commodity Credit Corporation	

factor(agency_names)Commodity Futures Trading Commission
 factor(agency_names)Community Development Financial Institutions Fund
 factor(agency_names)Community Living Administration
 factor(agency_names)Comptroller of the Currency
 factor(agency_names)Consumer Financial Protection Bureau
 factor(agency_names)Consumer Product Safety Commission
 factor(agency_names)Copyright Office, Library of Congress
 factor(agency_names)Copyright Royalty Board
 factor(agency_names)Corporation for National and Community Service
 factor(agency_names)Council on Environmental Quality
 factor(agency_names)Defense Acquisition Regulations System
 factor(agency_names)Defense Department
 factor(agency_names)Defense Nuclear Facilities Safety Board
 factor(agency_names)Delaware River Basin Commission
 factor(agency_names)Drug Enforcement Administration
 factor(agency_names)Education Department
 factor(agency_names)Election Assistance Commission
 factor(agency_names)Employee Benefits Security Administration
 factor(agency_names)Employment and Training Administration
 factor(agency_names)Energy Department
 factor(agency_names)Engineers Corps
 factor(agency_names)Environmental Protection Agency
 factor(agency_names)Equal Employment Opportunity Commission
 factor(agency_names)Executive Office for Immigration Review
 factor(agency_names)Farm Credit Administration
 factor(agency_names)Farm Credit System Insurance Corporation
 factor(agency_names)Farm Service Agency
 factor(agency_names)Federal Aviation Administration
 factor(agency_names)Federal Communications Commission
 factor(agency_names)Federal Crop Insurance Corporation
 factor(agency_names)Federal Deposit Insurance Corporation
 factor(agency_names)Federal Election Commission
 factor(agency_names)Federal Emergency Management Agency
 factor(agency_names)Federal Energy Regulatory Commission
 factor(agency_names)Federal Highway Administration
 factor(agency_names)Federal Housing Finance Agency
 factor(agency_names)Federal Labor Relations Authority
 factor(agency_names)Federal Maritime Commission
 factor(agency_names)Federal Mediation and Conciliation Service
 factor(agency_names)Federal Motor Carrier Safety Administration
 factor(agency_names)Federal Railroad Administration
 factor(agency_names)Federal Register Office
 factor(agency_names)Federal Reserve System

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factor(agency_names)Federal Retirement Thrift Investment Board
factor(agency_names)Federal Trade Commission
factor(agency_names)Federal Transit Administration
factor(agency_names)Financial Crimes Enforcement Network
factor(agency_names)Financial Research Office
factor(agency_names)Financial Stability Oversight Council
factor(agency_names)Fiscal Service
factor(agency_names)Fish and Wildlife Service
factor(agency_names)Food and Drug Administration
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factor(agency_names)Foreign-Trade Zones Board
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factor(agency_names)Forest Service
factor(agency_names)General Services Administration
factor(agency_names)Government Accountability Office
factor(agency_names)Government Ethics Office
factor(agency_names)Great Lakes St. Lawrence Seaway Development Corporation
factor(agency_names)Gulf Coast Ecosystem Restoration Council
factor(agency_names)Health and Human Services Department
factor(agency_names)Health Data, Technology, and Interoperability: Certification Program
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factor(agency_names)Housing and Urban Development Department
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factor(agency_names)Interior Department
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factor(agency_names)Justice Department
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factor(agency_names)Library of Congress
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factor(agency_names)National Aeronautics and Space Administration
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factor(agency_names)National Credit Union Administration
 factor(agency_names)National Endowment for the Arts
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 factor(agency_names)Rural Housing Service
 factor(agency_names)Rural Utilities Service
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 factor(agency_names)Social Security Administration
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 factor(agency_names)Surface Transportation Board
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 factor(agency_names)Tennessee Valley Authority

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factor(agency_names)Transportation Department
factor(agency_names)Transportation Security Administration
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factor(agency_names)United States Mint
factor(agency_names)Veterans Affairs Department
factor(agency_names)Wage and Hour Division
factor(agency_names)Workers' Compensation Programs Office
post:distance
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Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

Residual standard error: 3.724 on 823 degrees of freedom
Multiple R-squared:  0.9128,    Adjusted R-squared:  0.8962
F-statistic: 55.21 on 156 and 823 DF,  p-value: < 2.2e-16

```

```
library(ggplot2)
```

Warning: package 'ggplot2' was built under R version 4.3.3

```

library(dplyr)

# Aggregate total rules published per month across all agencies
monthly_total <- monthly_counts %>%
  group_by(month) %>%
  summarise(total_rules = sum(n_rules), .groups = "drop")

# Create a line chart for the total number of rules per month
ggplot(monthly_total, aes(x = month, y = total_rules)) +
  geom_line(color = "blue", size = 1) +
  geom_point(color = "blue", size = 2) +
  geom_vline(xintercept = as.Date("2024-06-29"), linetype = "dashed", color = "red") +
  scale_x_date(date_labels = "%b %Y", date_breaks = "1 month") +
  labs(title = "Total Number of Rules Published Per Month",
       subtitle = "Aggregated across all agencies; cutoff date shown in red",
       x = "Month",
       y = "Total Rules Published") +

```

```
theme_minimal() +
theme(axis.text.x = element_text(angle = 45, hjust = 1))
```

Warning: Using `size` aesthetic for lines was deprecated in ggplot2 3.4.0.
i Please use `linewidth` instead.

