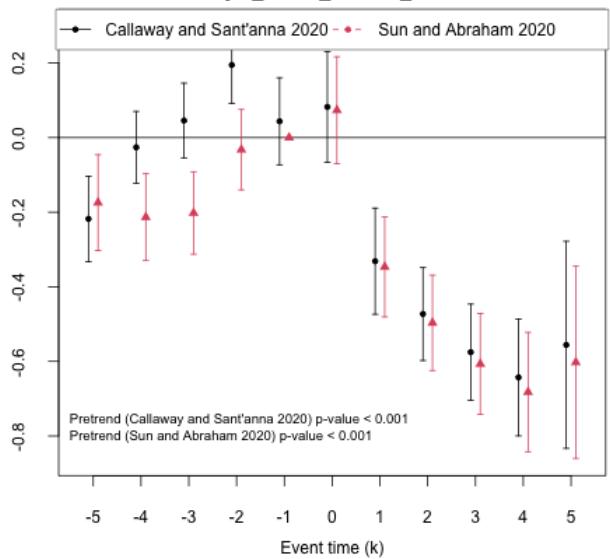
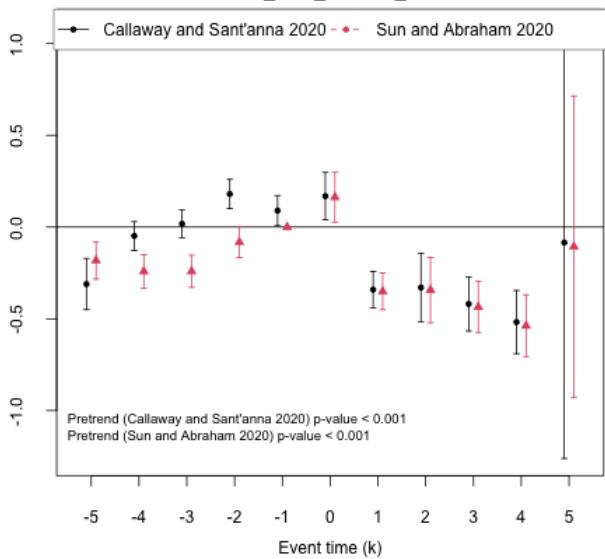
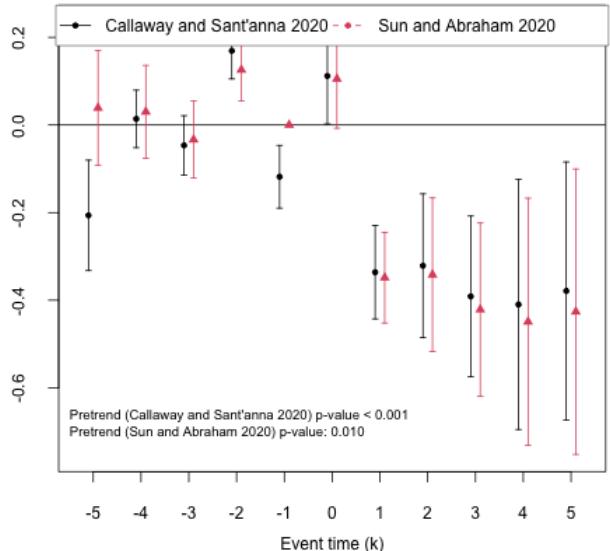
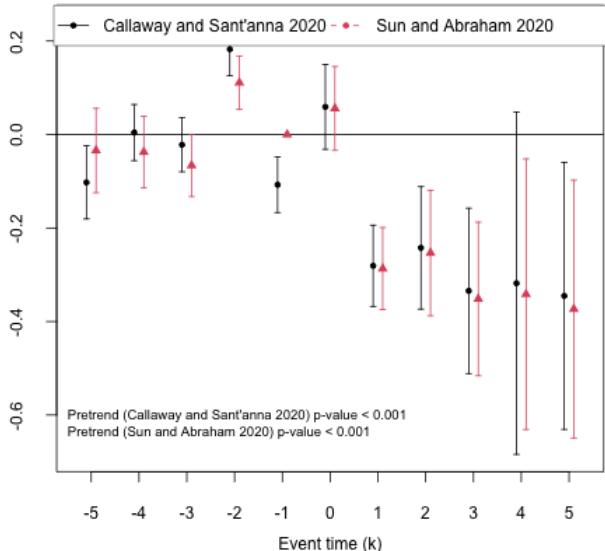


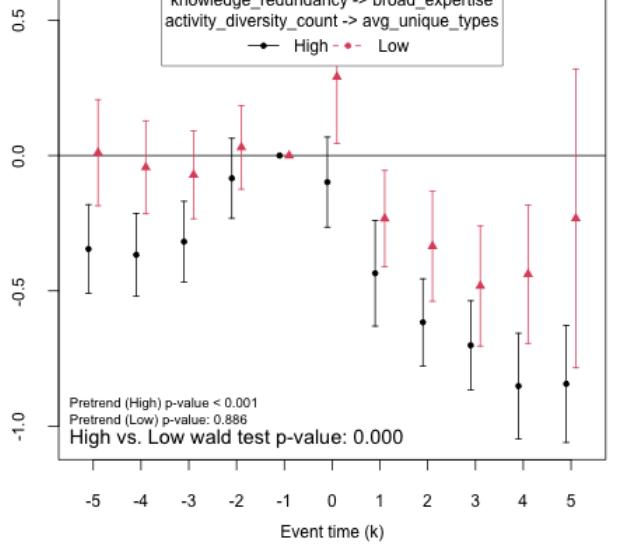
**major\_minor\_release\_count****overall\_new\_release\_count****pull\_request\_merged****pull\_request\_opened**

### major\_minor\_release\_count rolling5

Sample: num-qualified>=1

knowledge\_redundancy -> broad\_expertise  
activity\_diversity\_count -> avg\_unique\_types

● High ▲ Low

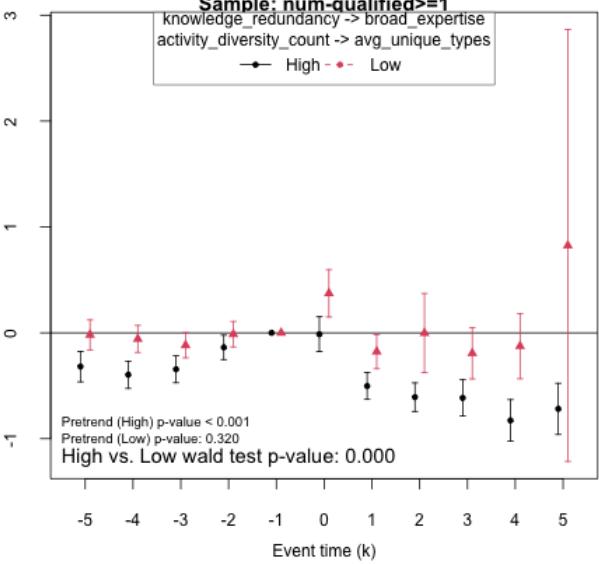


### overall\_new\_release\_count rolling5

Sample: num-qualified>=1

knowledge\_redundancy -> broad\_expertise  
activity\_diversity\_count -> avg\_unique\_types

● High ▲ Low

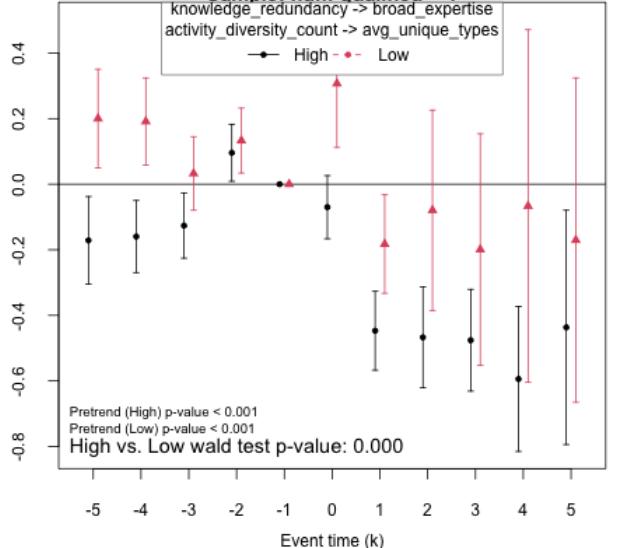


### pull\_request\_merged rolling5

Sample: num-qualified>=1

knowledge\_redundancy -> broad\_expertise  
activity\_diversity\_count -> avg\_unique\_types

● High ▲ Low

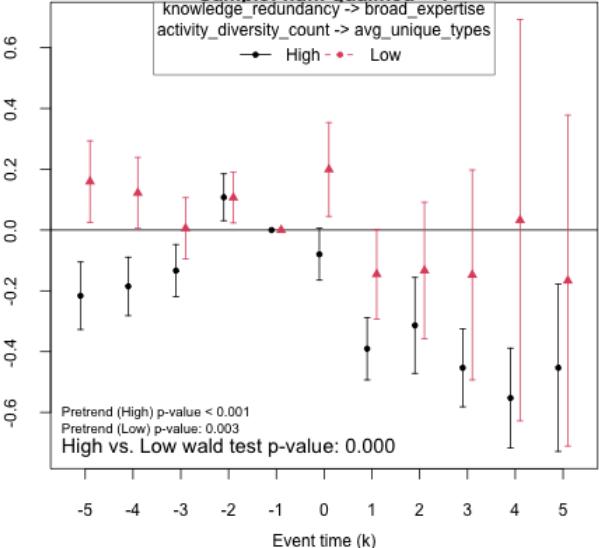


### pull\_request\_opened rolling5

Sample: num-qualified>=1

knowledge\_redundancy -> broad\_expertise  
activity\_diversity\_count -> avg\_unique\_types

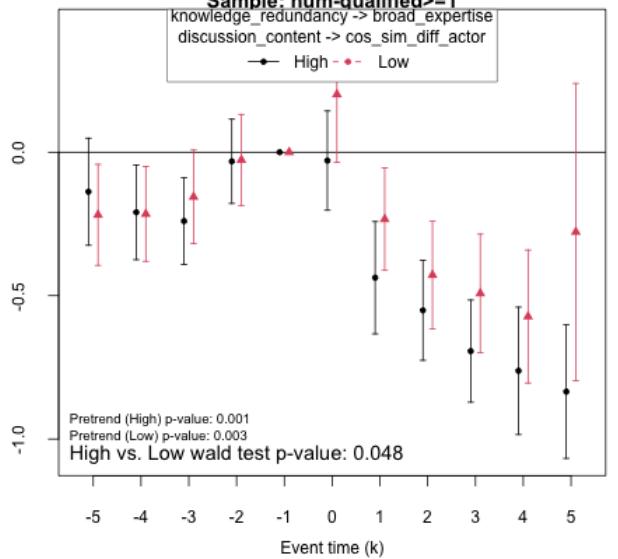
● High ▲ Low



**major\_minor\_release\_count rolling5****Sample: num-qualified>=1**

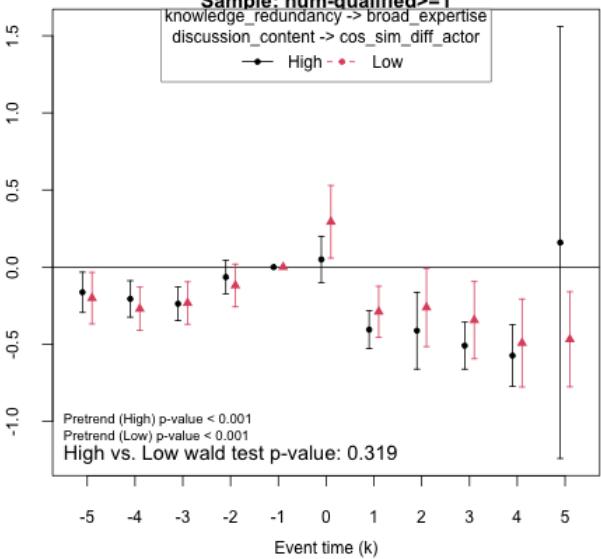
knowledge\_redundancy -> broad\_expertise  
 discussion\_content -> cos\_sim\_diff\_actor

● High ▲ Low

**overall\_new\_release\_count rolling5****Sample: num-qualified>=1**

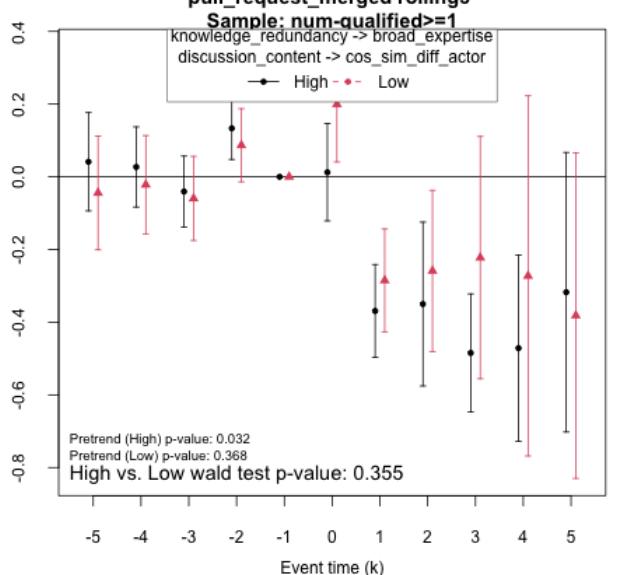
knowledge\_redundancy -> broad\_expertise  
 discussion\_content -> cos\_sim\_diff\_actor

● High ▲ Low

**pull\_request\_merged rolling5****Sample: num-qualified>=1**

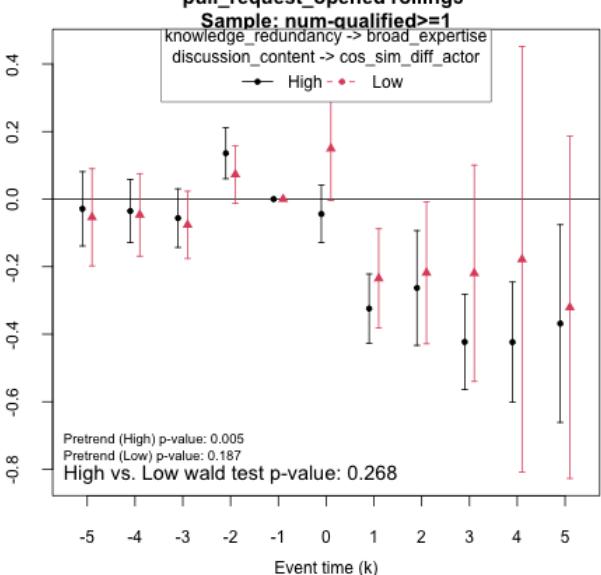
knowledge\_redundancy -> broad\_expertise  
 discussion\_content -> cos\_sim\_diff\_actor

● High ▲ Low

**pull\_request\_opened rolling5****Sample: num-qualified>=1**

knowledge\_redundancy -> broad\_expertise  
 discussion\_content -> cos\_sim\_diff\_actor

● High ▲ Low

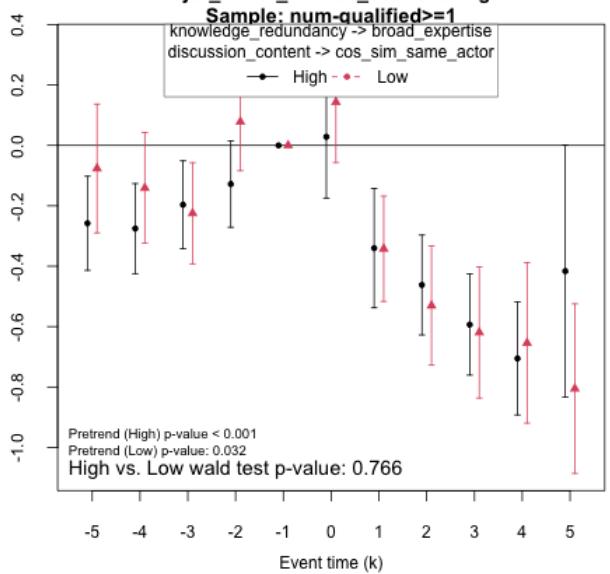


### major\_minor\_release\_count rolling5

**Sample: num-qualified>=1**

knowledge\_redundancy -> broad\_expertise  
discussion\_content -> cos\_sim\_same\_actor

● High ▲ Low

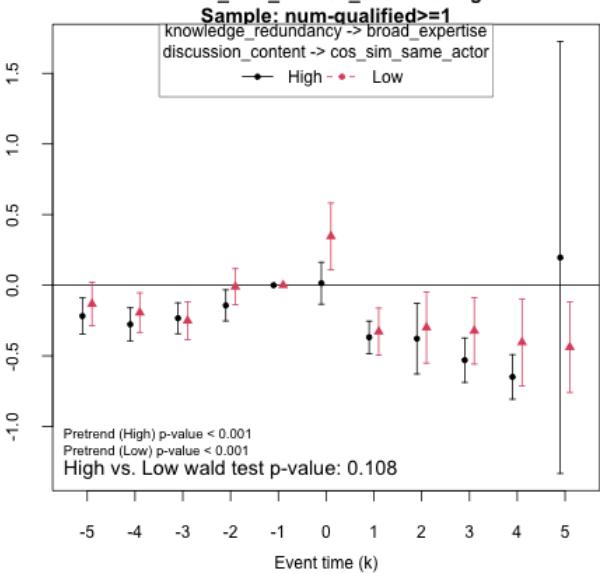


### overall\_new\_release\_count rolling5

**Sample: num-qualified>=1**

knowledge\_redundancy -> broad\_expertise  
discussion\_content -> cos\_sim\_same\_actor

● High ▲ Low

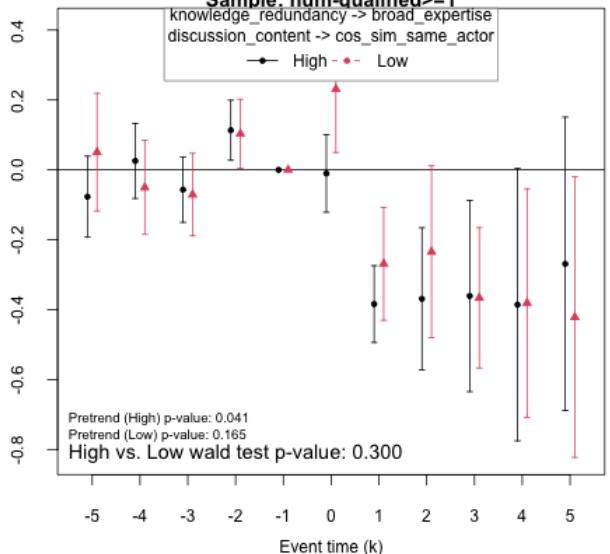


### pull\_request\_merged rolling5

**Sample: num-qualified>=1**

knowledge\_redundancy -> broad\_expertise  
discussion\_content -> cos\_sim\_same\_actor

● High ▲ Low

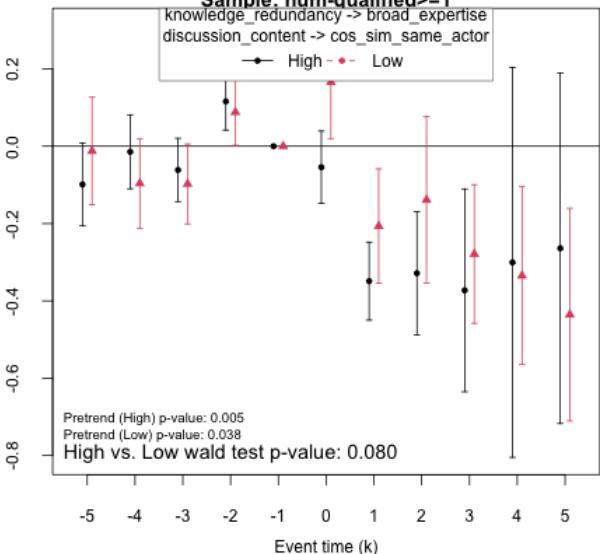


### pull\_request\_opened rolling5

**Sample: num-qualified>=1**

knowledge\_redundancy -> broad\_expertise  
discussion\_content -> cos\_sim\_same\_actor

● High ▲ Low



**major\_minor\_release\_count rolling5****Sample: num-qualified>=1**

knowledge\_redundancy -&gt; broad\_expertise

discussion\_content -&gt; text\_sim\_ratio

● High ▲ Low

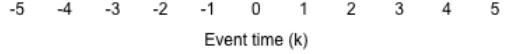
0.0

-0.5

Pretrend (High) p-value: 0.003

Pretrend (Low) p-value &lt; 0.001

High vs. Low wald test p-value: 0.430



Event time (k)

**overall\_new\_release\_count rolling5****Sample: num-qualified>=1**

knowledge\_redundancy -&gt; broad\_expertise

discussion\_content -&gt; text\_sim\_ratio

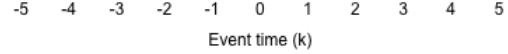
● High ▲ Low

0.0 0.5 1.0 1.5 2.0

Pretrend (High) p-value &lt; 0.001

Pretrend (Low) p-value &lt; 0.001

High vs. Low wald test p-value: 0.591



Event time (k)

**pull\_request\_merged rolling5****Sample: num-qualified>=1**

knowledge\_redundancy -&gt; broad\_expertise

discussion\_content -&gt; text\_sim\_ratio

● High ▲ Low

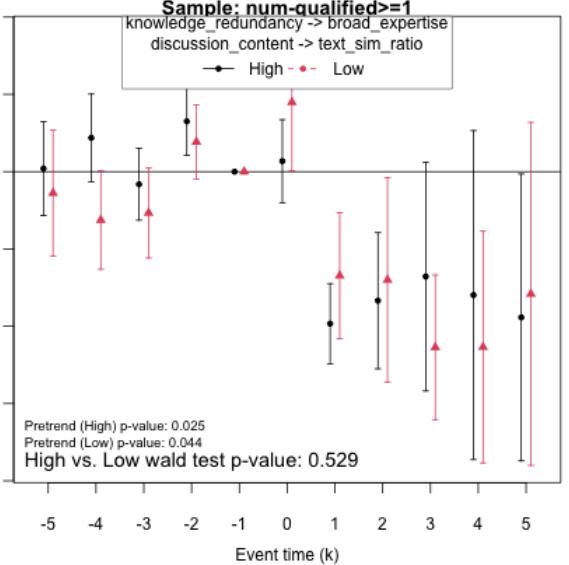
0.0

-0.2

Pretrend (High) p-value: 0.025

Pretrend (Low) p-value: 0.044

High vs. Low wald test p-value: 0.529



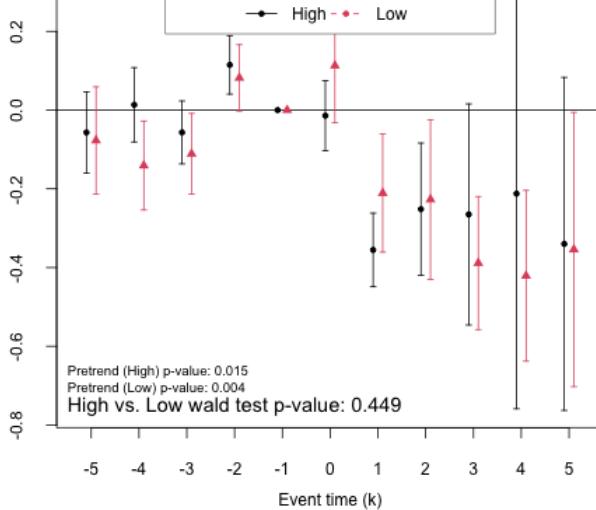
Event time (k)

**pull\_request\_opened rolling5****Sample: num-qualified>=1**

knowledge\_redundancy -&gt; broad\_expertise

discussion\_content -&gt; text\_sim\_ratio

● High ▲ Low

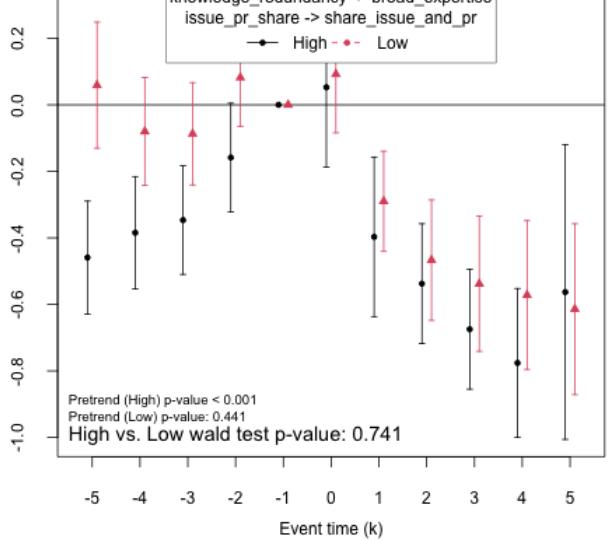


Event time (k)

### major\_minor\_release\_count rolling5

**Sample: num-qualified>=1**

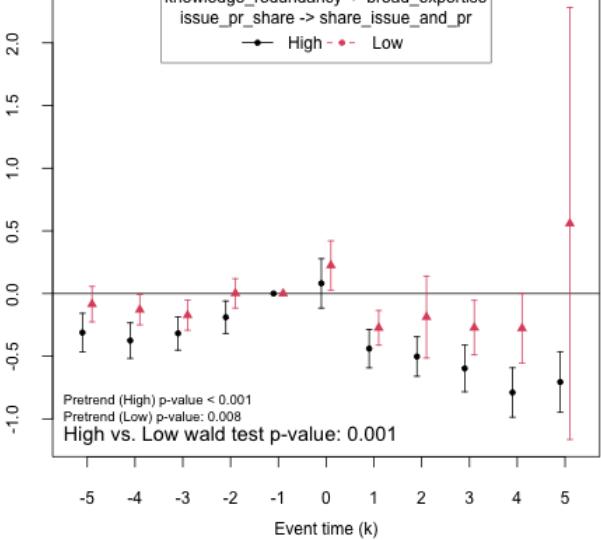
knowledge\_redundancy -> broad\_expertise  
 issue\_pr\_share -> share\_issue\_and\_pr



### overall\_new\_release\_count rolling5

**Sample: num-qualified>=1**

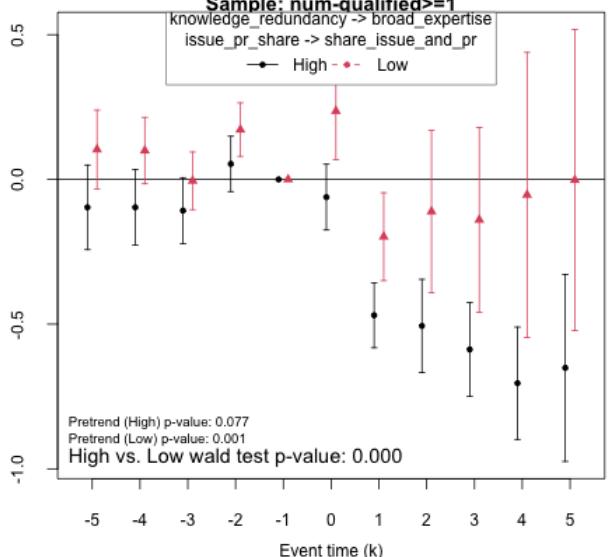
knowledge\_redundancy -> broad\_expertise  
 issue\_pr\_share -> share\_issue\_and\_pr



### pull\_request\_merged rolling5

**Sample: num-qualified>=1**

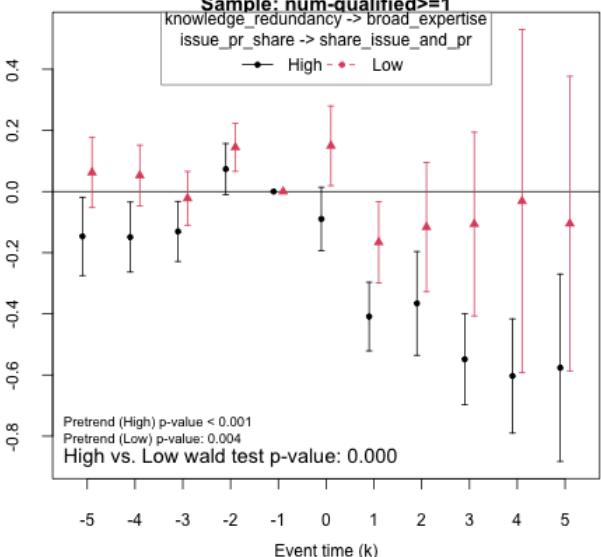
knowledge\_redundancy -> broad\_expertise  
 issue\_pr\_share -> share\_issue\_and\_pr



### pull\_request\_opened rolling5

**Sample: num-qualified>=1**

knowledge\_redundancy -> broad\_expertise  
 issue\_pr\_share -> share\_issue\_and\_pr

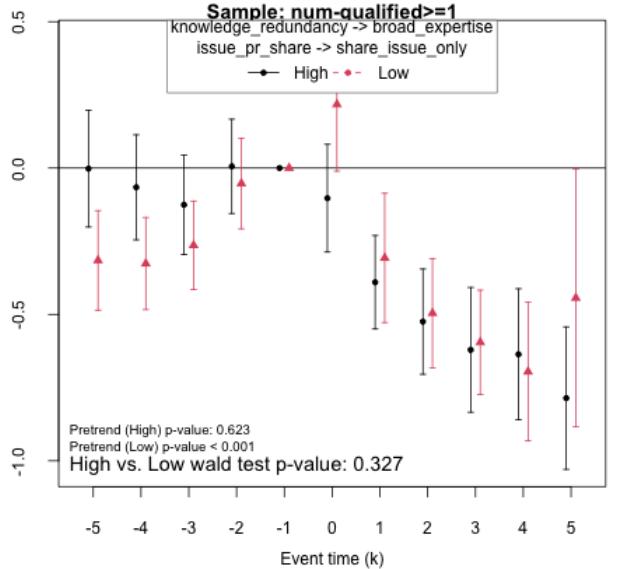


### major\_minor\_release\_count rolling5

Sample: num-qualified>=1

knowledge\_redundancy -> broad\_expertise  
issue\_pr\_share -> share\_issue\_only

● High ▲ Low

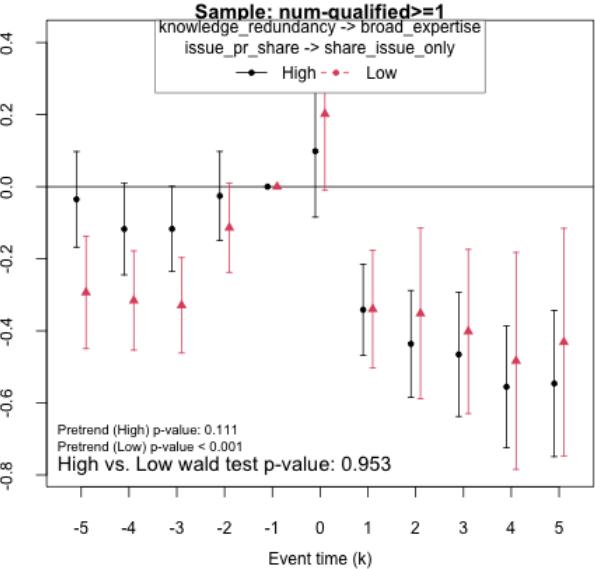


### overall\_new\_release\_count rolling5

Sample: num-qualified>=1

knowledge\_redundancy -> broad\_expertise  
issue\_pr\_share -> share\_issue\_only

● High ▲ Low

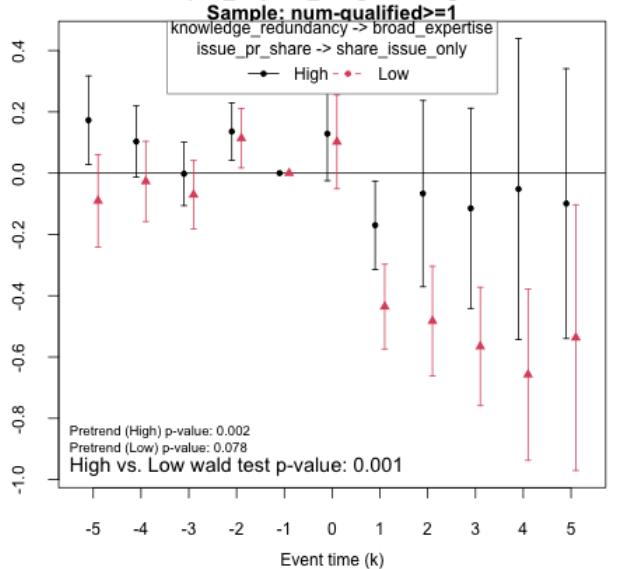


### pull\_request\_merged rolling5

Sample: num-qualified>=1

knowledge\_redundancy -> broad\_expertise  
issue\_pr\_share -> share\_issue\_only

● High ▲ Low

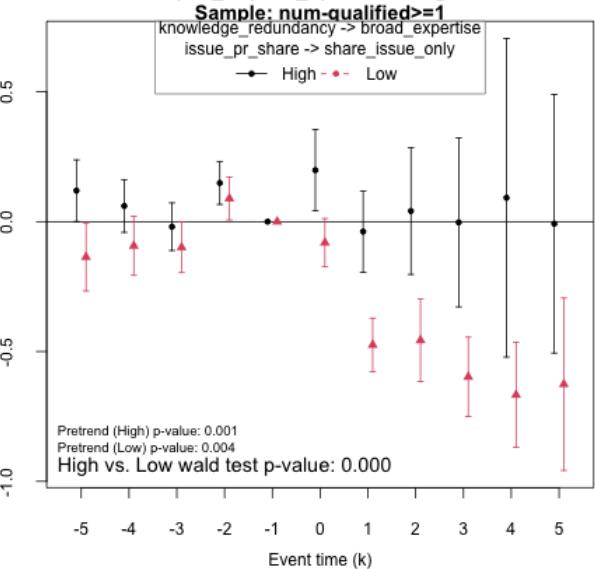


### pull\_request\_opened rolling5

Sample: num-qualified>=1

knowledge\_redundancy -> broad\_expertise  
issue\_pr\_share -> share\_issue\_only

● High ▲ Low



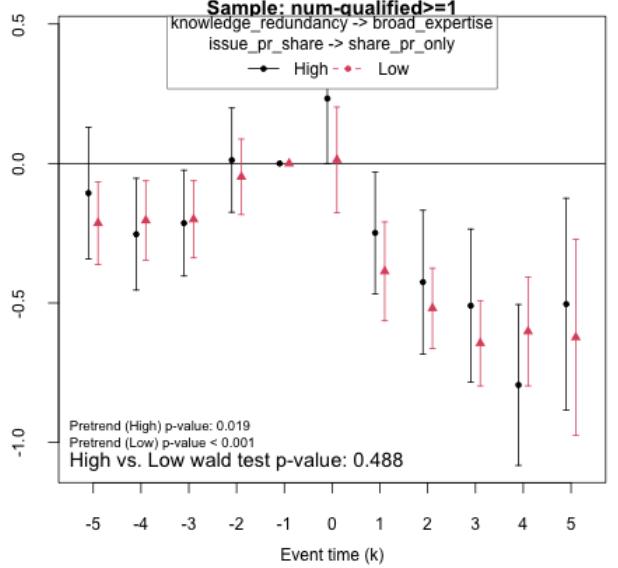
### major\_minor\_release\_count rolling5

Sample: num-qualified>=1

knowledge\_redundancy -> broad\_expertise

issue\_pr\_share -> share\_pr\_only

● High ▲ Low



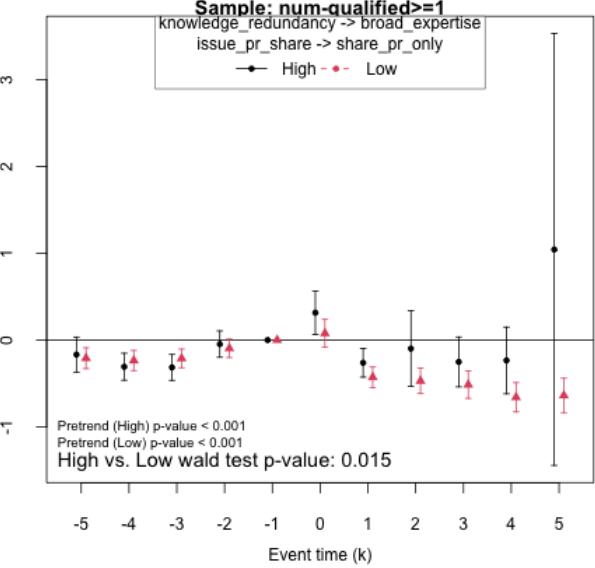
### overall\_new\_release\_count rolling5

Sample: num-qualified>=1

knowledge\_redundancy -> broad\_expertise

issue\_pr\_share -> share\_pr\_only

● High ▲ Low



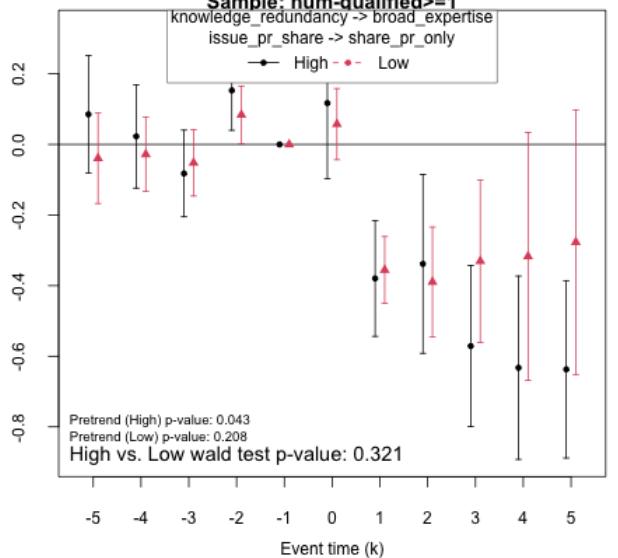
### pull\_request\_merged rolling5

Sample: num-qualified>=1

knowledge\_redundancy -> broad\_expertise

issue\_pr\_share -> share\_pr\_only

● High ▲ Low



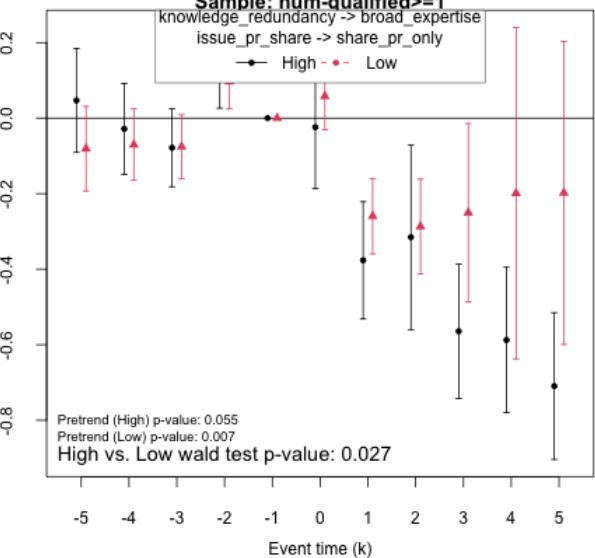
### pull\_request\_opened rolling5

Sample: num-qualified>=1

knowledge\_redundancy -> broad\_expertise

issue\_pr\_share -> share\_pr\_only

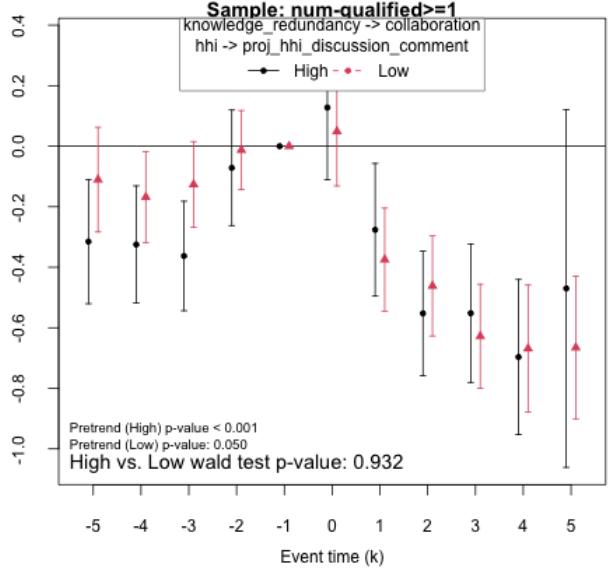
● High ▲ Low



### major\_minor\_release\_count rolling5

Sample: num-qualified>=1

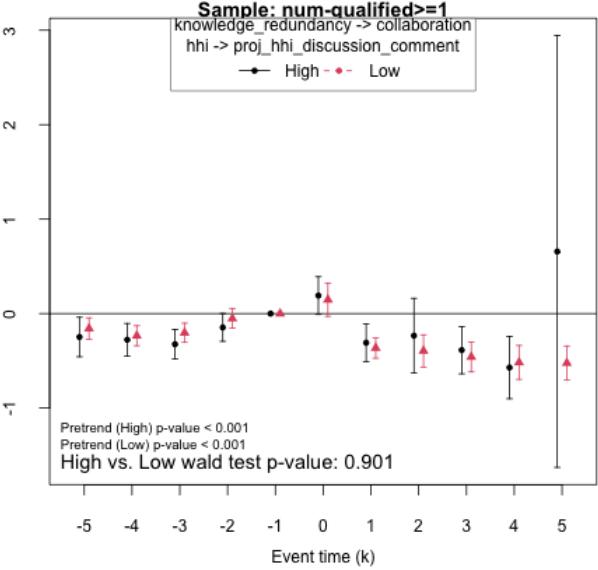
knowledge\_redundancy -> collaboration  
hhic -> proj\_hhic\_discussion\_comment  
● High ▲ Low



### overall\_new\_release\_count rolling5

Sample: num-qualified>=1

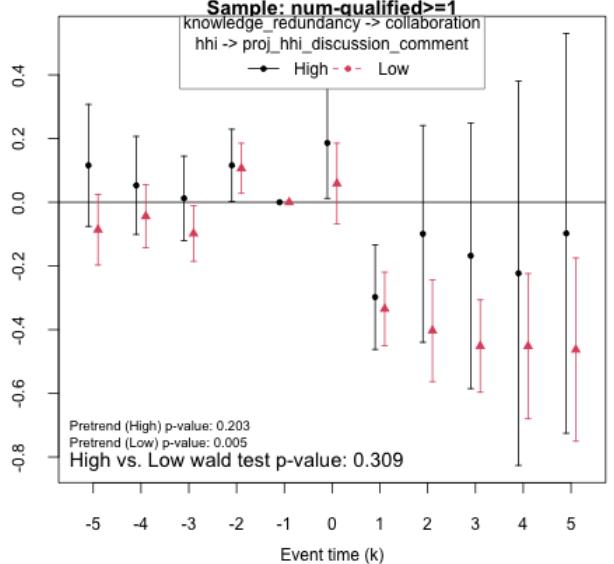
knowledge\_redundancy -> collaboration  
hhic -> proj\_hhic\_discussion\_comment  
● High ▲ Low



### pull\_request\_merged rolling5

Sample: num-qualified>=1

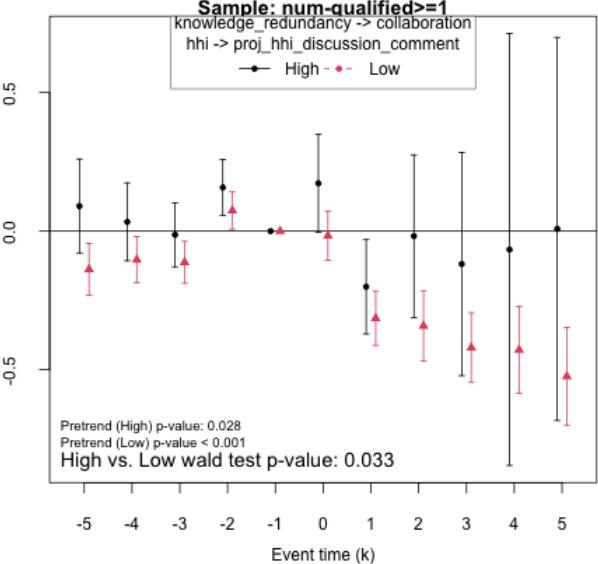
knowledge\_redundancy -> collaboration  
hhic -> proj\_hhic\_discussion\_comment  
● High ▲ Low



### pull\_request\_opened rolling5

Sample: num-qualified>=1

knowledge\_redundancy -> collaboration  
hhic -> proj\_hhic\_discussion\_comment  
● High ▲ Low

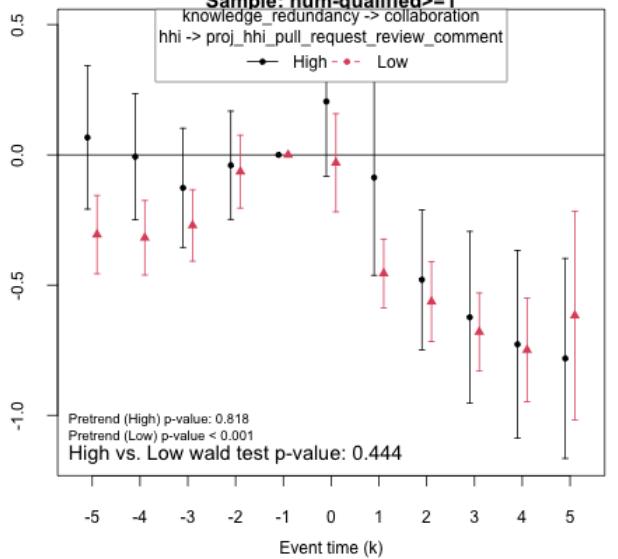


### major\_minor\_release\_count rolling5

Sample: num-qualified>=1

knowledge\_redundancy->collaboration  
hh1 -> proj\_hh1\_pull\_request\_review\_comment

● High ▲ Low

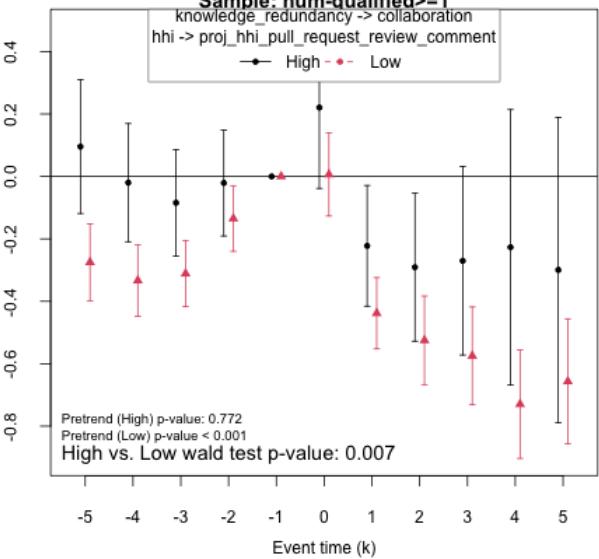


### overall\_new\_release\_count rolling5

Sample: num-qualified>=1

knowledge\_redundancy->collaboration  
hh1 -> proj\_hh1\_pull\_request\_review\_comment

● High ▲ Low

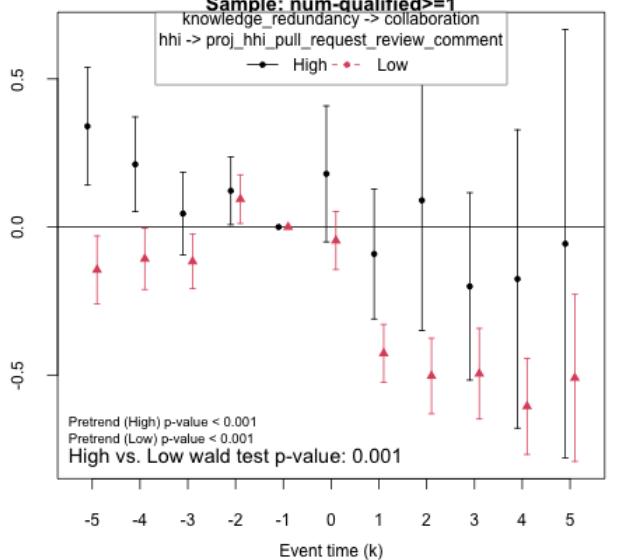


### pull\_request\_merged rolling5

Sample: num-qualified>=1

knowledge\_redundancy->collaboration  
hh1 -> proj\_hh1\_pull\_request\_review\_comment

● High ▲ Low

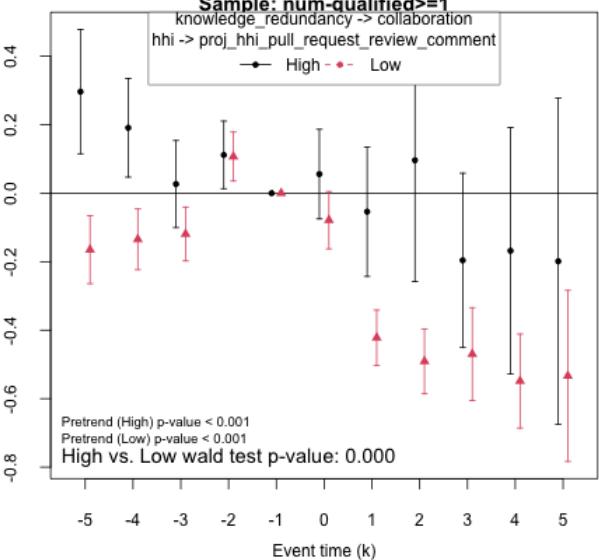


### pull\_request\_opened rolling5

Sample: num-qualified>=1

knowledge\_redundancy->collaboration  
hh1 -> proj\_hh1\_pull\_request\_review\_comment

● High ▲ Low

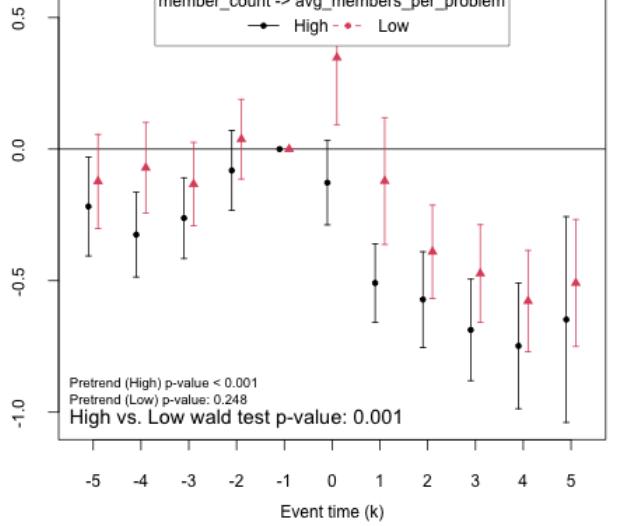


### major\_minor\_release\_count rolling5

Sample: num-qualified>=1

knowledge\_redundancy -> collaboration  
member\_count -> avg\_members\_per\_problem

● High ▲ Low

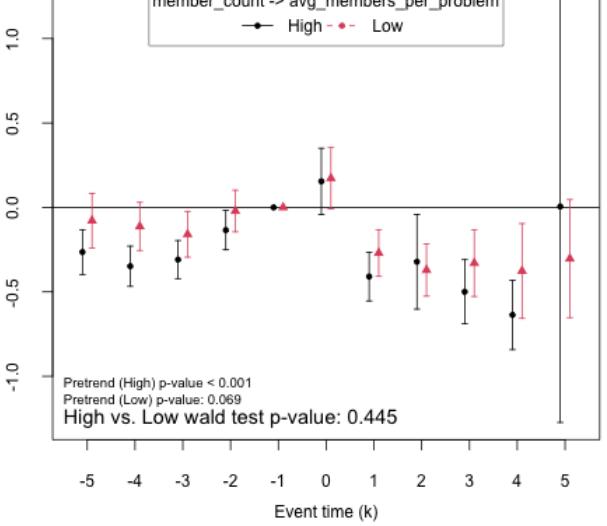


### overall\_new\_release\_count rolling5

Sample: num-qualified>=1

knowledge\_redundancy -> collaboration  
member\_count -> avg\_members\_per\_problem

● High ▲ Low

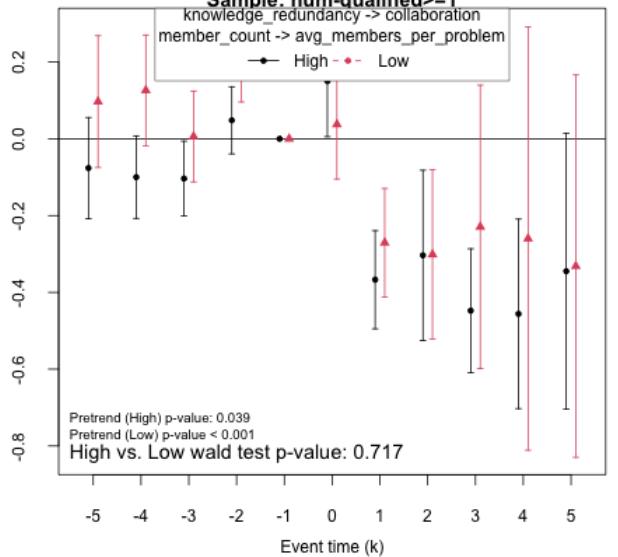


### pull\_request\_merged rolling5

Sample: num-qualified>=1

knowledge\_redundancy -> collaboration  
member\_count -> avg\_members\_per\_problem

● High ▲ Low

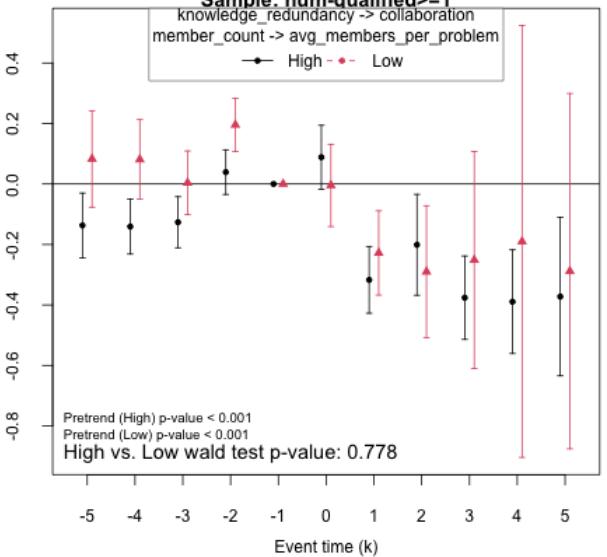


### pull\_request\_opened rolling5

Sample: num-qualified>=1

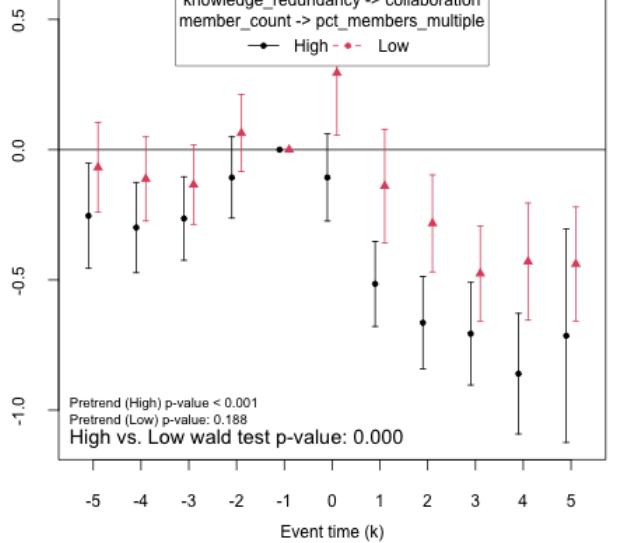
knowledge\_redundancy -> collaboration  
member\_count -> avg\_members\_per\_problem

● High ▲ Low

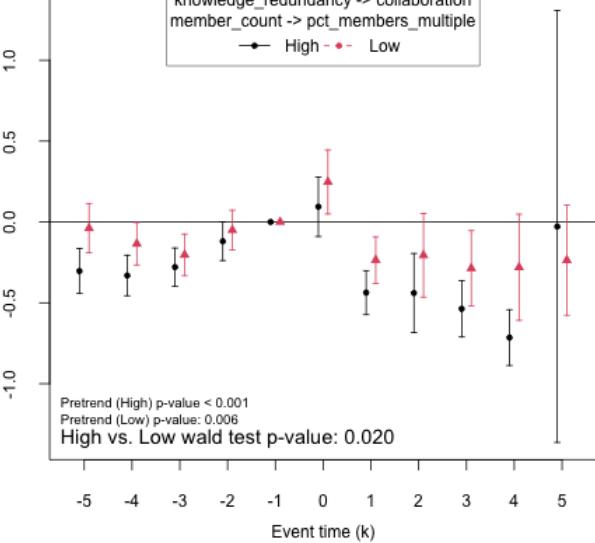


**major\_minor\_release\_count rolling5****Sample: num-qualified>=1**knowledge\_redundancy->collaboration  
member\_count->pct\_members\_multiple

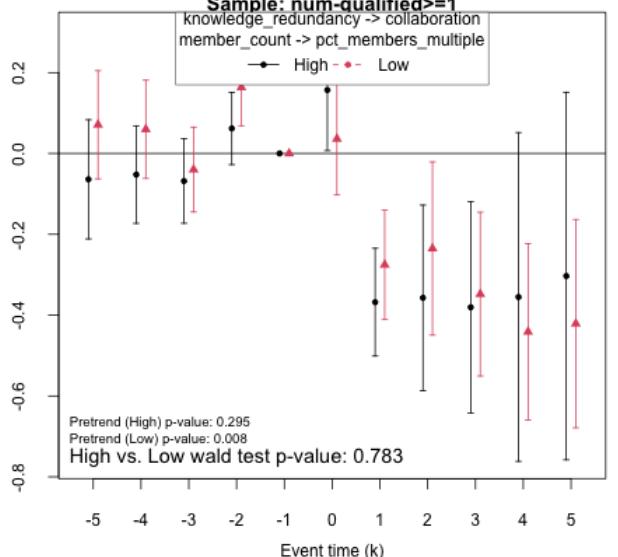
● High ▲ Low

**overall\_new\_release\_count rolling5****Sample: num-qualified>=1**knowledge\_redundancy->collaboration  
member\_count->pct\_members\_multiple

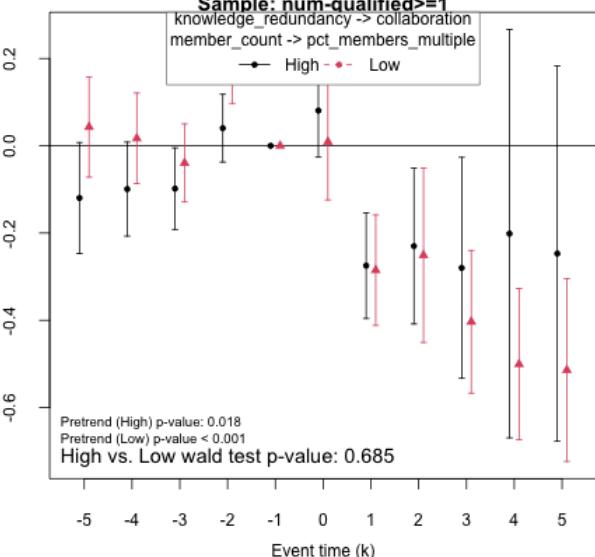
● High ▲ Low

**pull\_request\_merged rolling5****Sample: num-qualified>=1**knowledge\_redundancy->collaboration  
member\_count->pct\_members\_multiple

● High ▲ Low

**pull\_request\_opened rolling5****Sample: num-qualified>=1**knowledge\_redundancy->collaboration  
member\_count->pct\_members\_multiple

● High ▲ Low

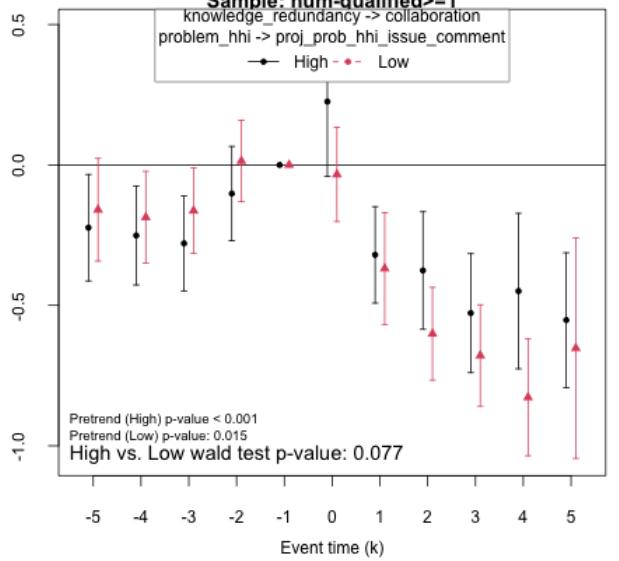


### major\_minor\_release\_count rolling5

Sample: num-qualified>=1

knowledge\_redundancy->collaboration  
problem\_hhi->proj\_prob\_hhi\_issue\_comment

● High ▲ Low

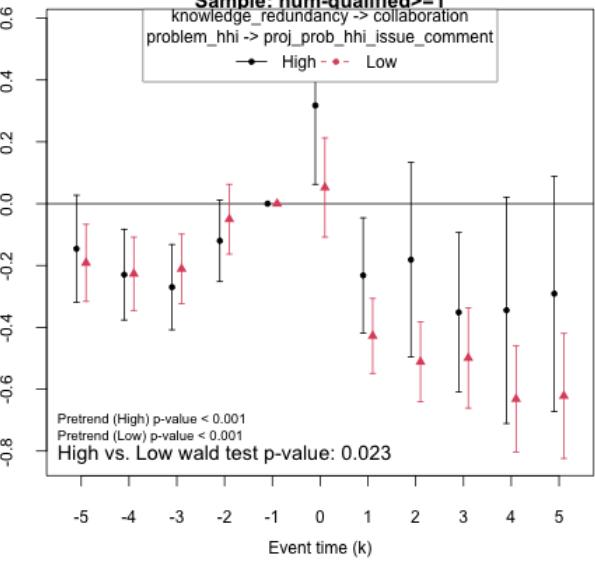


### overall\_new\_release\_count rolling5

Sample: num-qualified>=1

knowledge\_redundancy->collaboration  
problem\_hhi->proj\_prob\_hhi\_issue\_comment

● High ▲ Low

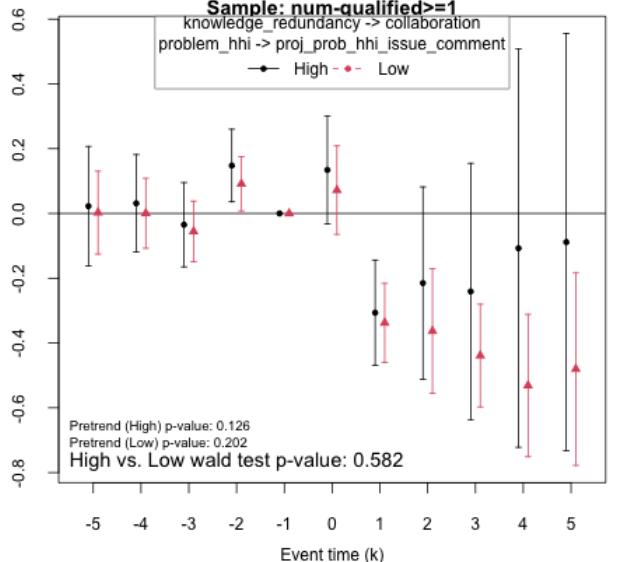


### pull\_request\_merged rolling5

Sample: num-qualified>=1

knowledge\_redundancy->collaboration  
problem\_hhi->proj\_prob\_hhi\_issue\_comment

● High ▲ Low

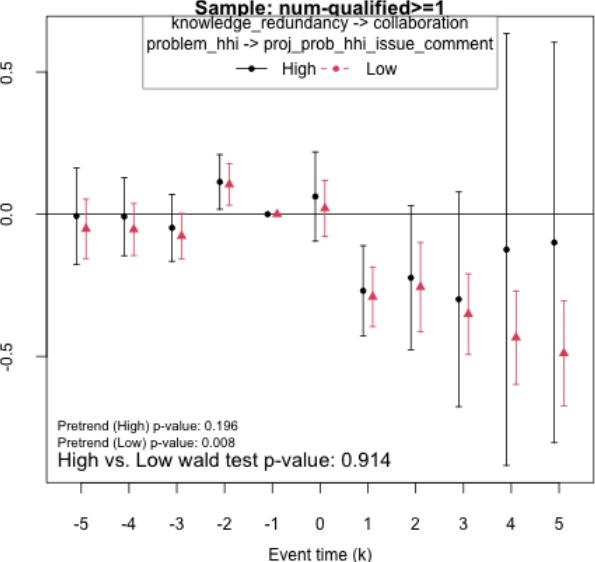


### pull\_request\_opened rolling5

Sample: num-qualified>=1

knowledge\_redundancy->collaboration  
problem\_hhi->proj\_prob\_hhi\_issue\_comment

● High ▲ Low

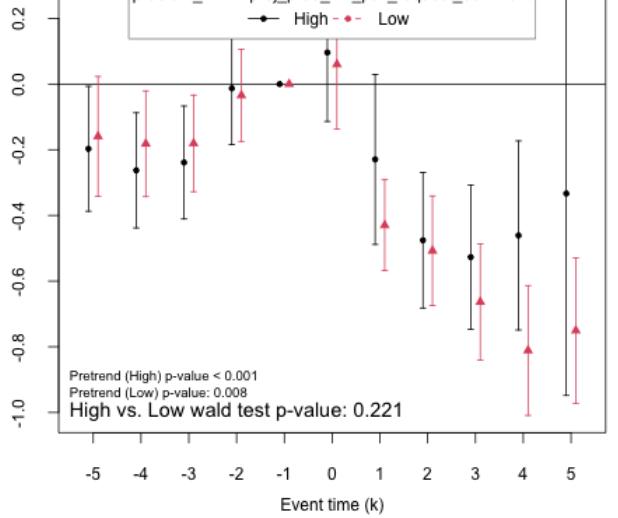


### major\_minor\_release\_count rolling5

Sample: num-qualified>=1

knowledge\_redundancy->collaboration  
problem\_hhi -> proj\_prob\_hhi\_pull\_request\_comment

● High ▲ Low

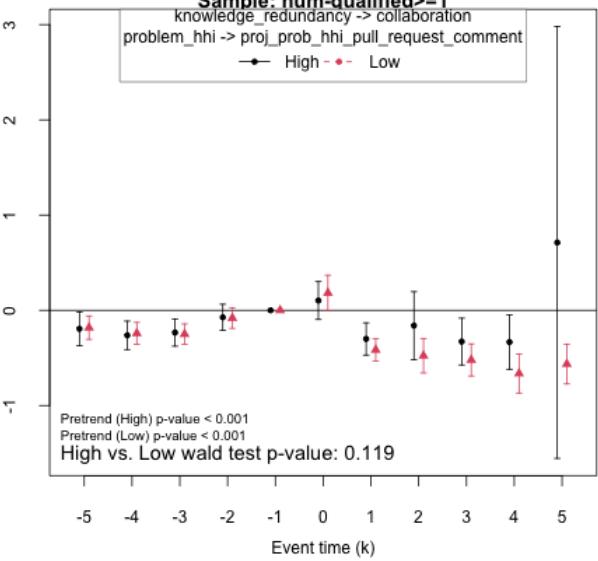


### overall\_new\_release\_count rolling5

Sample: num-qualified>=1

knowledge\_redundancy->collaboration  
problem\_hhi -> proj\_prob\_hhi\_pull\_request\_comment

● High ▲ Low

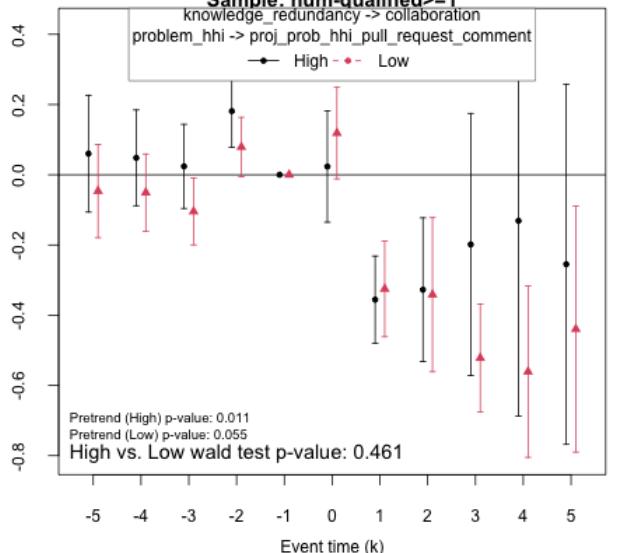


### pull\_request\_merged rolling5

Sample: num-qualified>=1

knowledge\_redundancy->collaboration  
problem\_hhi -> proj\_prob\_hhi\_pull\_request\_comment

● High ▲ Low

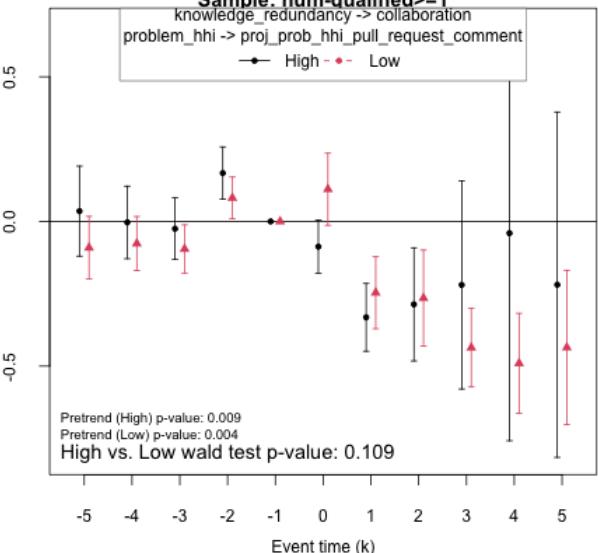


### pull\_request\_opened rolling5

Sample: num-qualified>=1

knowledge\_redundancy->collaboration  
problem\_hhi -> proj\_prob\_hhi\_pull\_request\_comment

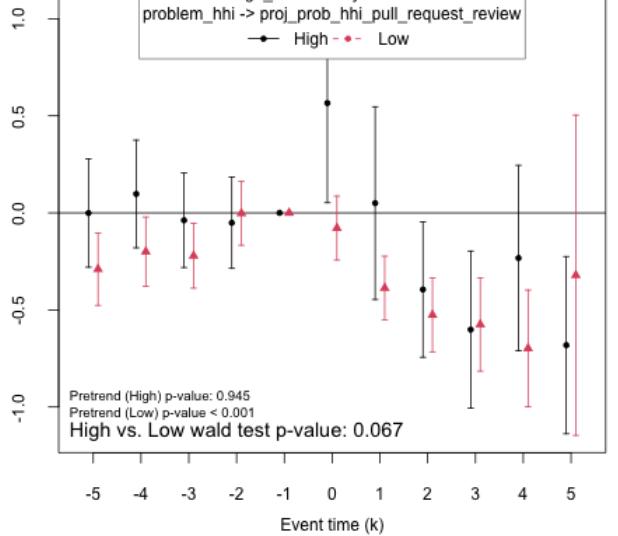
● High ▲ Low



**major\_minor\_release\_count rolling5****Sample: num-qualified>=1**

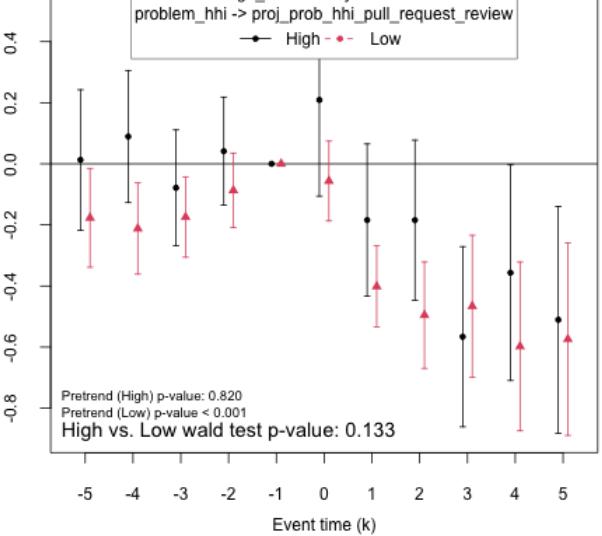
knowledge\_redundancy->collaboration  
problem\_hhi->proj\_prob\_hhi\_pull\_request\_review

● High ▲ Low

**overall\_new\_release\_count rolling5****Sample: num-qualified>=1**

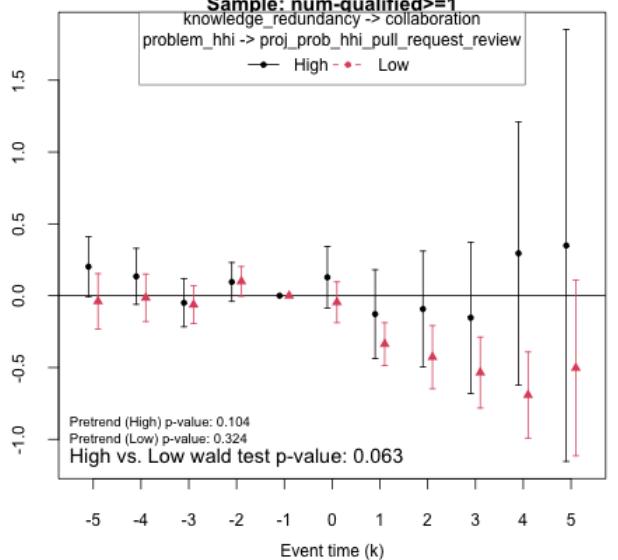
knowledge\_redundancy->collaboration  
problem\_hhi->proj\_prob\_hhi\_pull\_request\_review

● High ▲ Low

**pull\_request\_merged rolling5****Sample: num-qualified>=1**

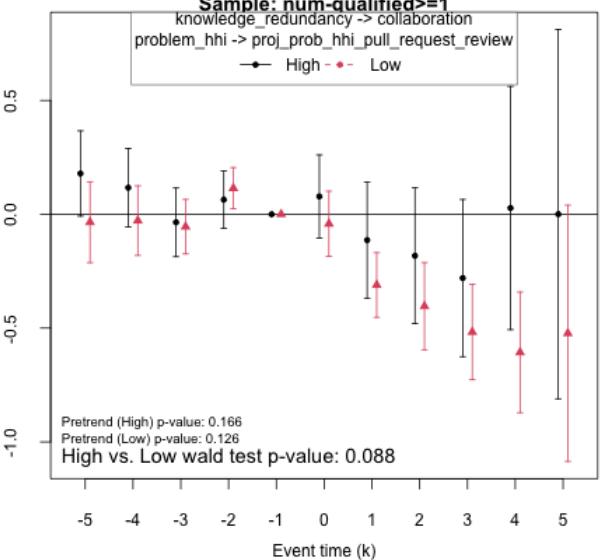
knowledge\_redundancy->collaboration  
problem\_hhi->proj\_prob\_hhi\_pull\_request\_review

● High ▲ Low

**pull\_request\_opened rolling5****Sample: num-qualified>=1**

knowledge\_redundancy->collaboration  
problem\_hhi->proj\_prob\_hhi\_pull\_request\_review

● High ▲ Low



### major\_minor\_release\_count rolling5

**Sample: num-qualified>=1**

knowledge\_redundancy->collaboration

problem\_hhi -> proj\_prob\_hhi\_pull\_request\_review\_comment

● High - ▲ Low

0.0

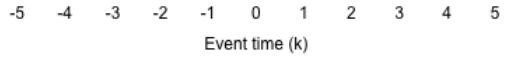
-0.5

-1.0

Pretrend (High) p-value: 0.199

Pretrend (Low) p-value < 0.001

High vs. Low wald test p-value: 0.373



Event time (k)

### overall\_new\_release\_count rolling5

**Sample: num-qualified>=1**

knowledge\_redundancy->collaboration

problem\_hhi -> proj\_prob\_hhi\_pull\_request\_review\_comment

● High - ▲ Low

0.4

0.2

0.0

-0.2

-0.4

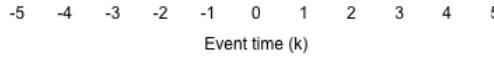
-0.6

-0.8

Pretrend (High) p-value: 0.088

Pretrend (Low) p-value < 0.001

High vs. Low wald test p-value: 0.015



Event time (k)

### pull\_request\_merged rolling5

**Sample: num-qualified>=1**

knowledge\_redundancy->collaboration

problem\_hhi -> proj\_prob\_hhi\_pull\_request\_review\_comment

● High - ▲ Low

0.4

0.2

0.0

-0.2

-0.4

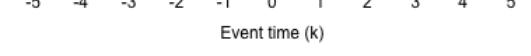
-0.6

-0.8

Pretrend (High) p-value: 0.036

Pretrend (Low) p-value: 0.006

High vs. Low wald test p-value: 0.054



Event time (k)

### pull\_request\_opened rolling5

**Sample: num-qualified>=1**

knowledge\_redundancy->collaboration

problem\_hhi -> proj\_prob\_hhi\_pull\_request\_review\_comment

● High - ▲ Low

0.4

0.2

0.0

-0.2

-0.4

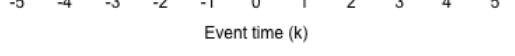
-0.6

-0.8

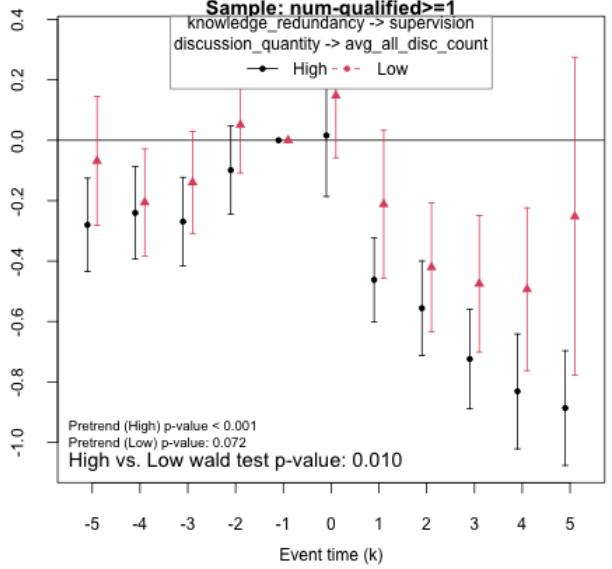
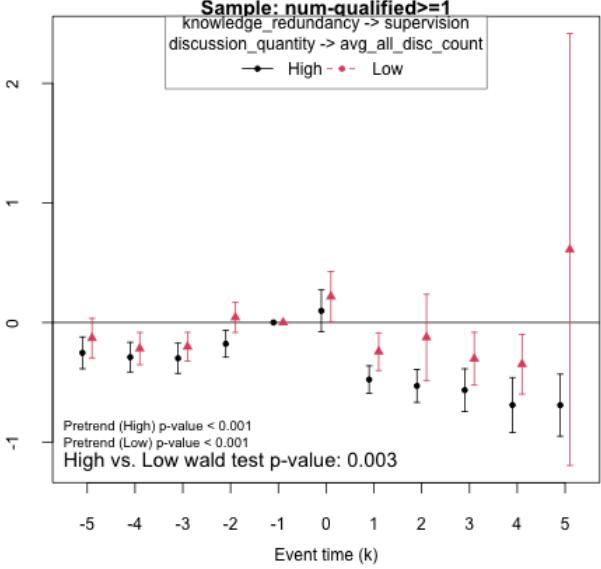
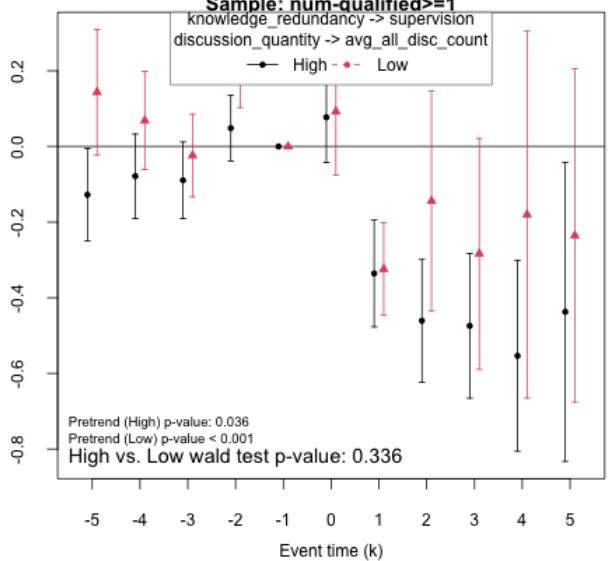
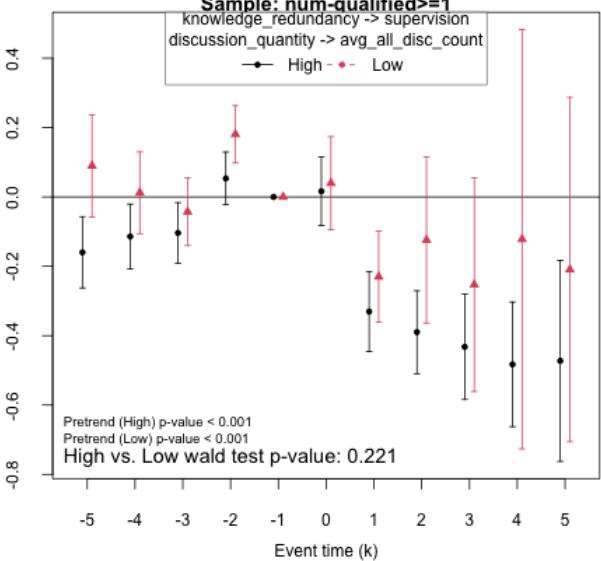
Pretrend (High) p-value: 0.088

Pretrend (Low) p-value < 0.001

High vs. Low wald test p-value: 0.141



Event time (k)

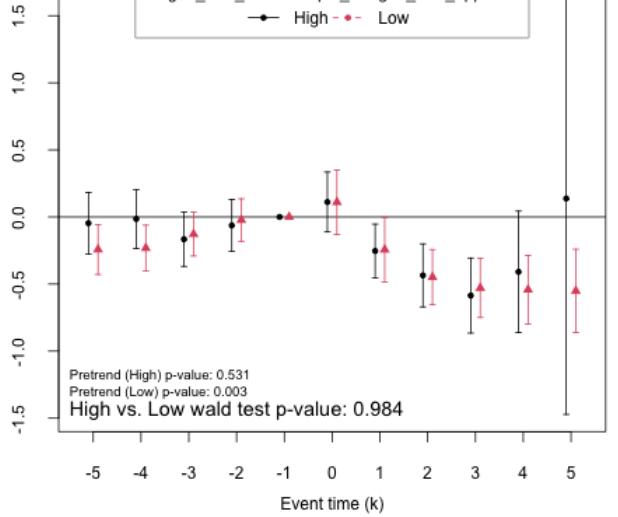
**major\_minor\_release\_count rolling5****Sample: num-qualified>=1**knowledge\_redundancy -> supervision  
discussion\_quantity -> avg\_all\_disc\_count**overall\_new\_release\_count rolling5****Sample: num-qualified>=1**knowledge\_redundancy -> supervision  
discussion\_quantity -> avg\_all\_disc\_count**pull\_request\_merged rolling5****Sample: num-qualified>=1**knowledge\_redundancy -> supervision  
discussion\_quantity -> avg\_all\_disc\_count**pull\_request\_opened rolling5****Sample: num-qualified>=1**knowledge\_redundancy -> supervision  
discussion\_quantity -> avg\_all\_disc\_count

**major\_minor\_release\_count rolling5****Sample: num-qualified>=1**

knowledge\_redundancy-&gt; supervision

merged\_with\_review -&gt; pct\_merged\_with\_approved

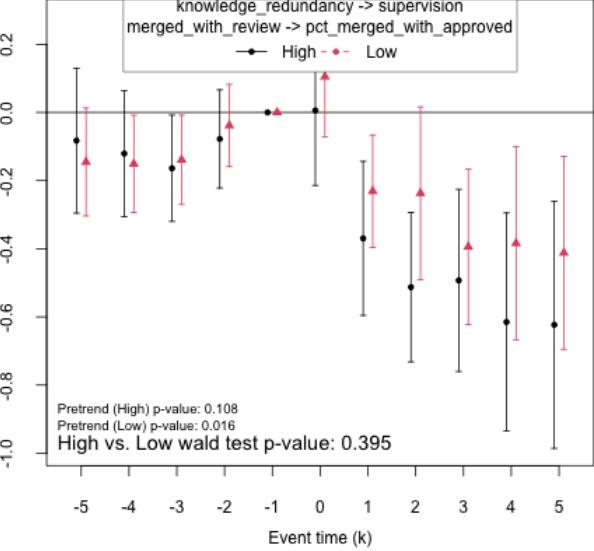
● High - ▲ Low

**overall\_new\_release\_count rolling5****Sample: num-qualified>=1**

knowledge\_redundancy-&gt; supervision

merged\_with\_review -&gt; pct\_merged\_with\_approved

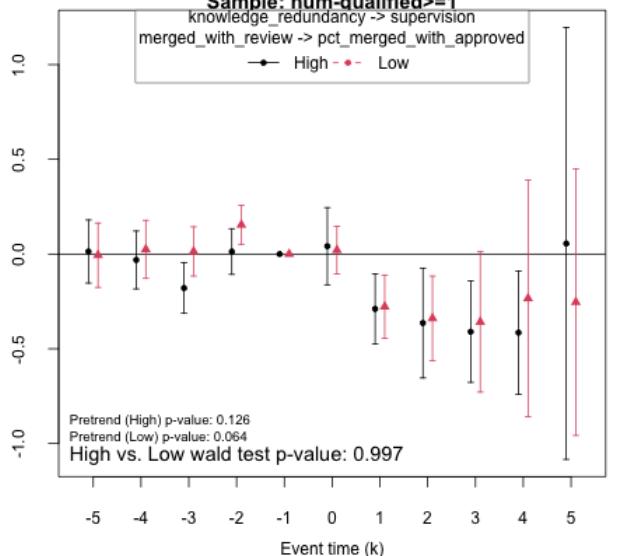
● High - ▲ Low

**pull\_request\_merged rolling5****Sample: num-qualified>=1**

knowledge\_redundancy-&gt; supervision

merged\_with\_review -&gt; pct\_merged\_with\_approved

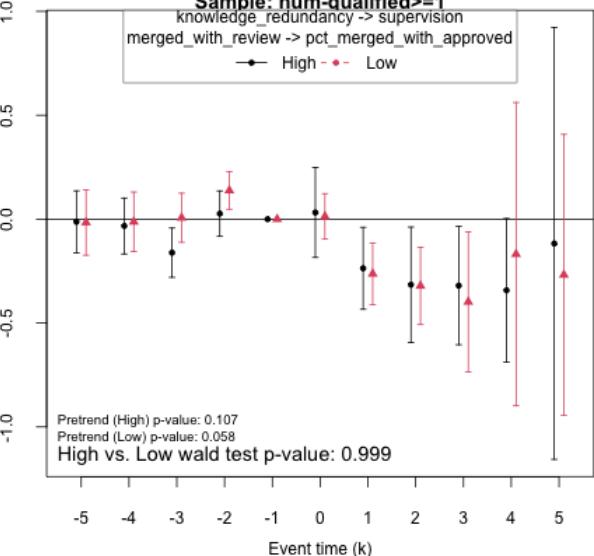
● High - ▲ Low

**pull\_request\_opened rolling5****Sample: num-qualified>=1**

knowledge\_redundancy-&gt; supervision

merged\_with\_review -&gt; pct\_merged\_with\_approved

● High - ▲ Low

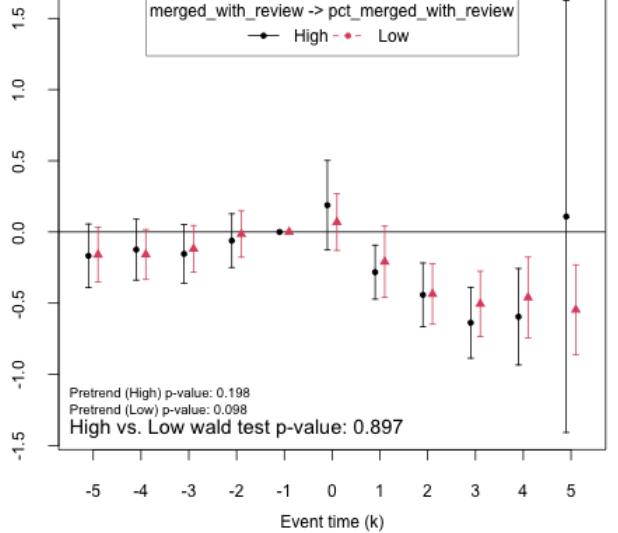


**major\_minor\_release\_count rolling5****Sample: num-qualified>=1**

knowledge\_redundancy-&gt; supervision

merged\_with\_review -&gt; pct\_merged\_with\_review

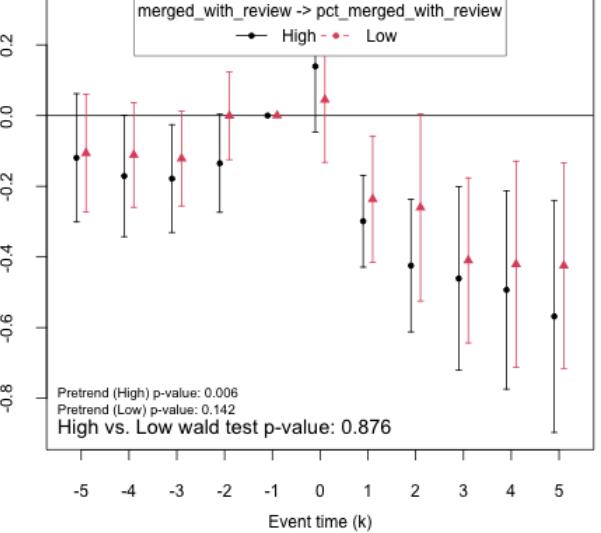
● High - ● Low

**overall\_new\_release\_count rolling5****Sample: num-qualified>=1**

knowledge\_redundancy-&gt; supervision

merged\_with\_review -&gt; pct\_merged\_with\_review

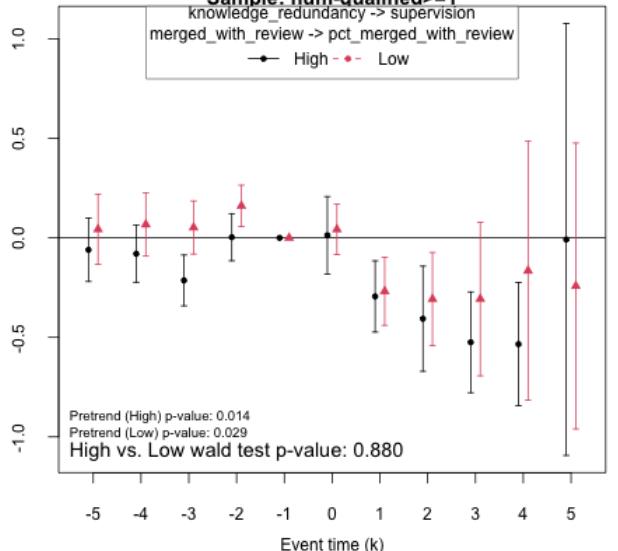
● High - ● Low

**pull\_request\_merged rolling5****Sample: num-qualified>=1**

knowledge\_redundancy-&gt; supervision

merged\_with\_review -&gt; pct\_merged\_with\_review

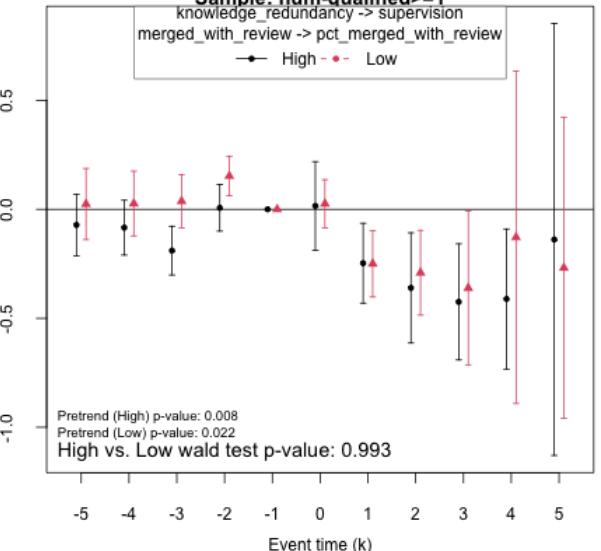
● High - ● Low

**pull\_request\_opened rolling5****Sample: num-qualified>=1**

knowledge\_redundancy-&gt; supervision

merged\_with\_review -&gt; pct\_merged\_with\_review

● High - ● Low

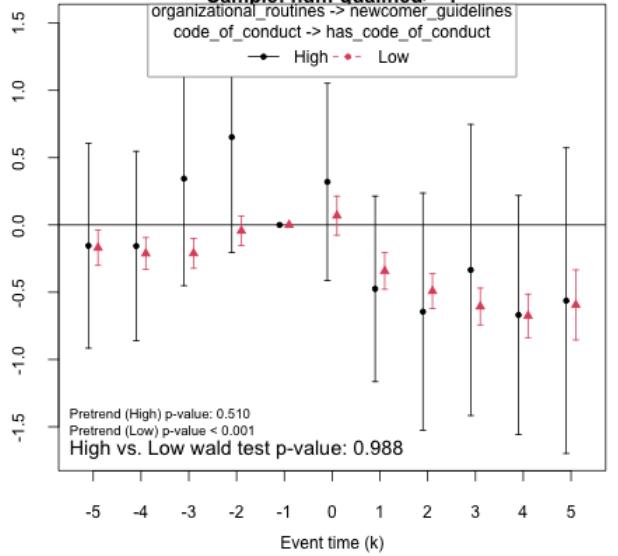


### major\_minor\_release\_count rolling5

Sample: num-qualified>=1

organizational\_routines -> newcomer\_guidelines  
code\_of\_conduct -> has\_code\_of\_conduct

● High ▲ Low

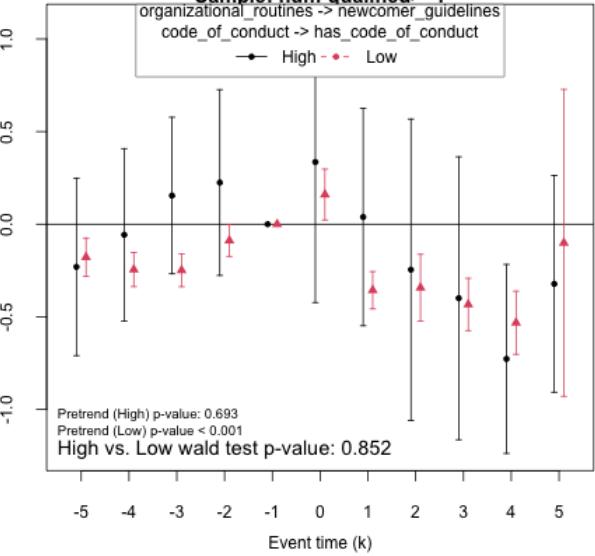


### overall\_new\_release\_count rolling5

Sample: num-qualified>=1

organizational\_routines -> newcomer\_guidelines  
code\_of\_conduct -> has\_code\_of\_conduct

● High ▲ Low

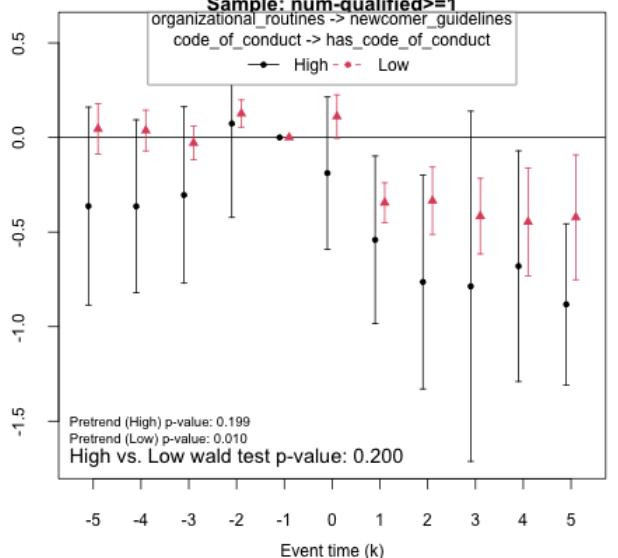


### pull\_request\_merged rolling5

Sample: num-qualified>=1

organizational\_routines -> newcomer\_guidelines  
code\_of\_conduct -> has\_code\_of\_conduct

● High ▲ Low

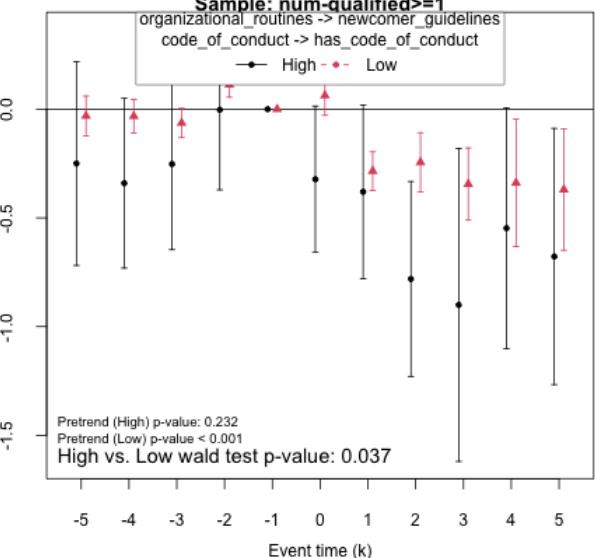


### pull\_request\_opened rolling5

Sample: num-qualified>=1

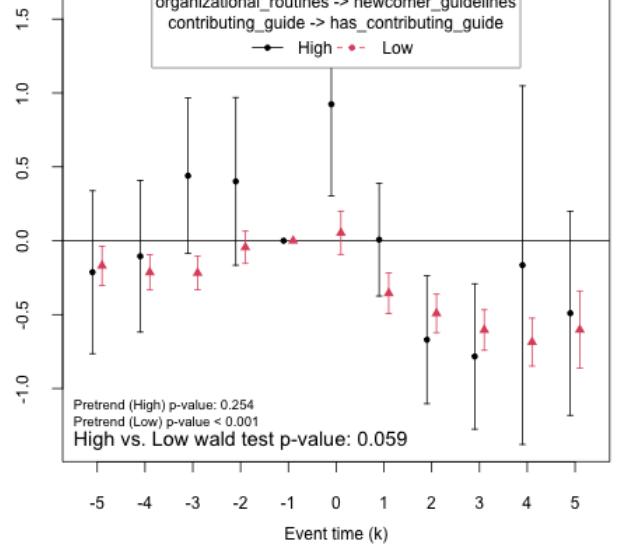
organizational\_routines -> newcomer\_guidelines  
code\_of\_conduct -> has\_code\_of\_conduct

● High ▲ Low

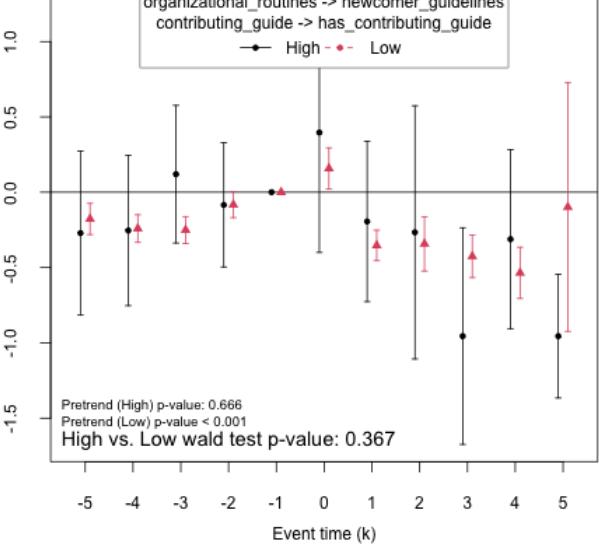


**major\_minor\_release\_count rolling5****Sample: num-qualified>=1**organizational\_routines -> newcomer\_guidelines  
contributing\_guide -> has\_contributing\_guide

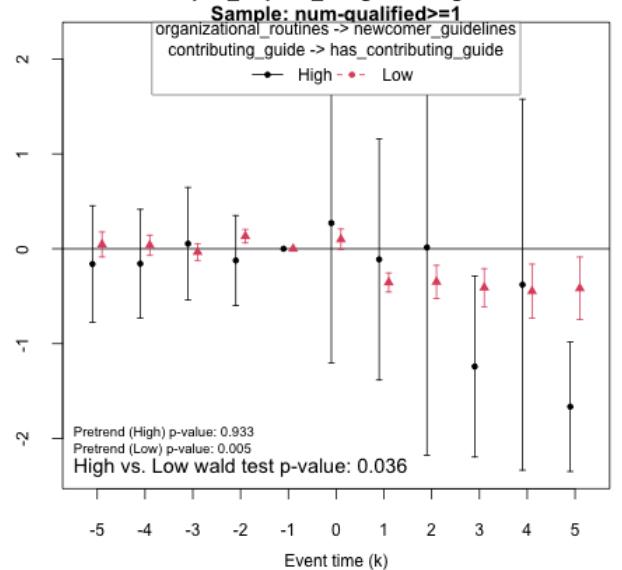
● High ● Low

**overall\_new\_release\_count rolling5****Sample: num-qualified>=1**organizational\_routines -> newcomer\_guidelines  
contributing\_guide -> has\_contributing\_guide

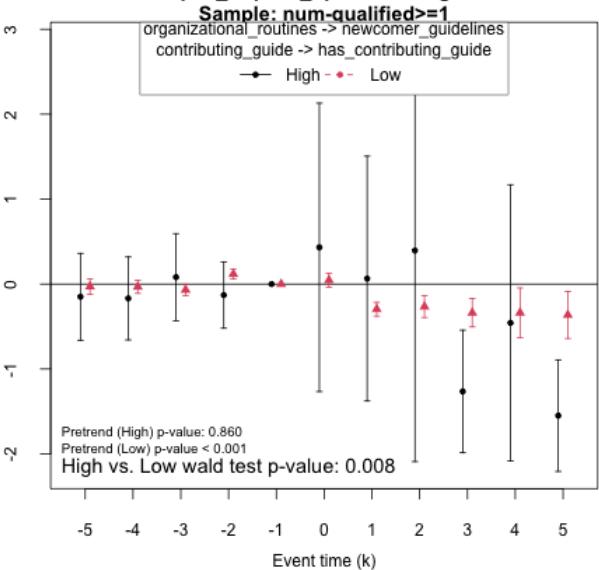
● High ● Low

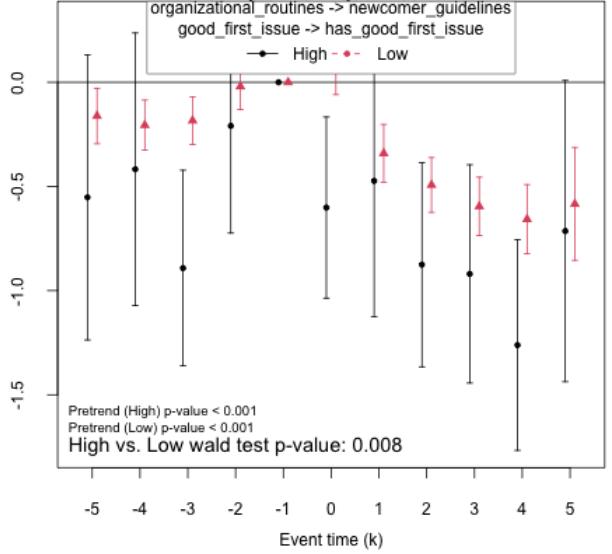
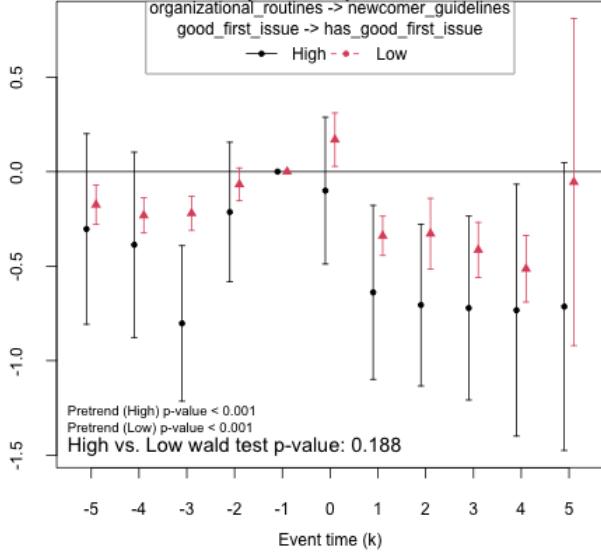
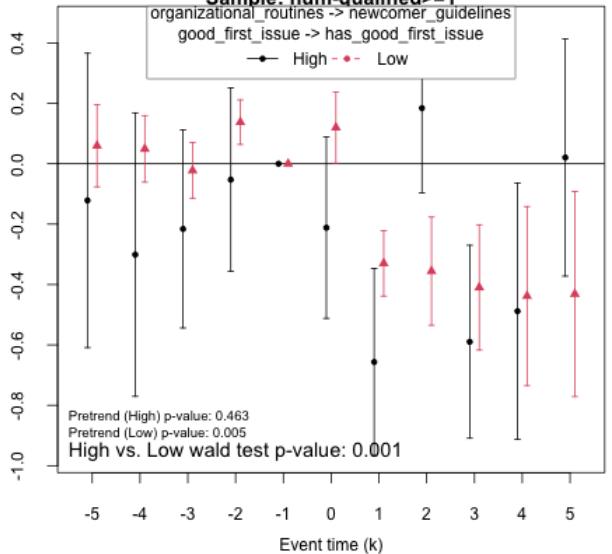
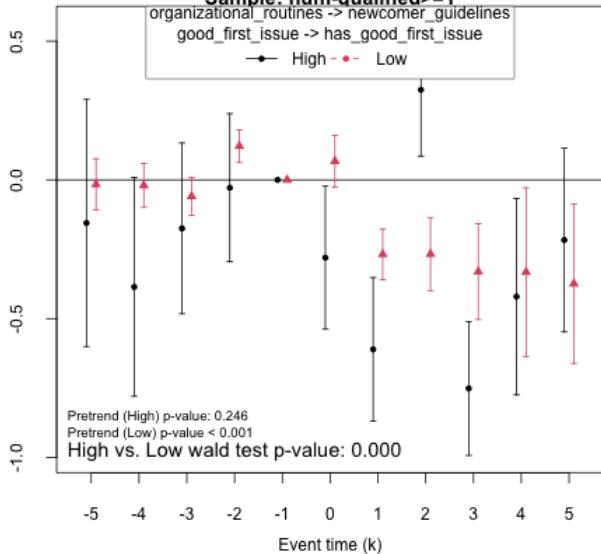
**pull\_request\_merged rolling5****Sample: num-qualified>=1**organizational\_routines -> newcomer\_guidelines  
contributing\_guide -> has\_contributing\_guide

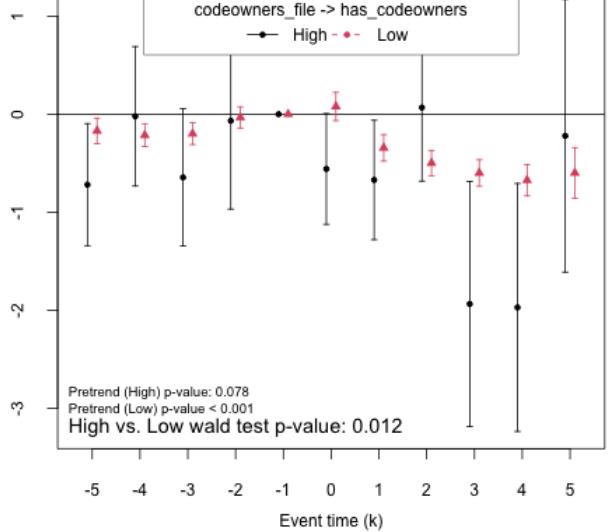
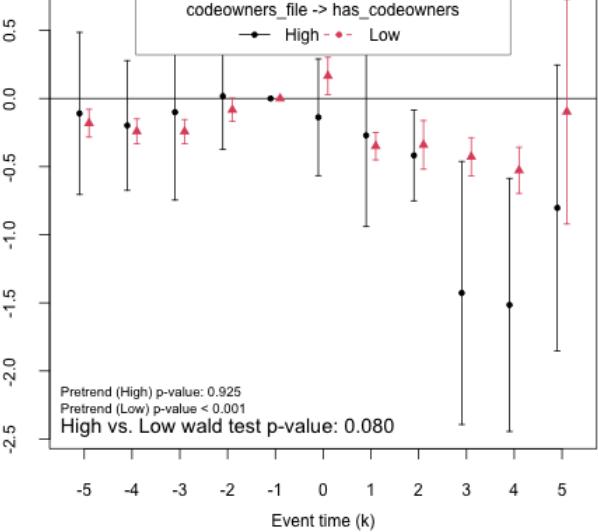
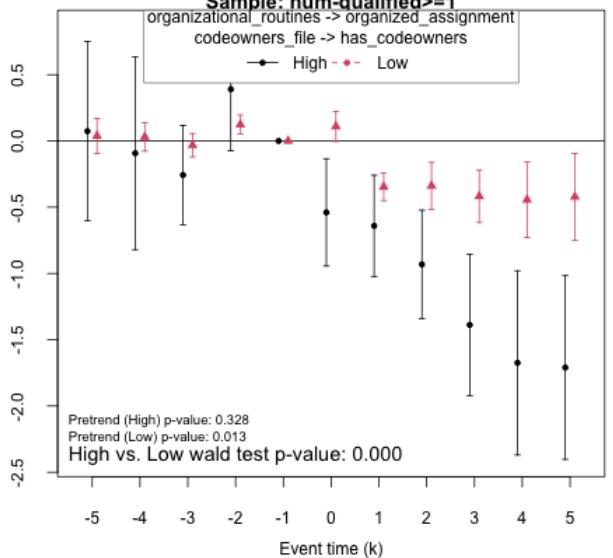
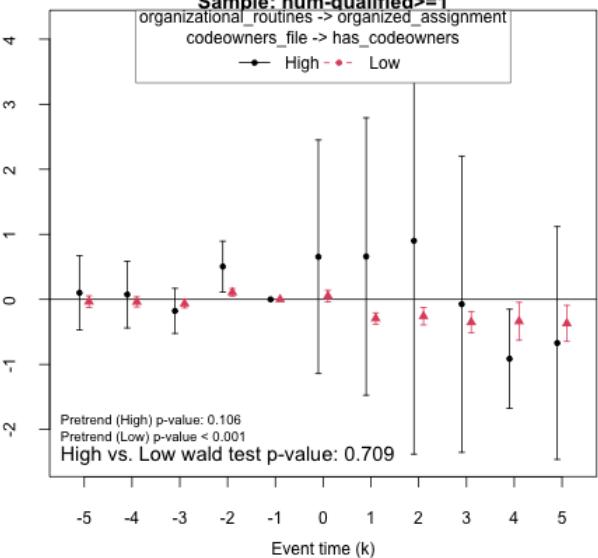
● High ● Low

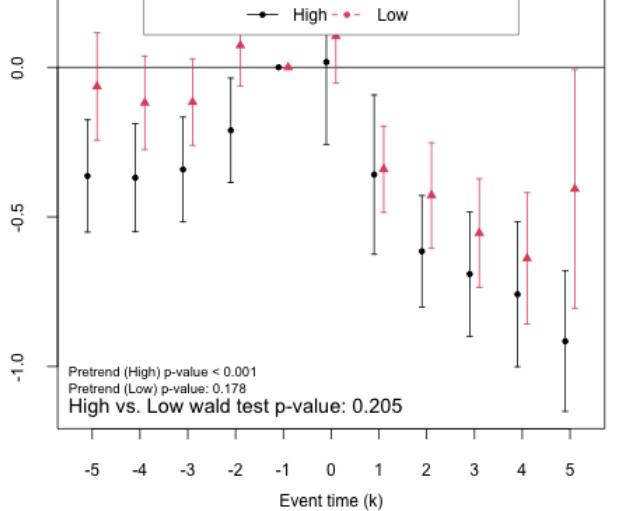
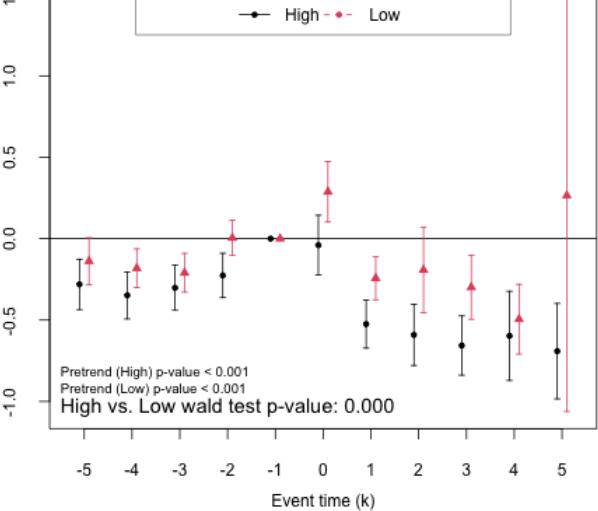
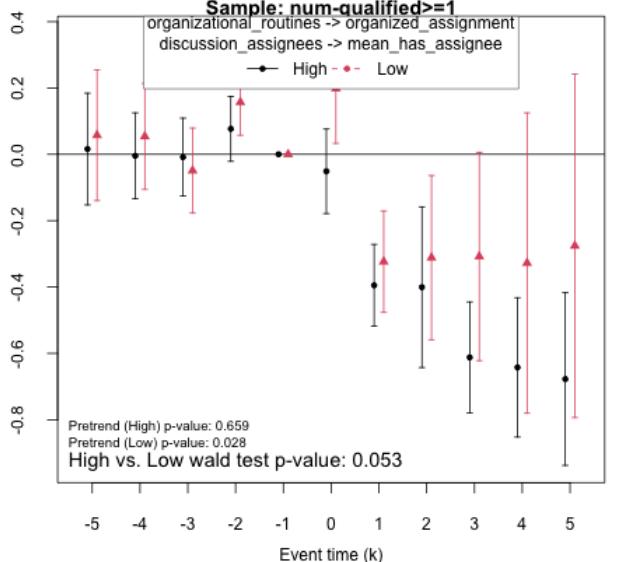
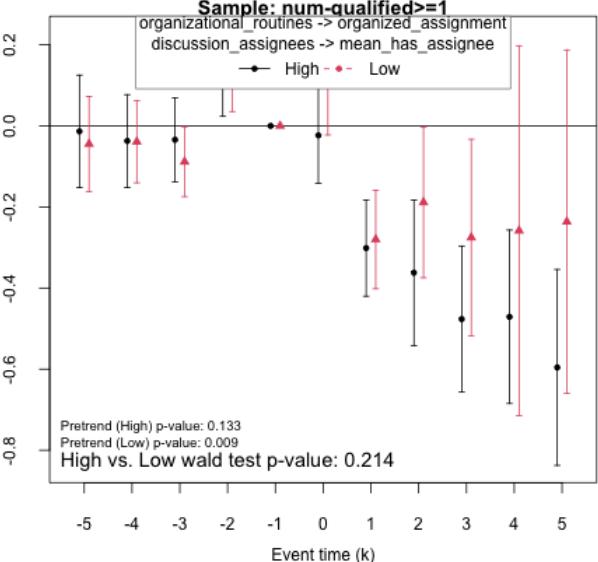
**pull\_request\_opened rolling5****Sample: num-qualified>=1**organizational\_routines -> newcomer\_guidelines  
contributing\_guide -> has\_contributing\_guide

● High ● Low



**major\_minor\_release\_count rolling5****Sample: num-qualified>=1**organizational\_routines -> newcomer\_guidelines  
good\_first\_issue -> has\_good\_first\_issue**overall\_new\_release\_count rolling5****Sample: num-qualified>=1**organizational\_routines -> newcomer\_guidelines  
good\_first\_issue -> has\_good\_first\_issue**pull\_request\_merged rolling5****Sample: num-qualified>=1**organizational\_routines -> newcomer\_guidelines  
good\_first\_issue -> has\_good\_first\_issue**pull\_request\_opened rolling5****Sample: num-qualified>=1**organizational\_routines -> newcomer\_guidelines  
good\_first\_issue -> has\_good\_first\_issue

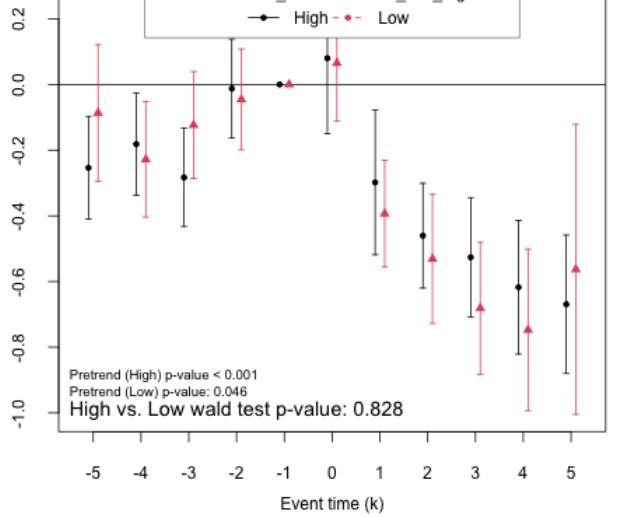
**major\_minor\_release\_count rolling5****Sample: num-qualified>=1**organizational\_routines -> organized\_assignment  
codeowners\_file -> has\_codeowners**overall\_new\_release\_count rolling5****Sample: num-qualified>=1**organizational\_routines -> organized\_assignment  
codeowners\_file -> has\_codeowners**pull\_request\_merged rolling5****Sample: num-qualified>=1**organizational\_routines -> organized\_assignment  
codeowners\_file -> has\_codeowners**pull\_request\_opened rolling5****Sample: num-qualified>=1**organizational\_routines -> organized\_assignment  
codeowners\_file -> has\_codeowners

**major\_minor\_release\_count rolling5****Sample: num-qualified>=1**organizational\_routines -> organized\_assignment  
discussion\_assignees -> mean\_has\_assignee**overall\_new\_release\_count rolling5****Sample: num-qualified>=1**organizational\_routines -> organized\_assignment  
discussion\_assignees -> mean\_has\_assignee**pull\_request\_merged rolling5****Sample: num-qualified>=1**organizational\_routines -> organized\_assignment  
discussion\_assignees -> mean\_has\_assignee**pull\_request\_opened rolling5****Sample: num-qualified>=1**organizational\_routines -> organized\_assignment  
discussion\_assignees -> mean\_has\_assignee

**major\_minor\_release\_count rolling5****Sample: num-qualified>=1**

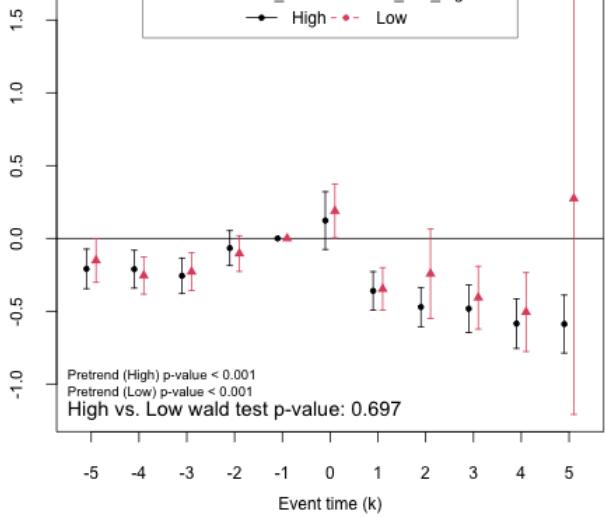
organizational\_routines -> organized\_assignment  
 discussion\_labels -> mean\_has\_tag

- High
- Low

**overall\_new\_release\_count rolling5****Sample: num-qualified>=1**

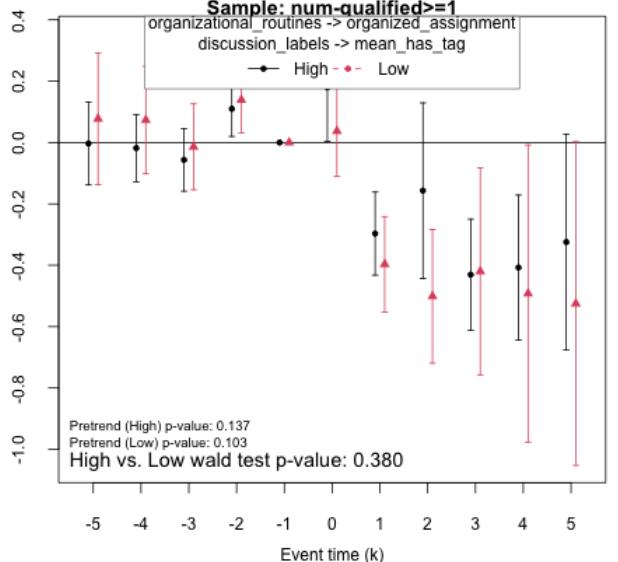
organizational\_routines -> organized\_assignment  
 discussion\_labels -> mean\_has\_tag

- High
- Low

**pull\_request\_merged rolling5****Sample: num-qualified>=1**

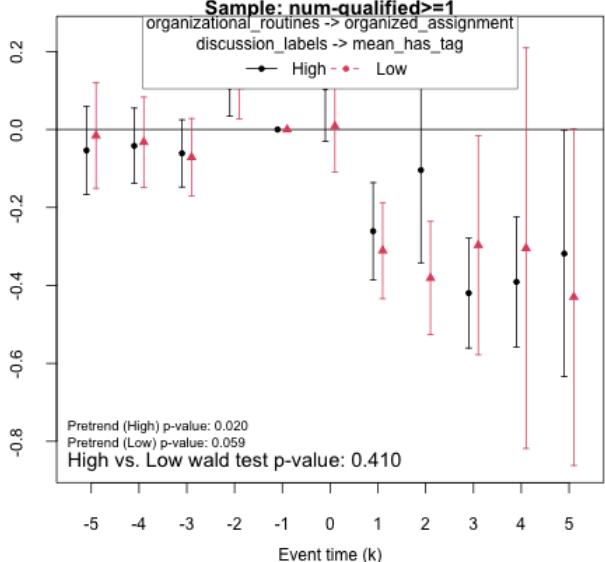
organizational\_routines -> organized\_assignment  
 discussion\_labels -> mean\_has\_tag

- High
- Low

**pull\_request\_opened rolling5****Sample: num-qualified>=1**

organizational\_routines -> organized\_assignment  
 discussion\_labels -> mean\_has\_tag

- High
- Low



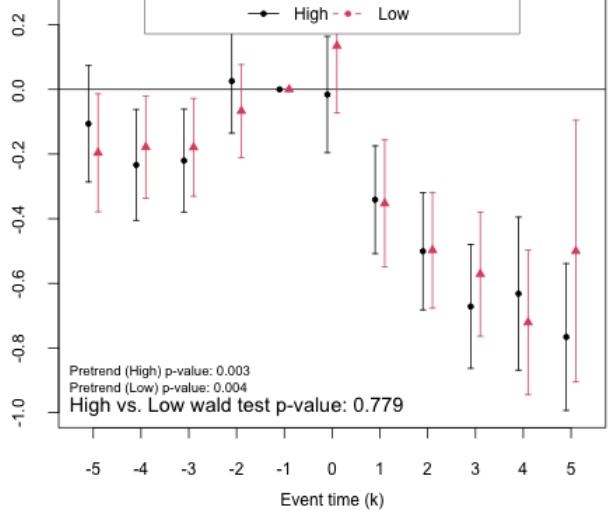
### major\_minor\_release\_count rolling5

Sample: num-qualified>=1

organizational\_routines -> organized\_assignment

pr\_reviewers -> mean\_has\_reviewer

● High - ▲ Low



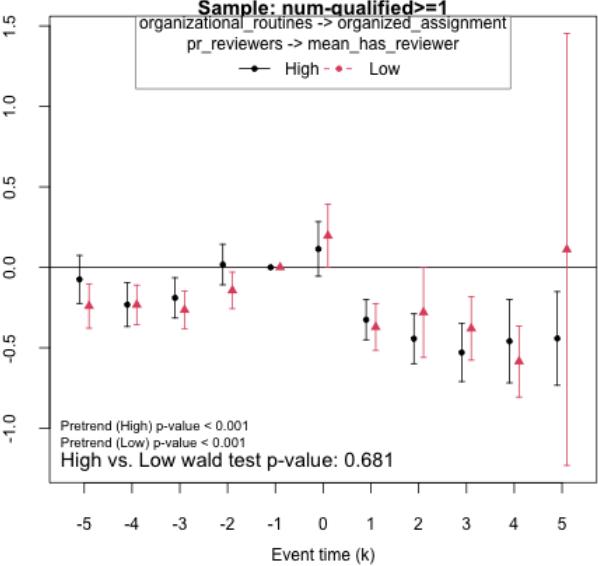
### overall\_new\_release\_count rolling5

Sample: num-qualified>=1

organizational\_routines -> organized\_assignment

pr\_reviewers -> mean\_has\_reviewer

● High - ▲ Low



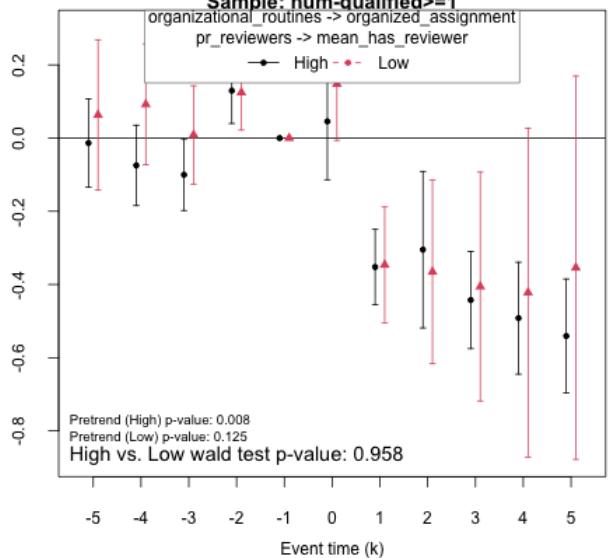
### pull\_request\_merged rolling5

Sample: num-qualified>=1

organizational\_routines -> organized\_assignment

pr\_reviewers -> mean\_has\_reviewer

● High - ▲ Low



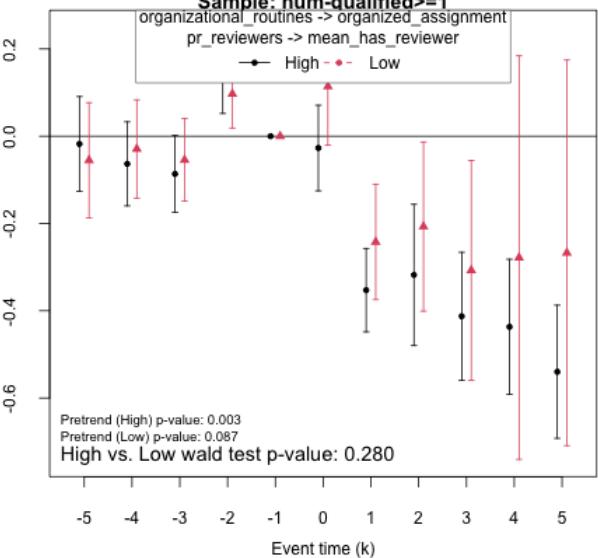
### pull\_request\_opened rolling5

Sample: num-qualified>=1

organizational\_routines -> organized\_assignment

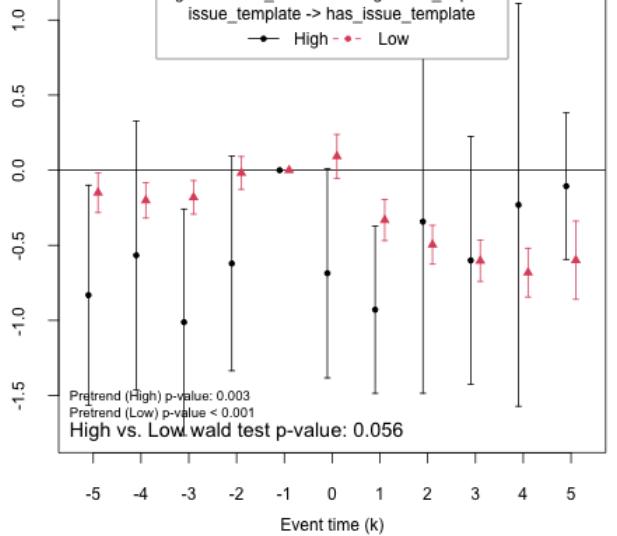
pr\_reviewers -> mean\_has\_reviewer

● High - ▲ Low

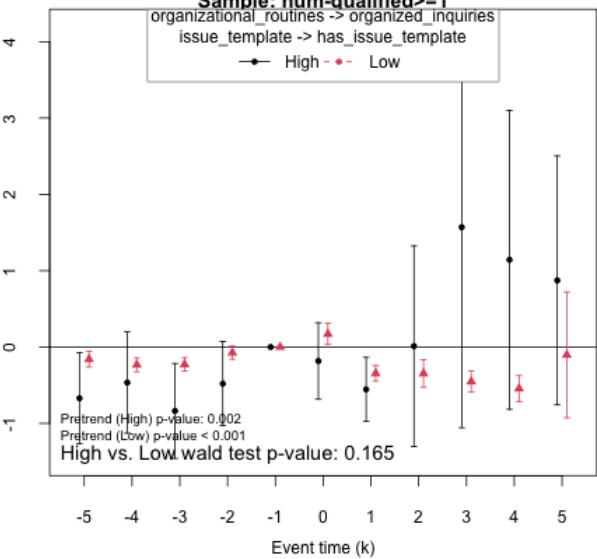


**major\_minor\_release\_count rolling5****Sample: num-qualified>=1**

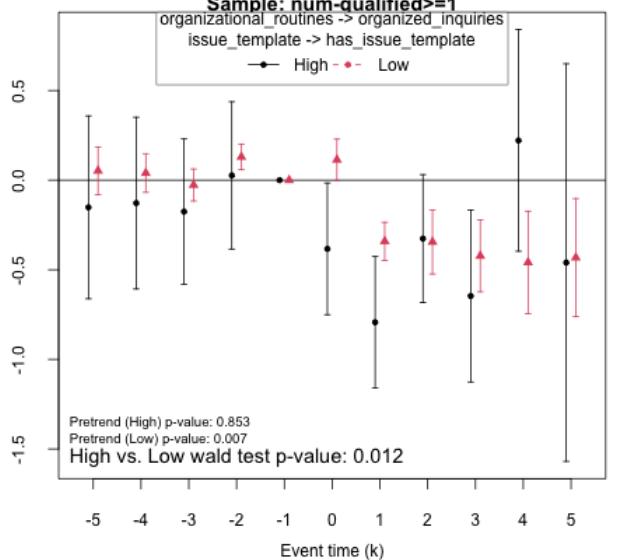
organizational\_routines -> organized\_inquiries  
 issue\_template -> has\_issue\_template  
 ● High - ▲ Low

**overall\_new\_release\_count rolling5****Sample: num-qualified>=1**

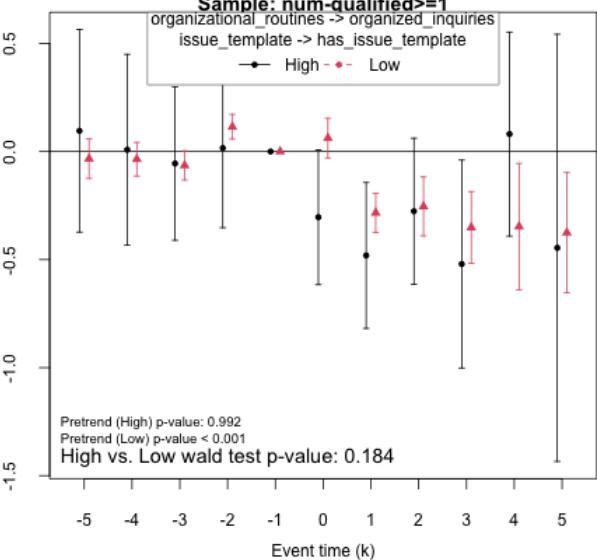
organizational\_routines -> organized\_inquiries  
 issue\_template -> has\_issue\_template  
 ● High - ▲ Low

**pull\_request\_merged rolling5****Sample: num-qualified>=1**

organizational\_routines -> organized\_inquiries  
 issue\_template -> has\_issue\_template  
 ● High - ▲ Low

**pull\_request\_opened rolling5****Sample: num-qualified>=1**

organizational\_routines -> organized\_inquiries  
 issue\_template -> has\_issue\_template  
 ● High - ▲ Low

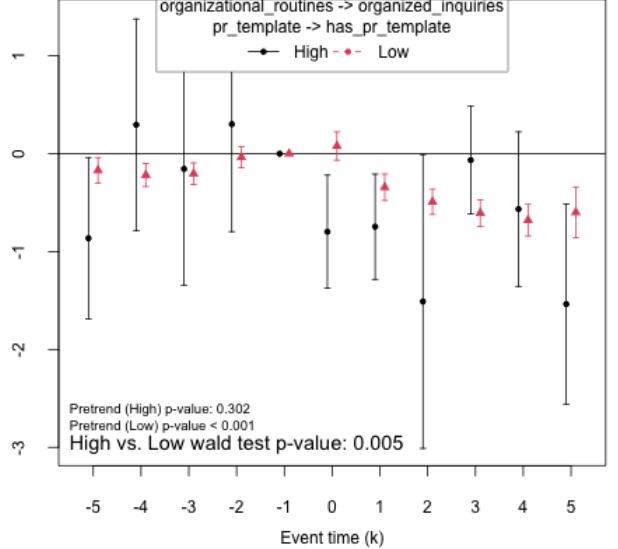


**major\_minor\_release\_count rolling5****Sample: num-qualified>=1**

organizational\_routines -&gt; organized\_inquiries

pr\_template -&gt; has\_pr\_template

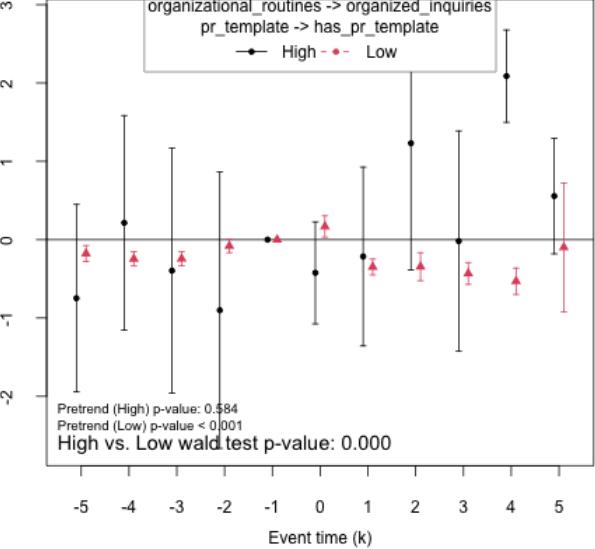
● High - ● Low

**overall\_new\_release\_count rolling5****Sample: num-qualified>=1**

organizational\_routines -&gt; organized\_inquiries

pr\_template -&gt; has\_pr\_template

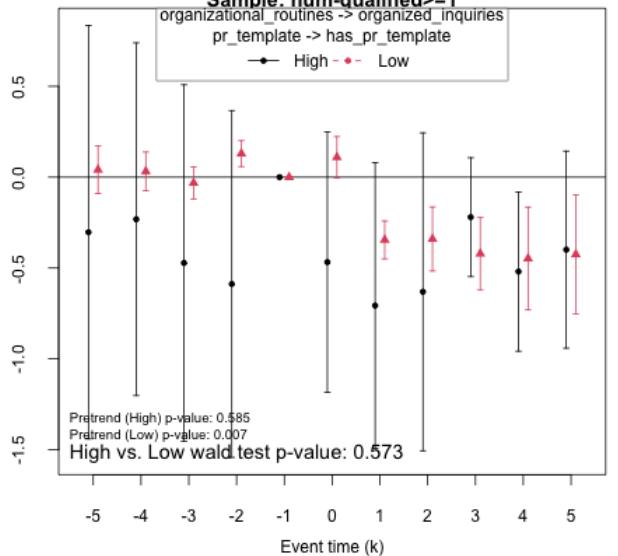
● High - ● Low

**pull\_request\_merged rolling5****Sample: num-qualified>=1**

organizational\_routines -&gt; organized\_inquiries

pr\_template -&gt; has\_pr\_template

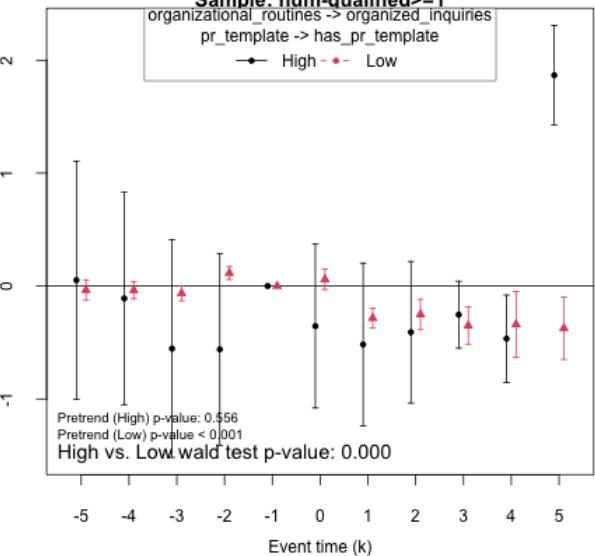
● High - ● Low

**pull\_request\_opened rolling5****Sample: num-qualified>=1**

organizational\_routines -&gt; organized\_inquiries

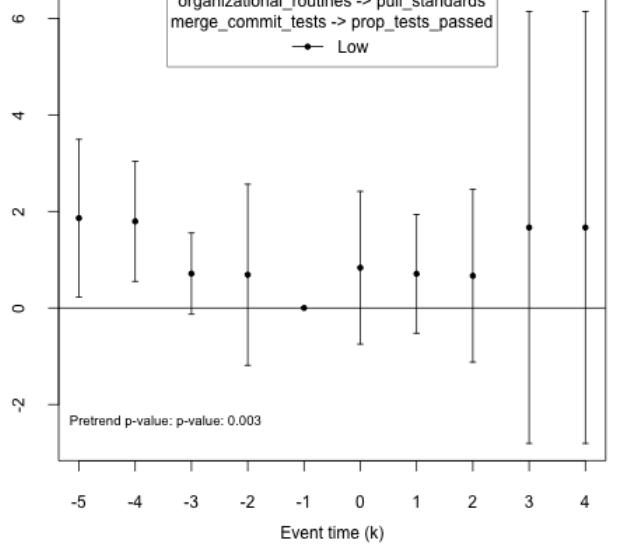
pr\_template -&gt; has\_pr\_template

● High - ● Low

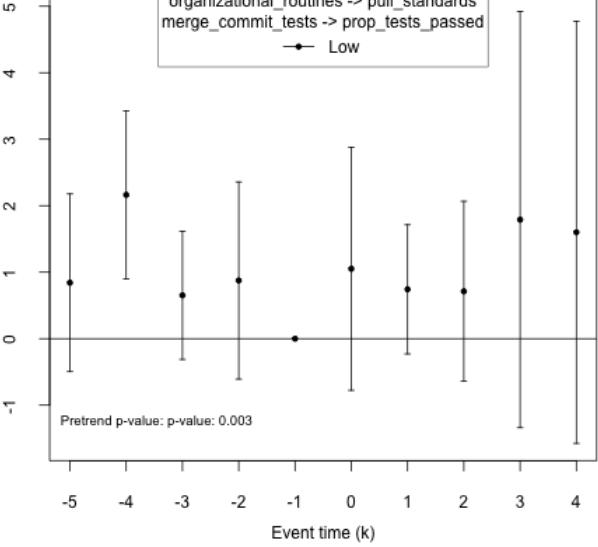


**major\_minor\_release\_count rolling5****Sample: num-qualified>=1**

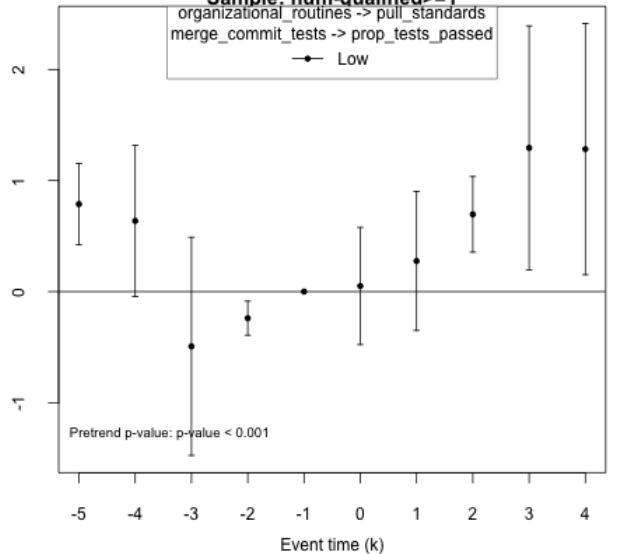
organizational\_routines -> pull\_standards  
 merge\_commit\_tests -> prop\_tests\_passed  
 ● Low

**overall\_new\_release\_count rolling5****Sample: num-qualified>=1**

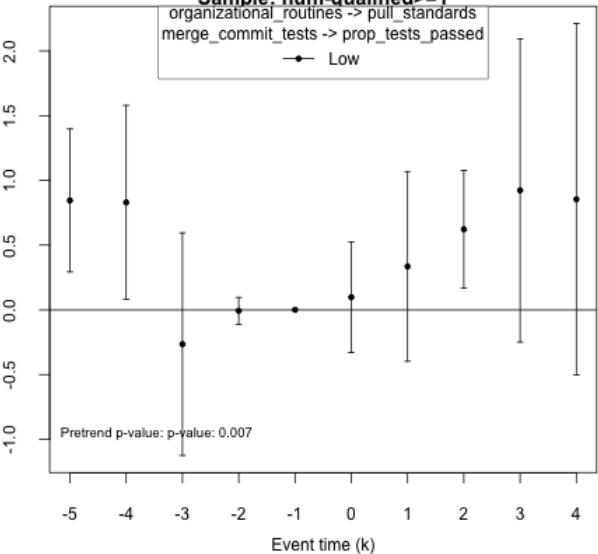
organizational\_routines -> pull\_standards  
 merge\_commit\_tests -> prop\_tests\_passed  
 ● Low

**pull\_request\_merged rolling5****Sample: num-qualified>=1**

organizational\_routines -> pull\_standards  
 merge\_commit\_tests -> prop\_tests\_passed  
 ● Low

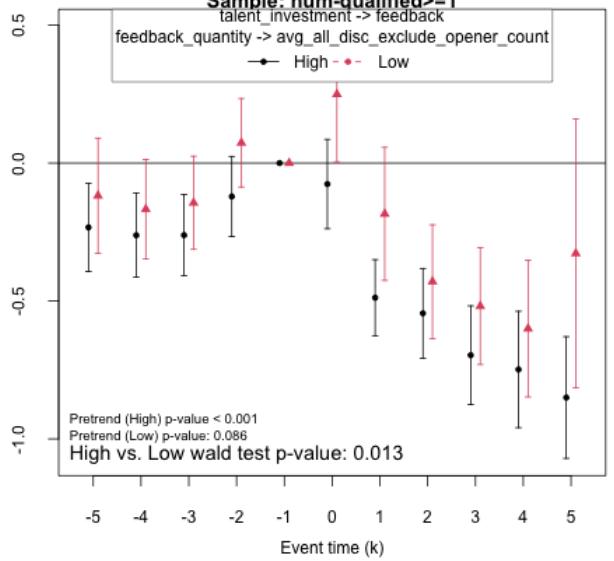
**pull\_request\_opened rolling5****Sample: num-qualified>=1**

organizational\_routines -> pull\_standards  
 merge\_commit\_tests -> prop\_tests\_passed  
 ● Low

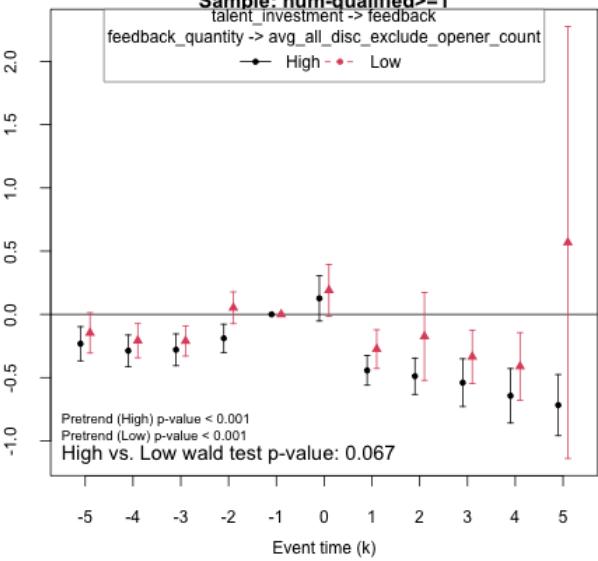


**major\_minor\_release\_count rolling5****Sample: num-qualified>=1**talent\_investment-> feedback  
feedback\_quantity -> avg\_all\_disc\_exclude\_opener\_count

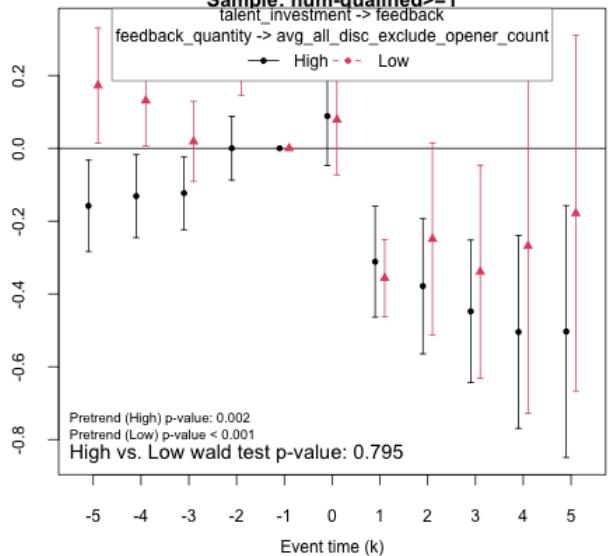
● High ▲ Low

**overall\_new\_release\_count rolling5****Sample: num-qualified>=1**talent\_investment-> feedback  
feedback\_quantity -> avg\_all\_disc\_exclude\_opener\_count

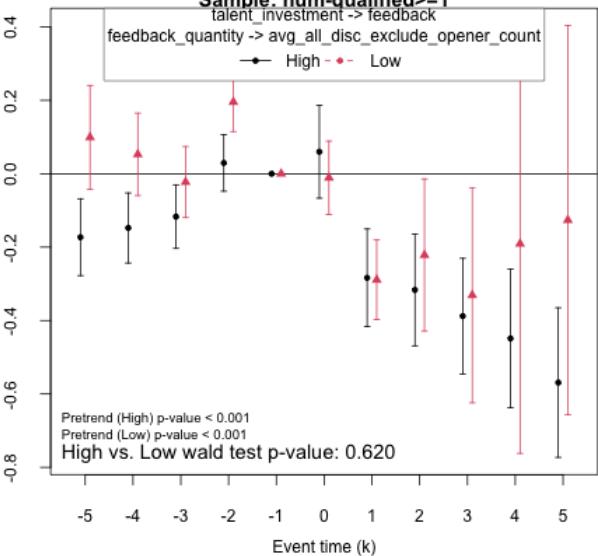
● High ▲ Low

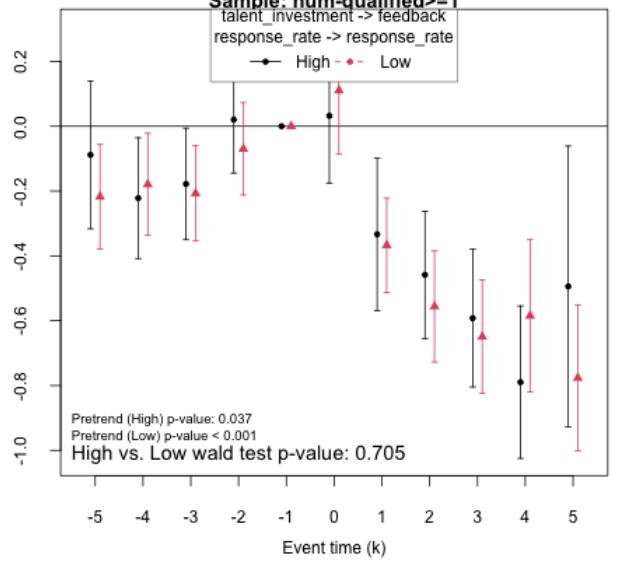
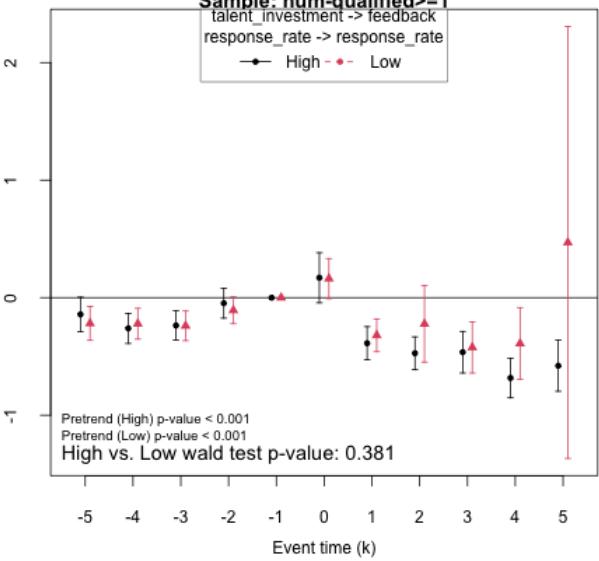
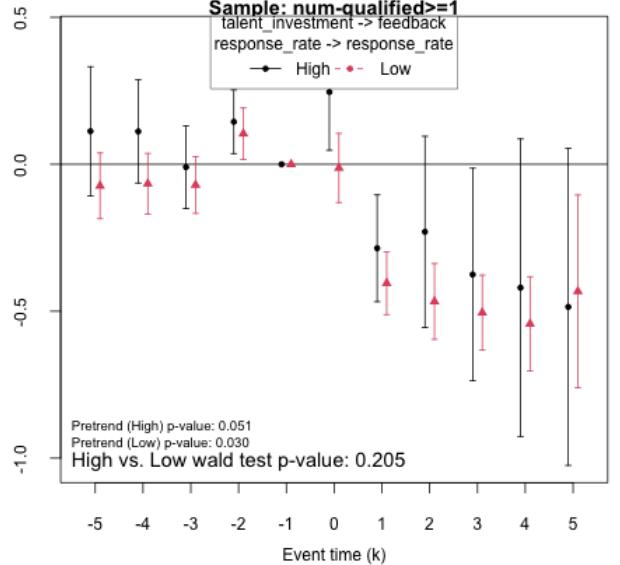
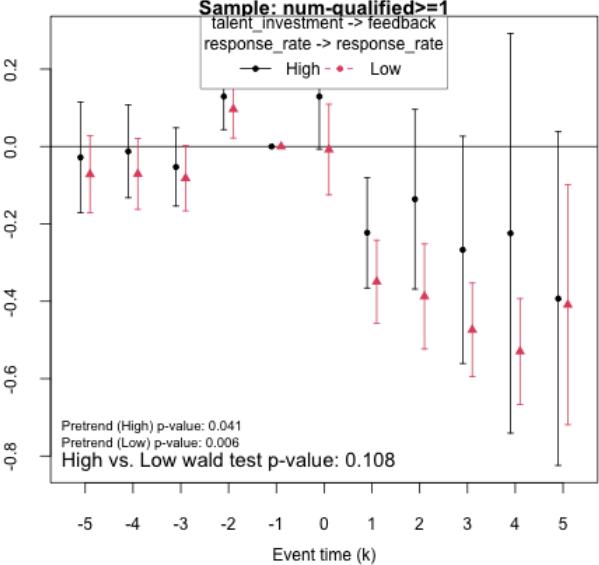
**pull\_request\_merged rolling5****Sample: num-qualified>=1**talent\_investment-> feedback  
feedback\_quantity -> avg\_all\_disc\_exclude\_opener\_count

● High ▲ Low

**pull\_request\_opened rolling5****Sample: num-qualified>=1**talent\_investment-> feedback  
feedback\_quantity -> avg\_all\_disc\_exclude\_opener\_count

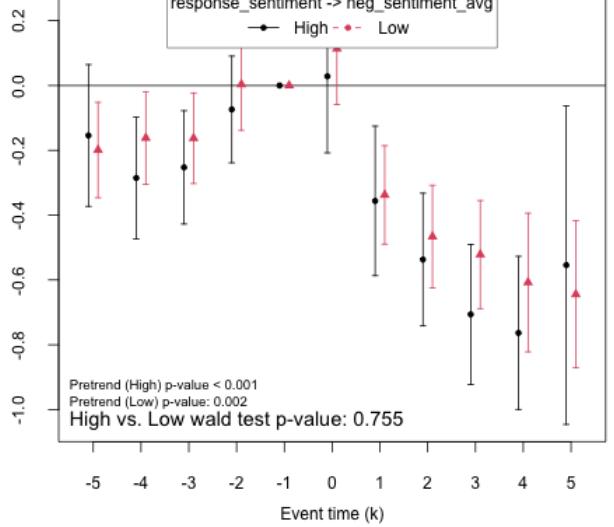
● High ▲ Low



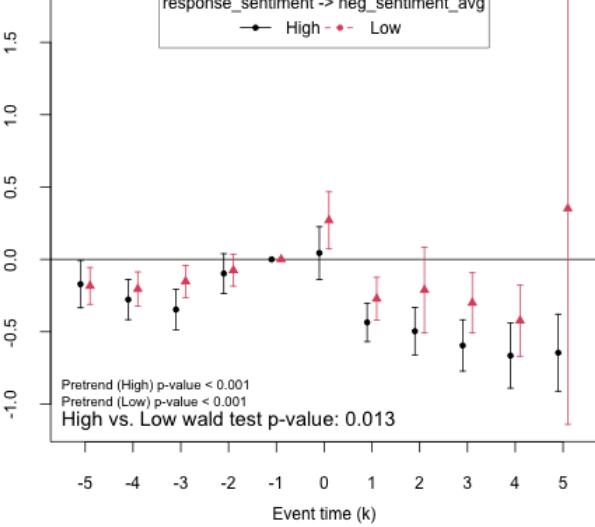
**major\_minor\_release\_count rolling5****Sample: num-qualified>=1****overall\_new\_release\_count rolling5****Sample: num-qualified>=1****pull\_request\_merged rolling5****Sample: num-qualified>=1****pull\_request\_opened rolling5****Sample: num-qualified>=1**

**major\_minor\_release\_count rolling5****Sample: num-qualified>=1**

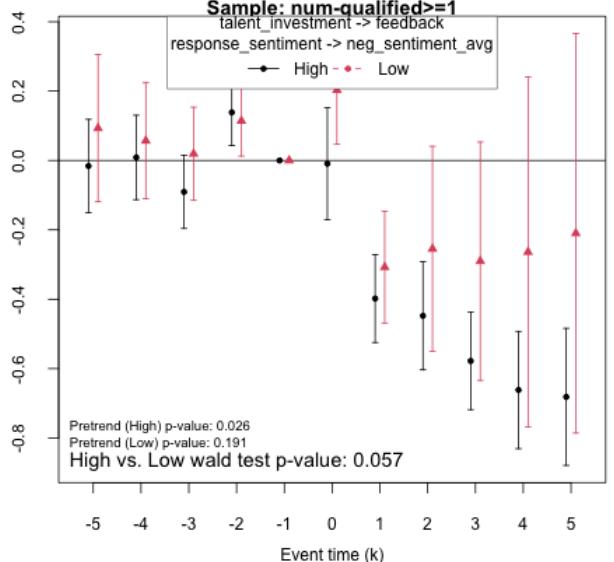
talent\_investment -> feedback  
 response\_sentiment -> neg\_sentiment\_avg  
 ● High ▲ Low

**overall\_new\_release\_count rolling5****Sample: num-qualified>=1**

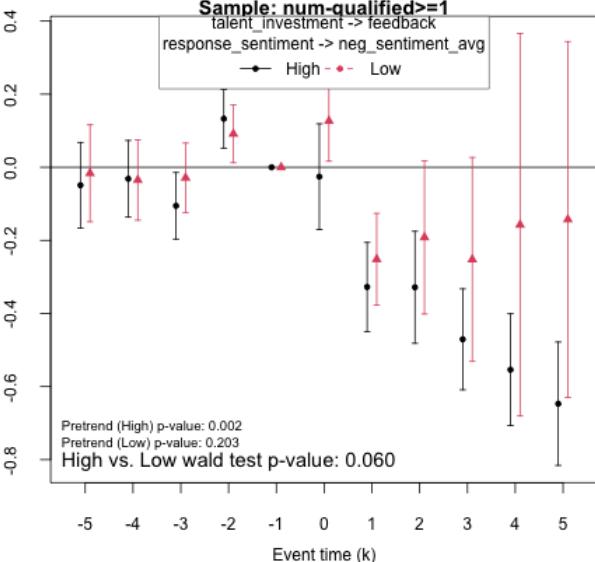
talent\_investment -> feedback  
 response\_sentiment -> neg\_sentiment\_avg  
 ● High ▲ Low

**pull\_request\_merged rolling5****Sample: num-qualified>=1**

talent\_investment -> feedback  
 response\_sentiment -> neg\_sentiment\_avg  
 ● High ▲ Low

**pull\_request\_opened rolling5****Sample: num-qualified>=1**

talent\_investment -> feedback  
 response\_sentiment -> neg\_sentiment\_avg  
 ● High ▲ Low

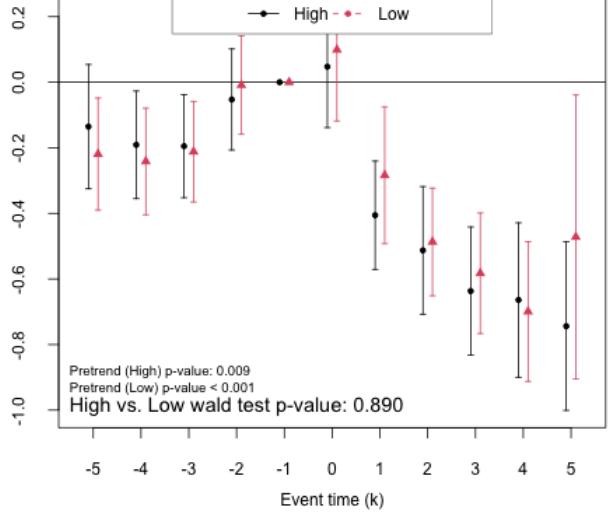


**major\_minor\_release\_count rolling5****Sample: num-qualified>=1**

talent\_investment -&gt; feedback

response\_sentiment -&gt; ov\_sentiment\_avg

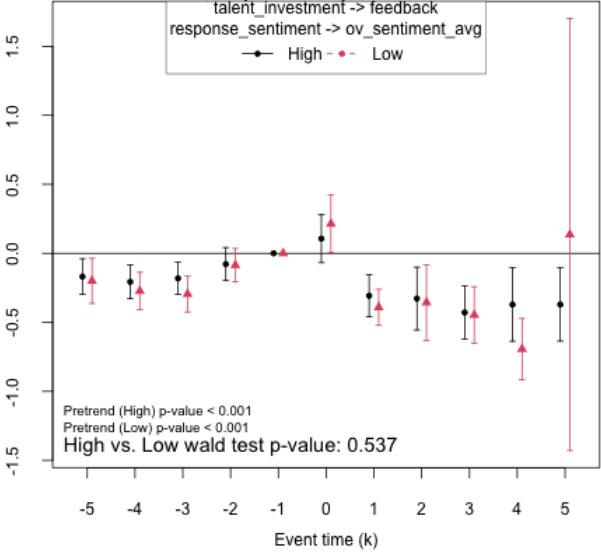
● High ▲ Low

**overall\_new\_release\_count rolling5****Sample: num-qualified>=1**

talent\_investment -&gt; feedback

response\_sentiment -&gt; ov\_sentiment\_avg

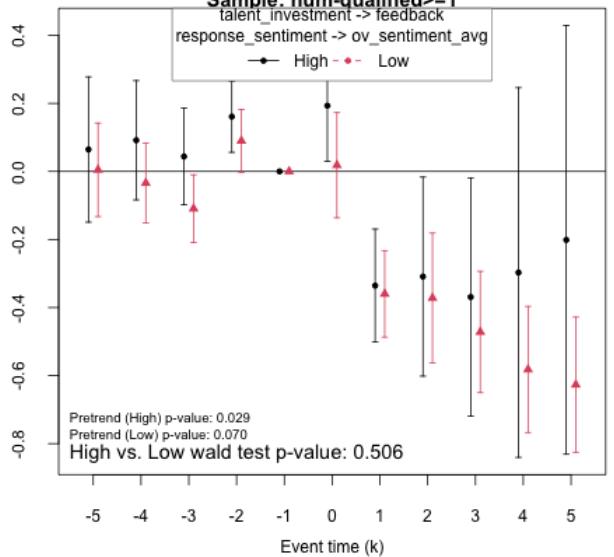
● High ▲ Low

**pull\_request\_merged rolling5****Sample: num-qualified>=1**

talent\_investment -&gt; feedback

response\_sentiment -&gt; ov\_sentiment\_avg

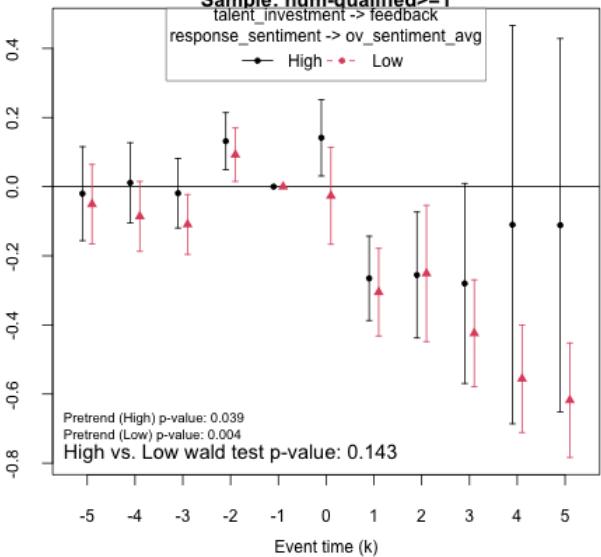
● High ▲ Low

**pull\_request\_opened rolling5****Sample: num-qualified>=1**

talent\_investment -&gt; feedback

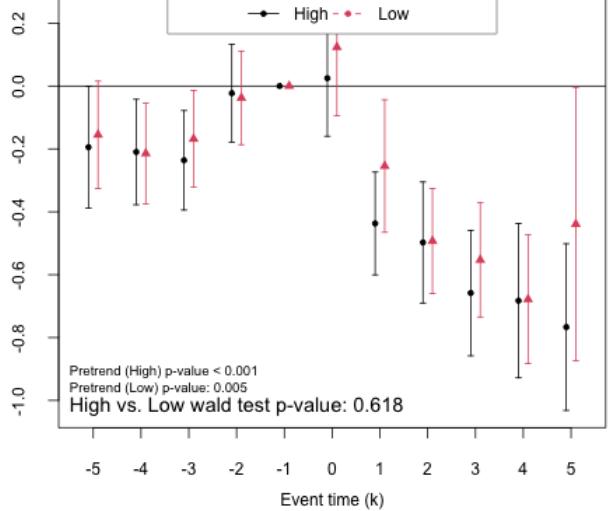
response\_sentiment -&gt; ov\_sentiment\_avg

● High ▲ Low

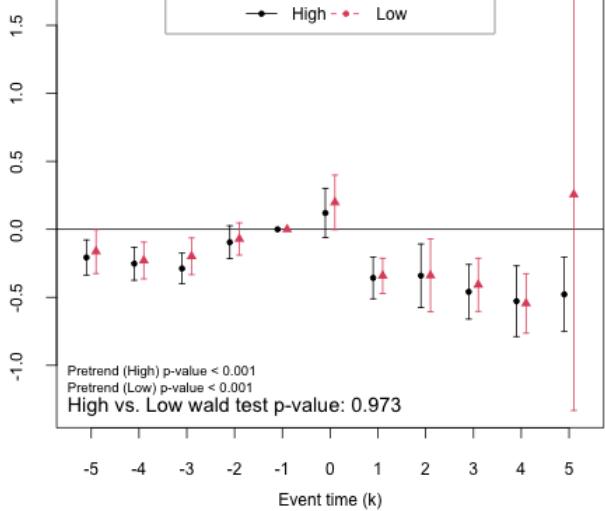


**major\_minor\_release\_count rolling5****Sample: num-qualified>=1**

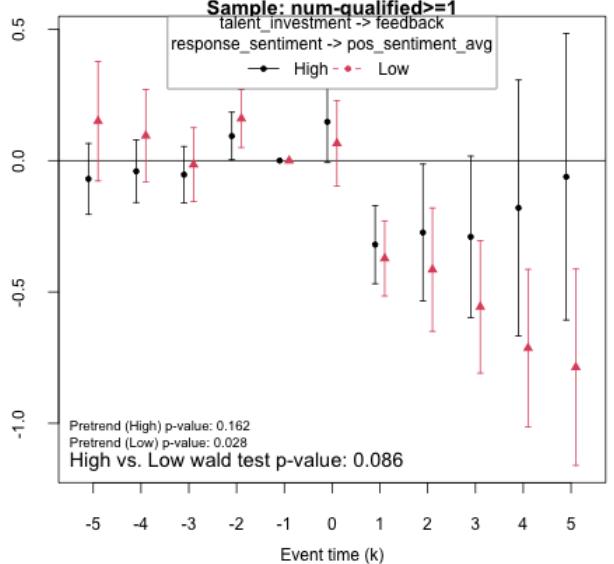
talent\_investment -> feedback  
 response\_sentiment -> pos\_sentiment\_avg  
 ● High ▲ Low

**overall\_new\_release\_count rolling5****Sample: num-qualified>=1**

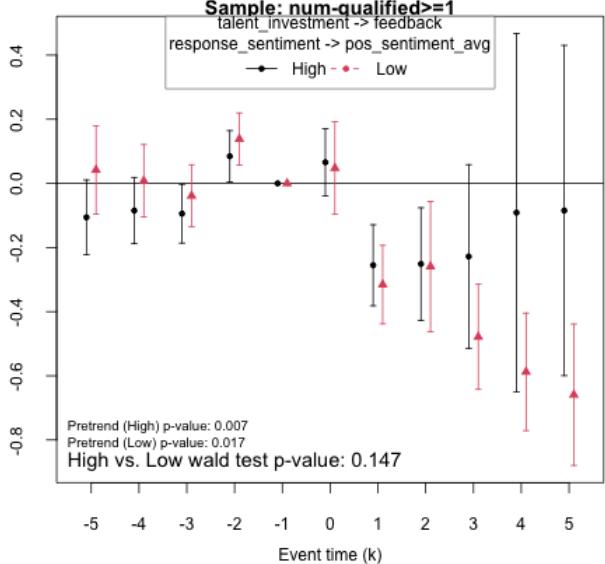
talent\_investment -> feedback  
 response\_sentiment -> pos\_sentiment\_avg  
 ● High ▲ Low

**pull\_request\_merged rolling5****Sample: num-qualified>=1**

talent\_investment -> feedback  
 response\_sentiment -> pos\_sentiment\_avg  
 ● High ▲ Low

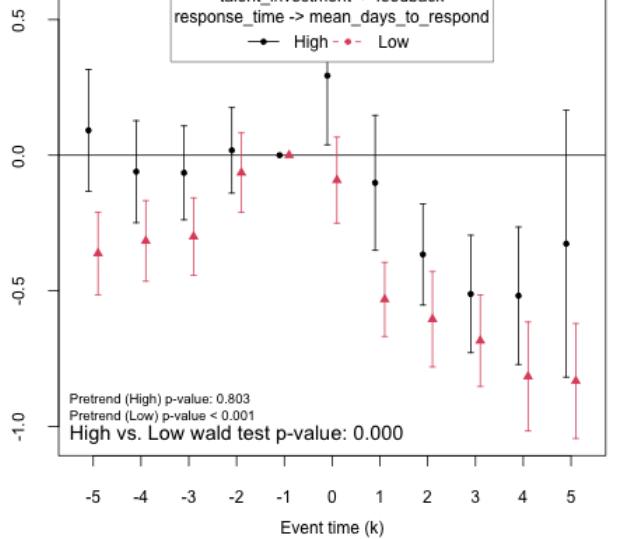
**pull\_request\_opened rolling5****Sample: num-qualified>=1**

talent\_investment -> feedback  
 response\_sentiment -> pos\_sentiment\_avg  
 ● High ▲ Low

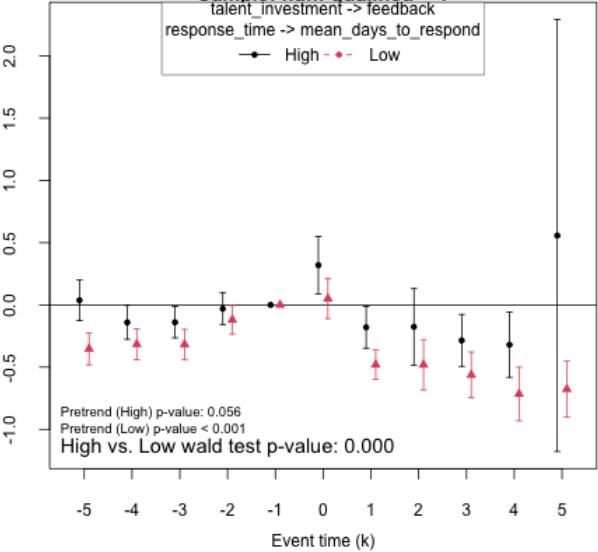


**major\_minor\_release\_count rolling5****Sample: num-qualified>=1**talent\_investment -> feedback  
response\_time -> mean\_days\_to\_respond

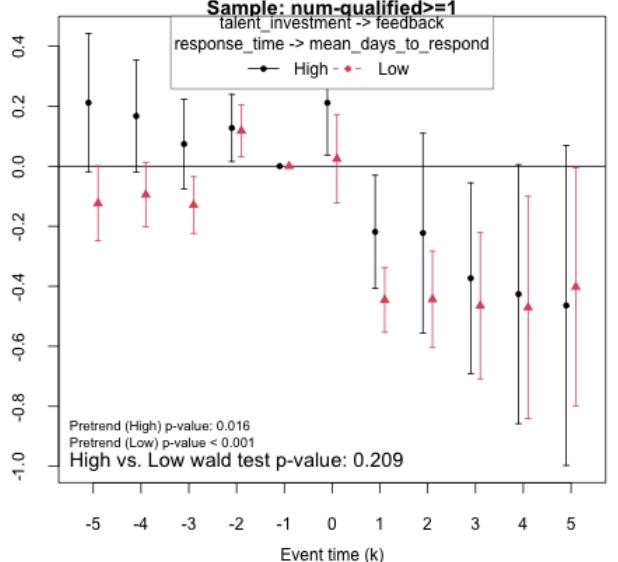
● High ▲ Low

**overall\_new\_release\_count rolling5****Sample: num-qualified>=1**talent\_investment -> feedback  
response\_time -> mean\_days\_to\_respond

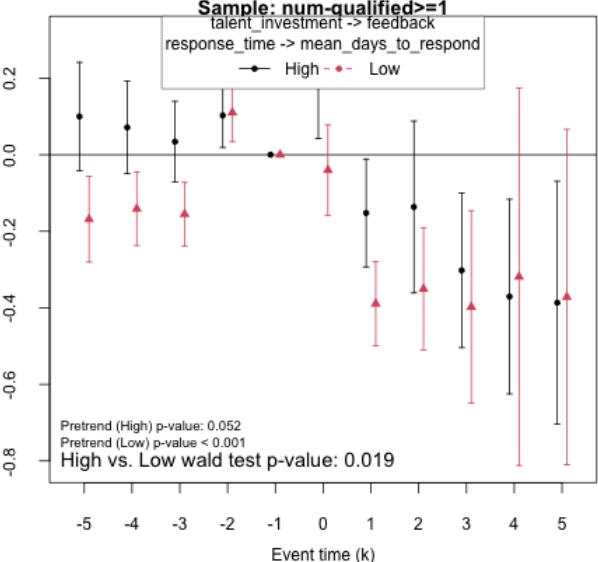
● High ▲ Low

**pull\_request\_merged rolling5****Sample: num-qualified>=1**talent\_investment -> feedback  
response\_time -> mean\_days\_to\_respond

● High ▲ Low

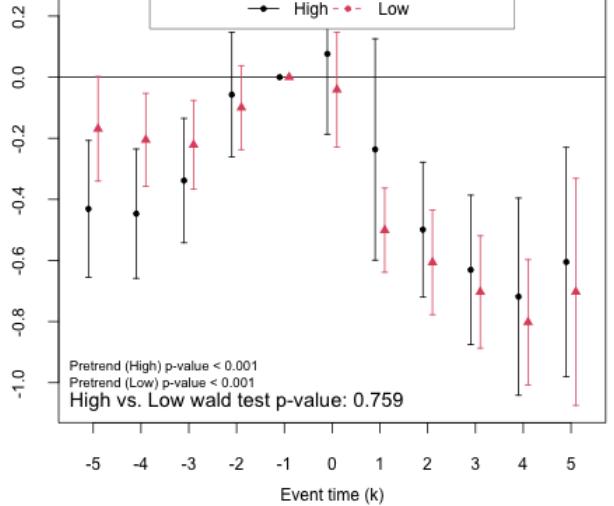
**pull\_request\_opened rolling5****Sample: num-qualified>=1**talent\_investment -> feedback  
response\_time -> mean\_days\_to\_respond

● High ▲ Low

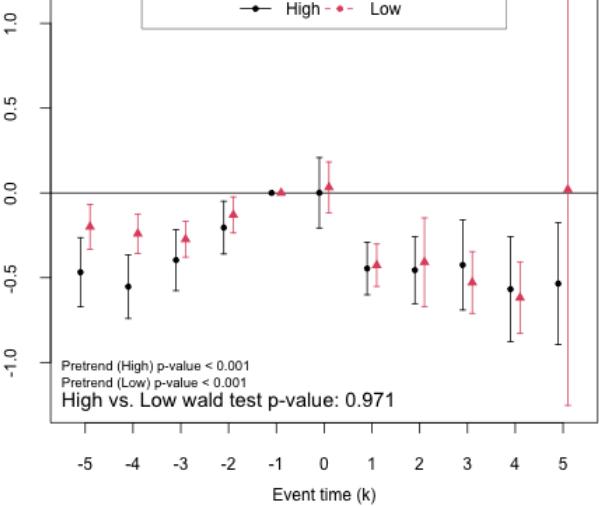


**major\_minor\_release\_count rolling5****Sample: num-qualified>=1**talent\_investment->growth\_opportunity  
merge\_review\_pr -> any\_activity\_rate\_weighted

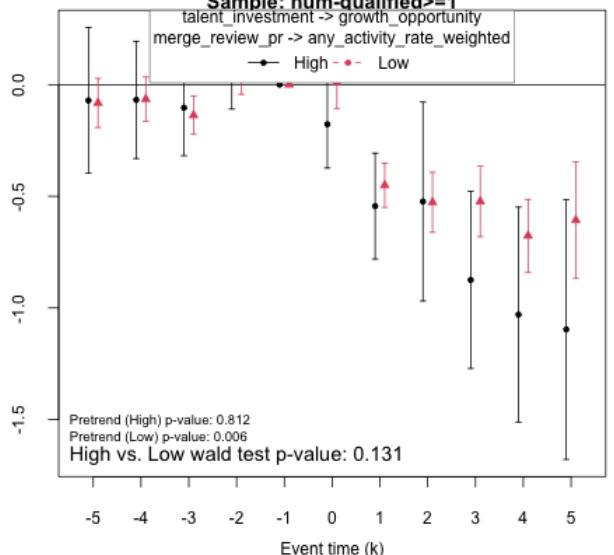
● High ▲ Low

**overall\_new\_release\_count rolling5****Sample: num-qualified>=1**talent\_investment->growth\_opportunity  
merge\_review\_pr -> any\_activity\_rate\_weighted

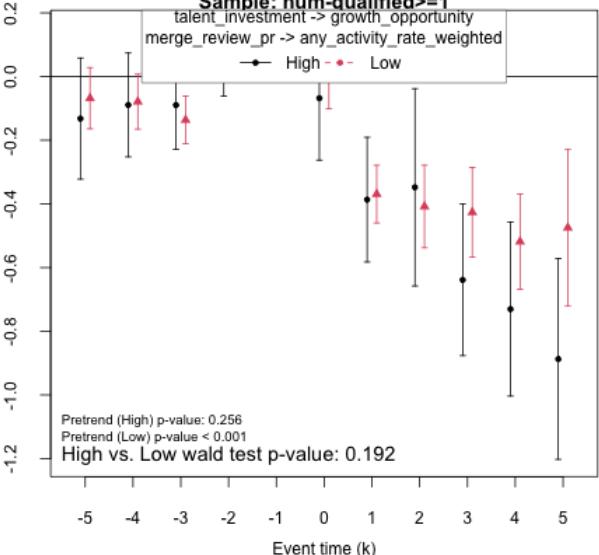
● High ▲ Low

**pull\_request\_merged rolling5****Sample: num-qualified>=1**talent\_investment->growth\_opportunity  
merge\_review\_pr -> any\_activity\_rate\_weighted

● High ▲ Low

**pull\_request\_opened rolling5****Sample: num-qualified>=1**talent\_investment->growth\_opportunity  
merge\_review\_pr -> any\_activity\_rate\_weighted

● High ▲ Low

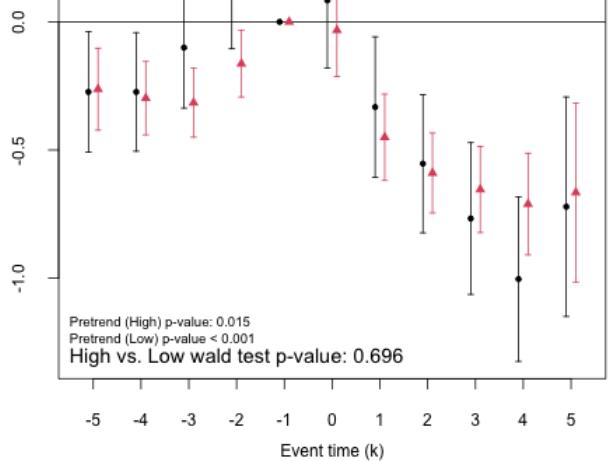


### major\_minor\_release\_count rolling5

Sample: num-qualified>=1

talent\_investment -> growth\_opportunity  
merge\_review\_pr -> pull\_request\_merged\_rate\_weighted

● High ▲ Low

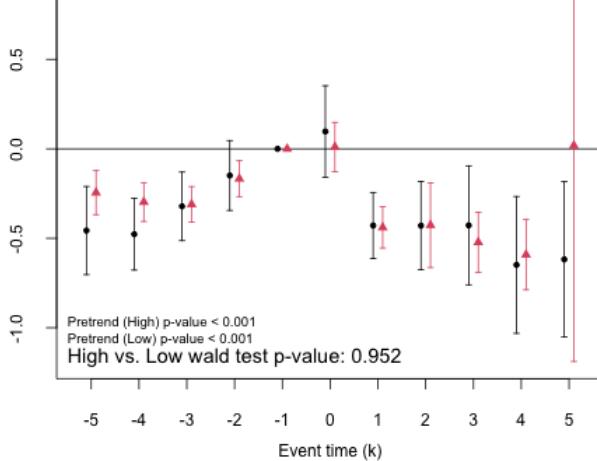


### overall\_new\_release\_count rolling5

Sample: num-qualified>=1

talent\_investment -> growth\_opportunity  
merge\_review\_pr -> pull\_request\_merged\_rate\_weighted

● High ▲ Low

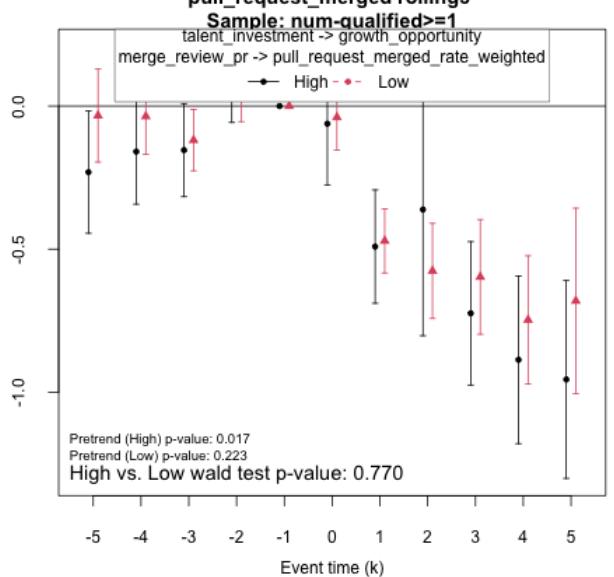


### pull\_request\_merged rolling5

Sample: num-qualified>=1

talent\_investment -> growth\_opportunity  
merge\_review\_pr -> pull\_request\_merged\_rate\_weighted

● High ▲ Low

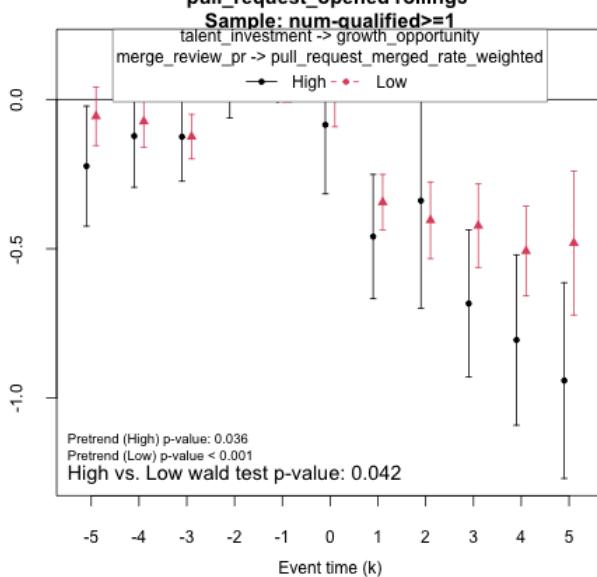


### pull\_request\_opened rolling5

Sample: num-qualified>=1

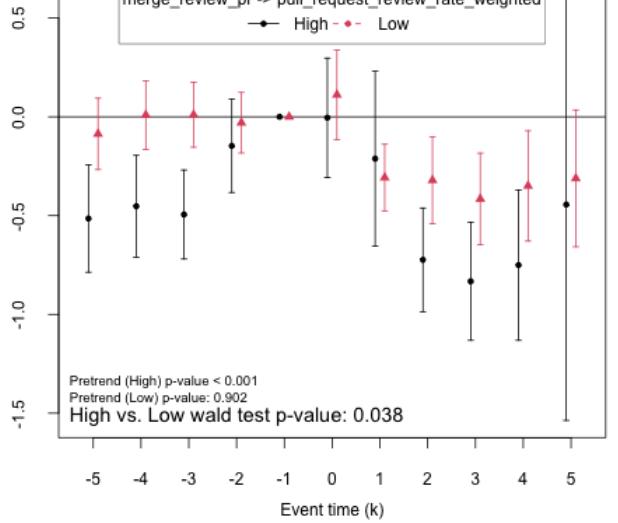
talent\_investment -> growth\_opportunity  
merge\_review\_pr -> pull\_request\_merged\_rate\_weighted

● High ▲ Low

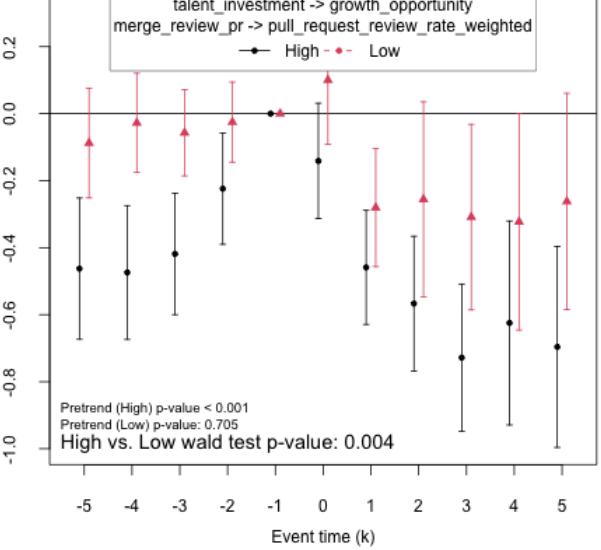


**major\_minor\_release\_count rolling5****Sample: num-qualified>=1**talent\_investment->growth\_opportunity  
merge\_review\_pr -> pull\_request\_review\_rate\_weighted

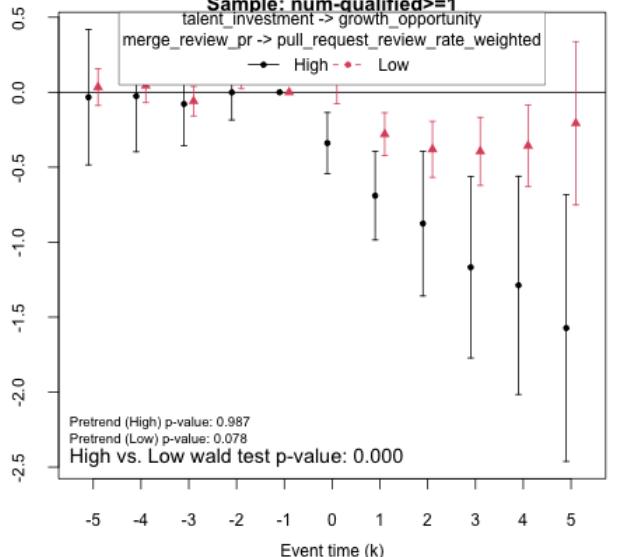
● High ▲ Low

**overall\_new\_release\_count rolling5****Sample: num-qualified>=1**talent\_investment->growth\_opportunity  
merge\_review\_pr -> pull\_request\_review\_rate\_weighted

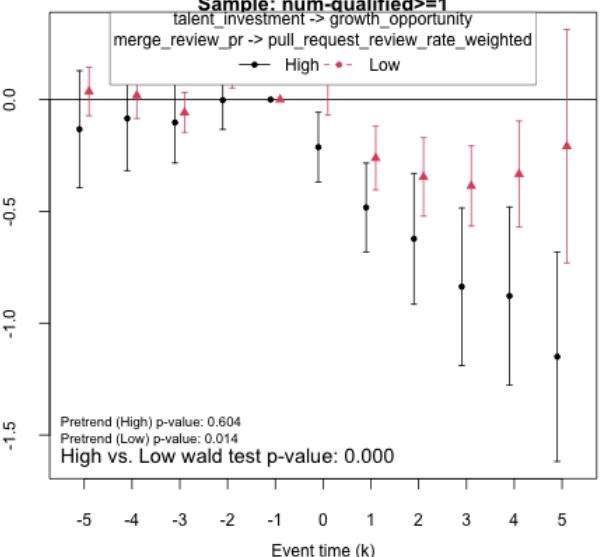
● High ▲ Low

**pull\_request\_merged rolling5****Sample: num-qualified>=1**talent\_investment->growth\_opportunity  
merge\_review\_pr -> pull\_request\_review\_rate\_weighted

● High ▲ Low

**pull\_request\_opened rolling5****Sample: num-qualified>=1**talent\_investment->growth\_opportunity  
merge\_review\_pr -> pull\_request\_review\_rate\_weighted

● High ▲ Low

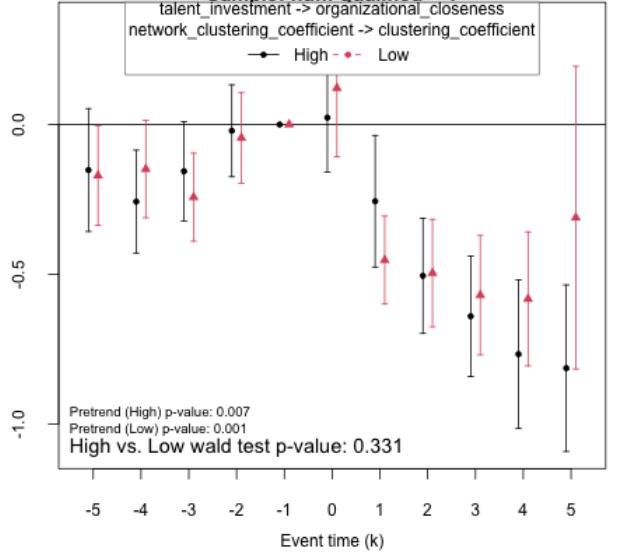


### major\_minor\_release\_count rolling5

**Sample: num-qualified>=1**

talent\_investment -> organizational\_closeness  
network\_clustering\_coefficient -> clustering\_coefficient

● High ▲ Low

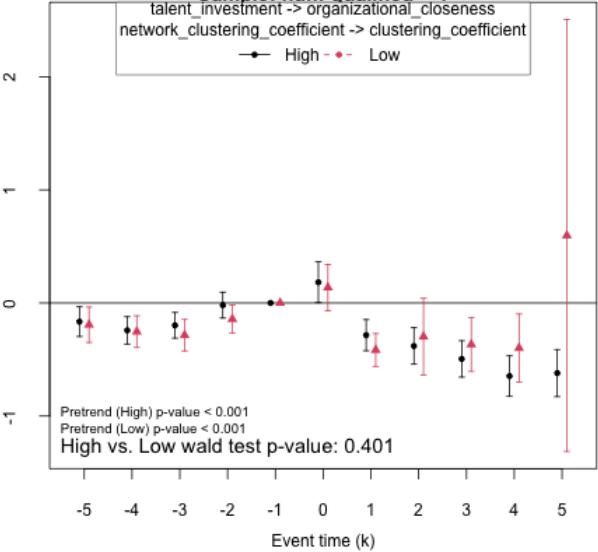


### overall\_new\_release\_count rolling5

**Sample: num-qualified>=1**

talent\_investment -> organizational\_closeness  
network\_clustering\_coefficient -> clustering\_coefficient

● High ▲ Low

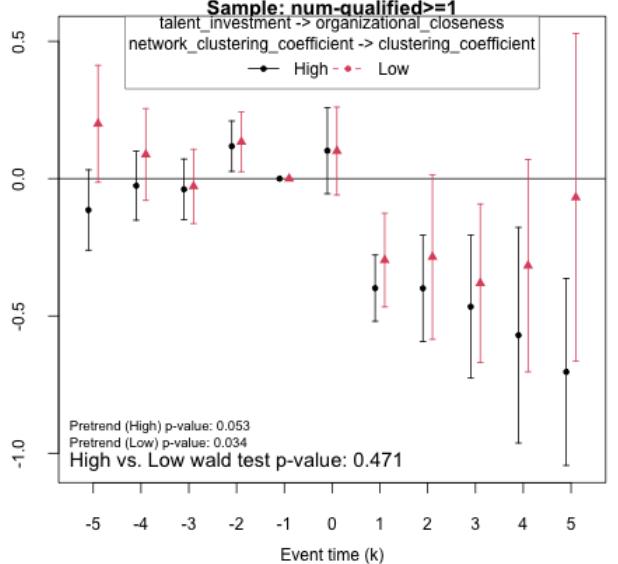


### pull\_request\_merged rolling5

**Sample: num-qualified>=1**

talent\_investment -> organizational\_closeness  
network\_clustering\_coefficient -> clustering\_coefficient

● High ▲ Low



### pull\_request\_opened rolling5

**Sample: num-qualified>=1**

talent\_investment -> organizational\_closeness  
network\_clustering\_coefficient -> clustering\_coefficient

● High ▲ Low

