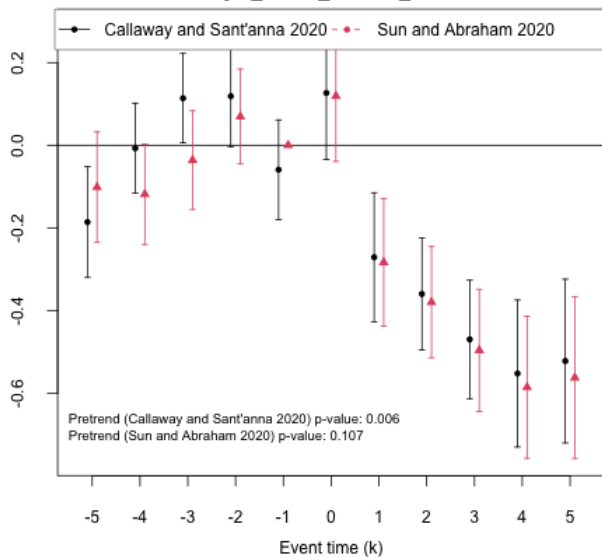
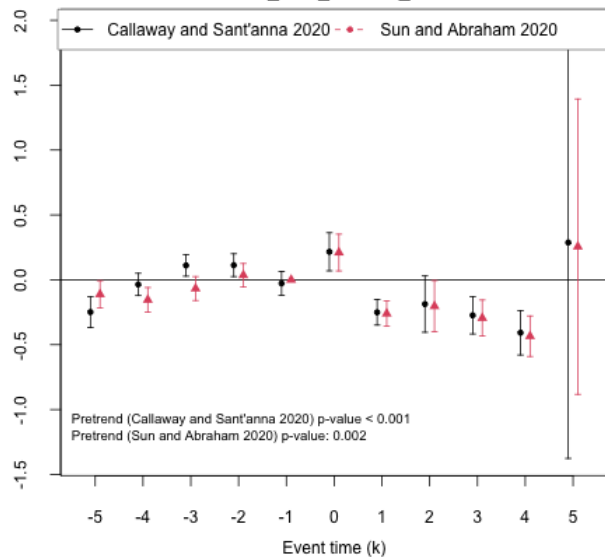


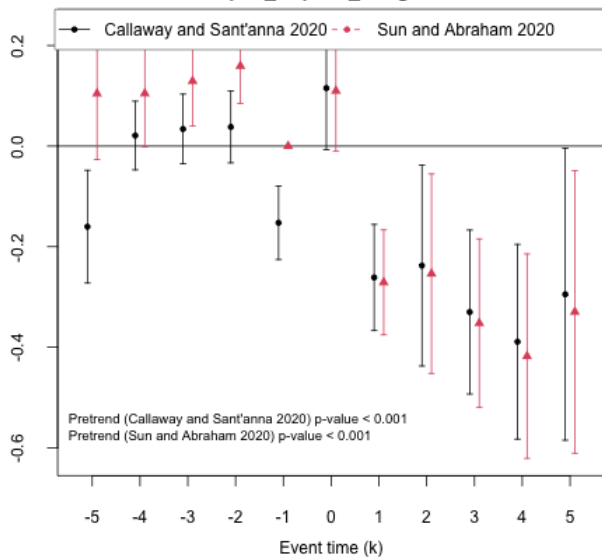
major\_minor\_release\_count



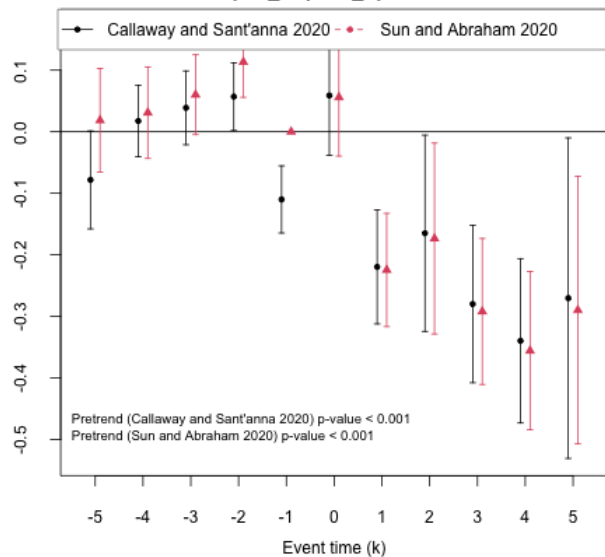
overall\_new\_release\_count



pull\_request\_merged



pull\_request\_opened

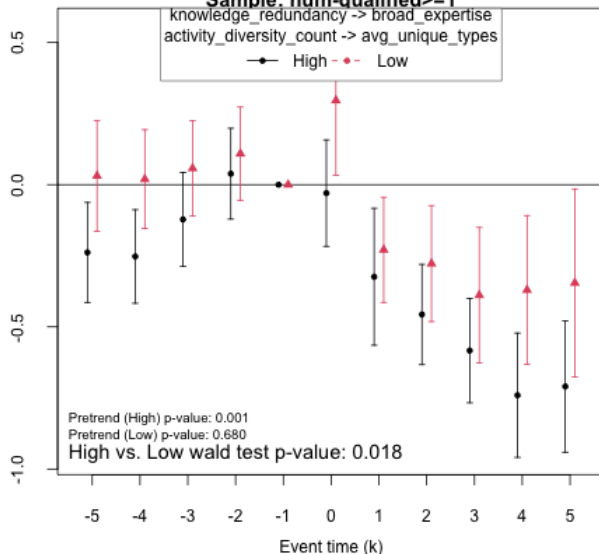


major\_minor\_release\_count rolling5

Sample: num-qualified&gt;=1

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

—●— High —●— Low

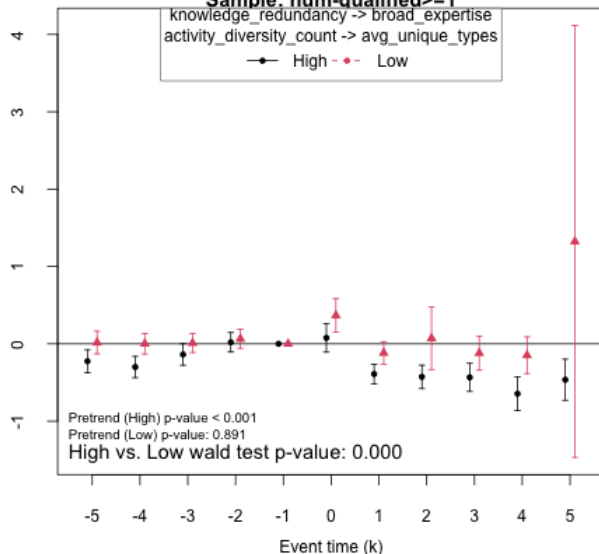


overall\_new\_release\_count rolling5

Sample: num-qualified&gt;=1

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

—●— High —●— Low

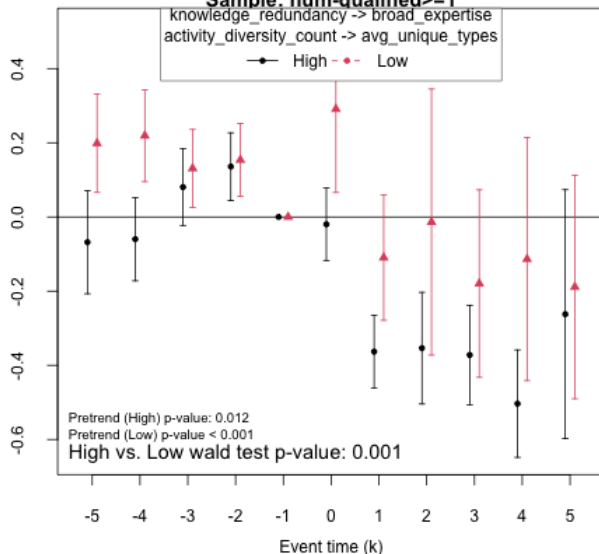


pull\_request\_merged rolling5

Sample: num-qualified&gt;=1

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

—●— High —●— Low

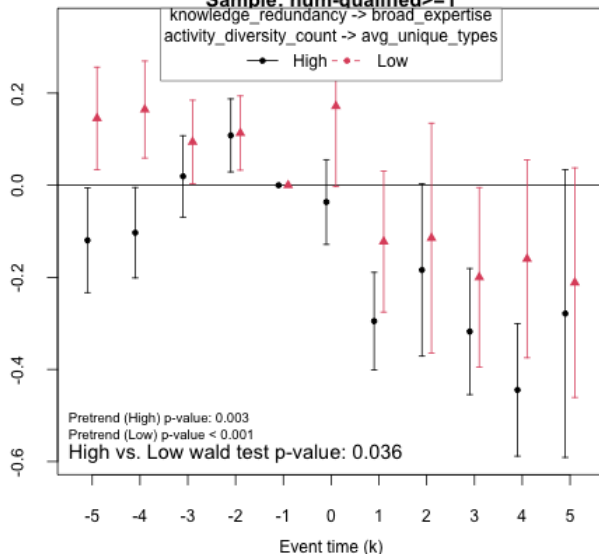


pull\_request\_opened rolling5

Sample: num-qualified&gt;=1

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

—●— High —●— Low

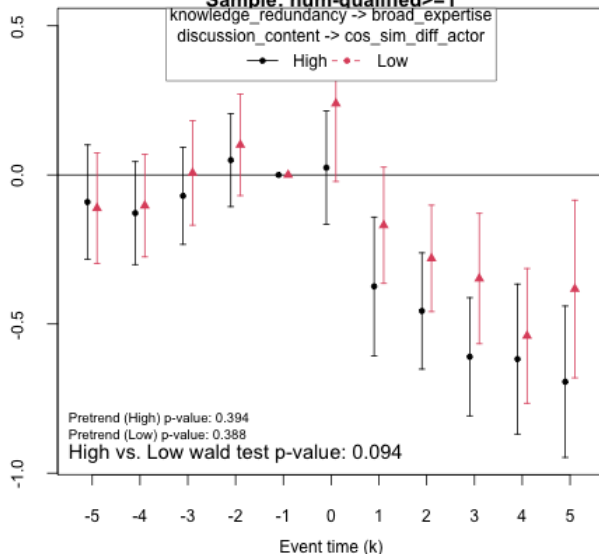


major\_minor\_release\_count\_rolling5

Sample: num-qualified&gt;=1

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

—●— High —●— Low

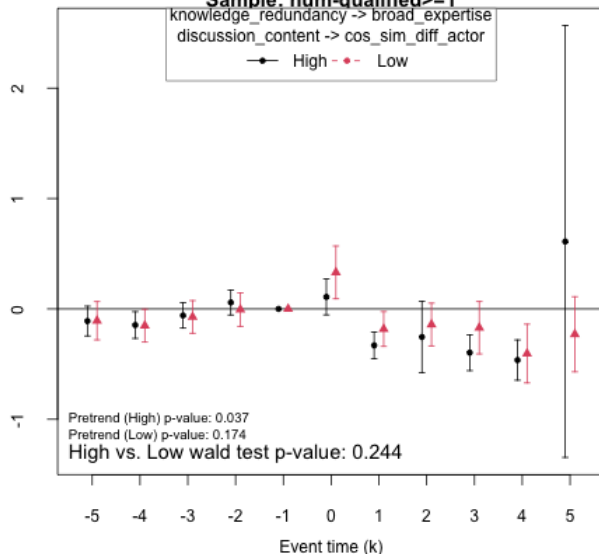


overall\_new\_release\_count\_rolling5

Sample: num-qualified&gt;=1

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

—●— High —●— Low

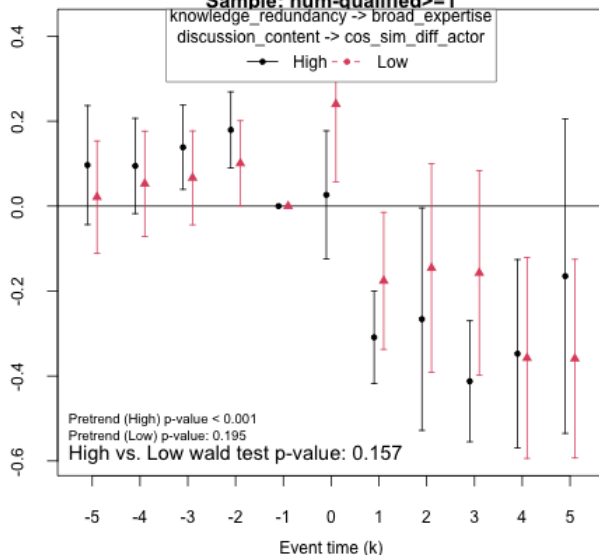


pull\_request\_merged\_rolling5

Sample: num-qualified&gt;=1

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

—●— High —●— Low

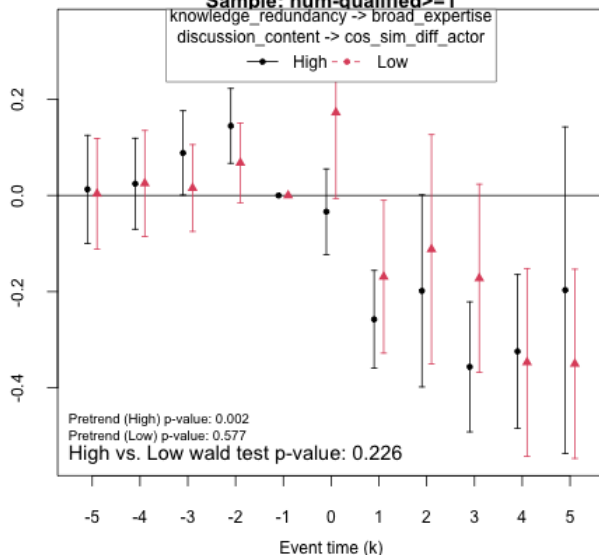


pull\_request\_opened\_rolling5

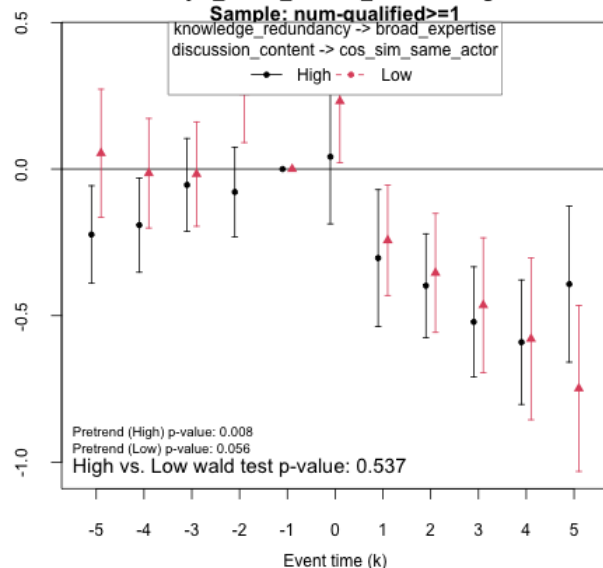
Sample: num-qualified&gt;=1

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

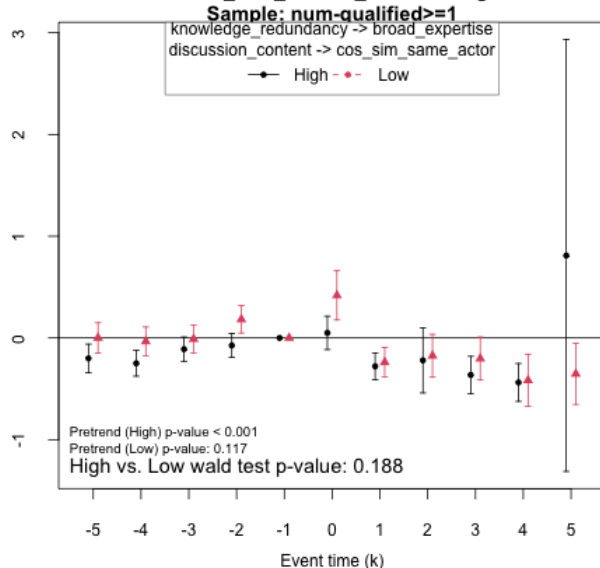
—●— High —●— Low



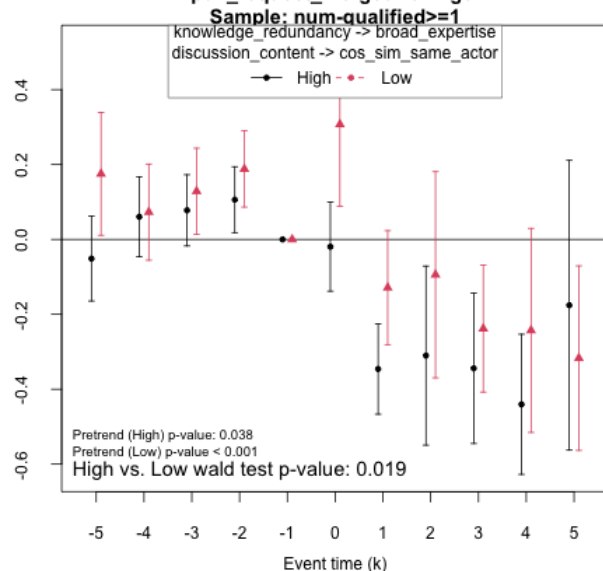
major\_minor\_release\_count rolling5



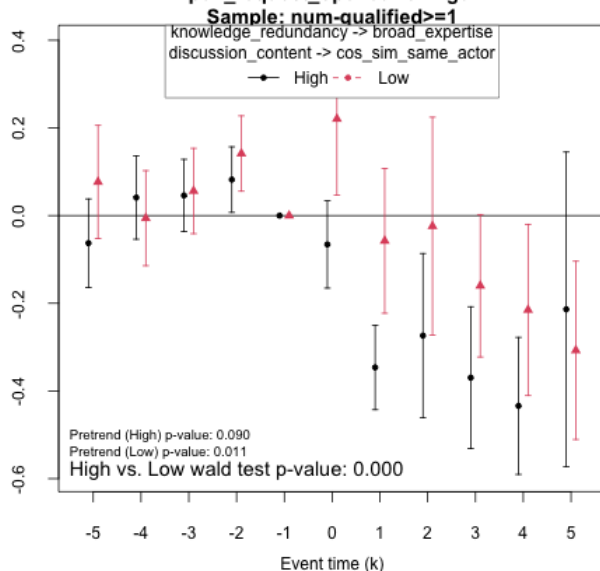
overall\_new\_release\_count rolling5



pull\_request\_merged rolling5



pull\_request\_opened rolling5

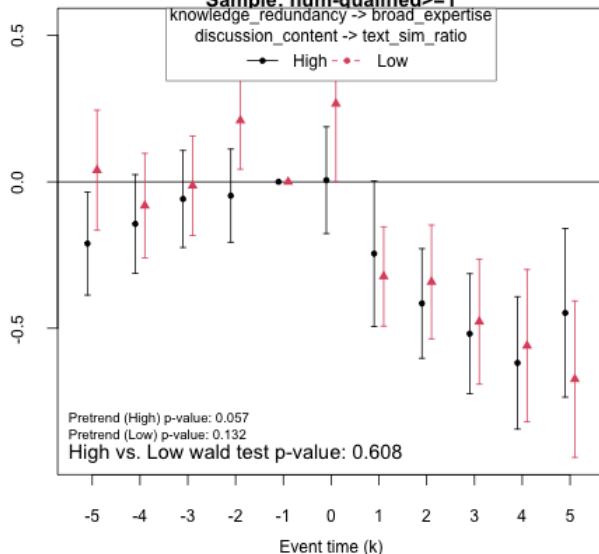


major\_minor\_release\_count rolling5

Sample: num-qualified&gt;=1

knowledge\_redundancy->broad\_expertise  
discussion\_content->text\_sim\_ratio

—●— High —●— Low

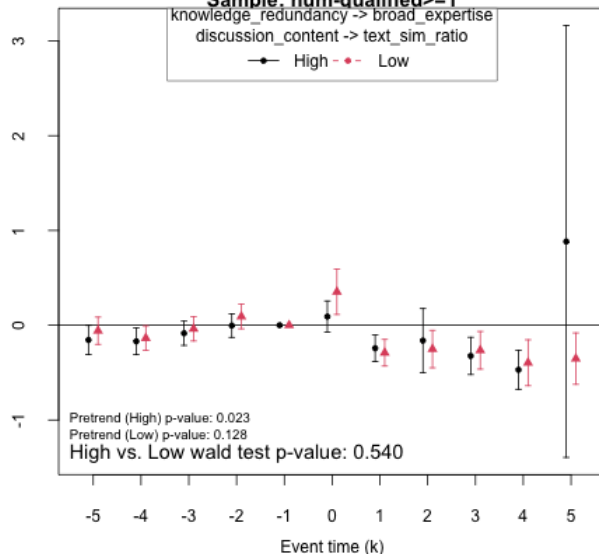


overall\_new\_release\_count rolling5

Sample: num-qualified&gt;=1

knowledge\_redundancy->broad\_expertise  
discussion\_content->text\_sim\_ratio

—●— High —●— Low

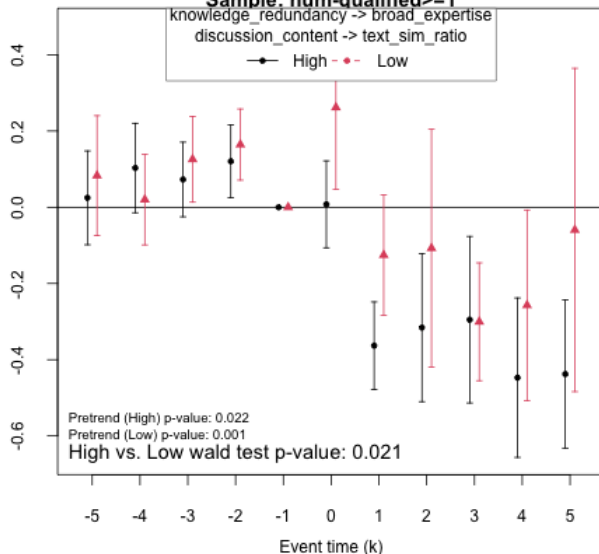


pull\_request\_merged rolling5

Sample: num-qualified&gt;=1

knowledge\_redundancy->broad\_expertise  
discussion\_content->text\_sim\_ratio

—●— High —●— Low

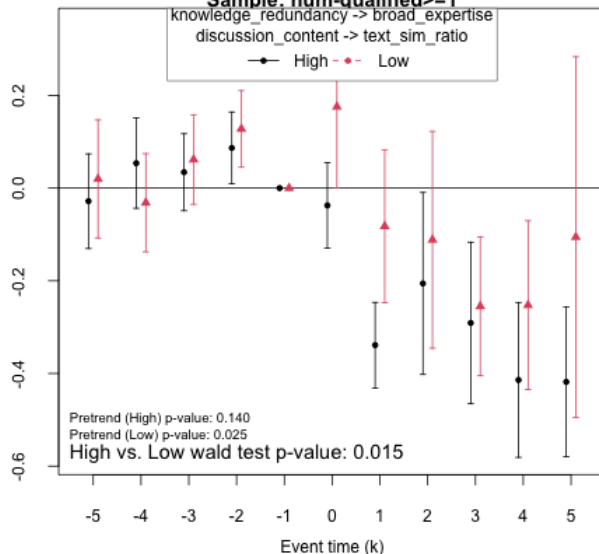


pull\_request\_opened rolling5

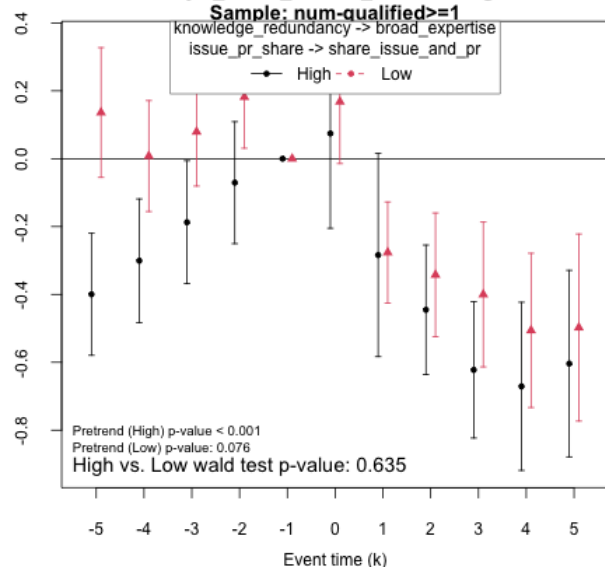
Sample: num-qualified&gt;=1

knowledge\_redundancy->broad\_expertise  
discussion\_content->text\_sim\_ratio

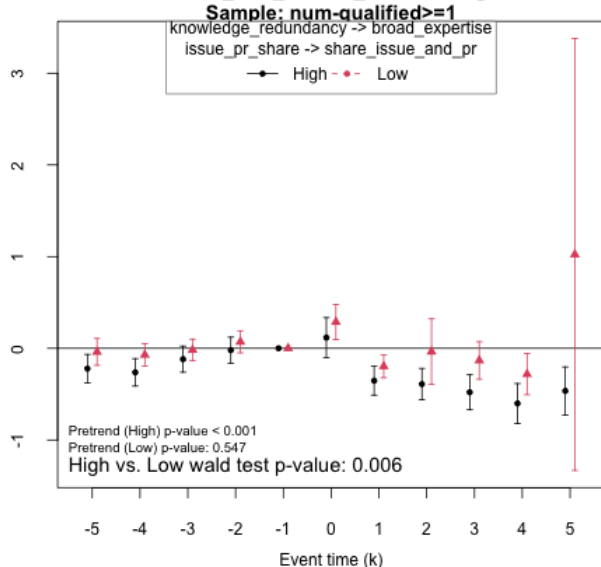
—●— High —●— Low



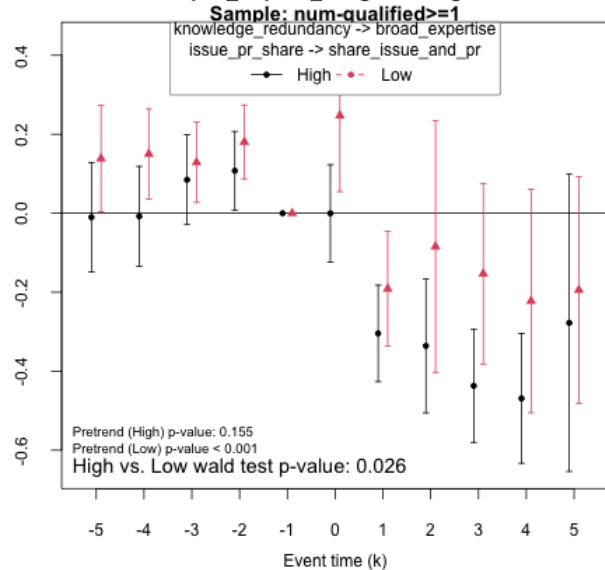
major\_minor\_release\_count rolling5



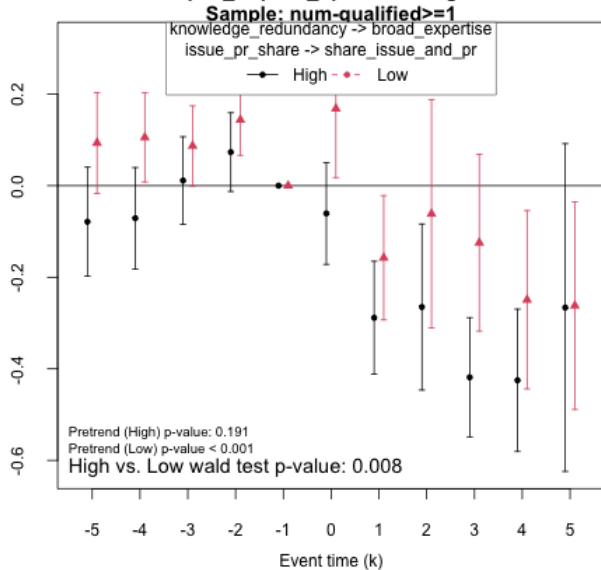
overall\_new\_release\_count rolling5



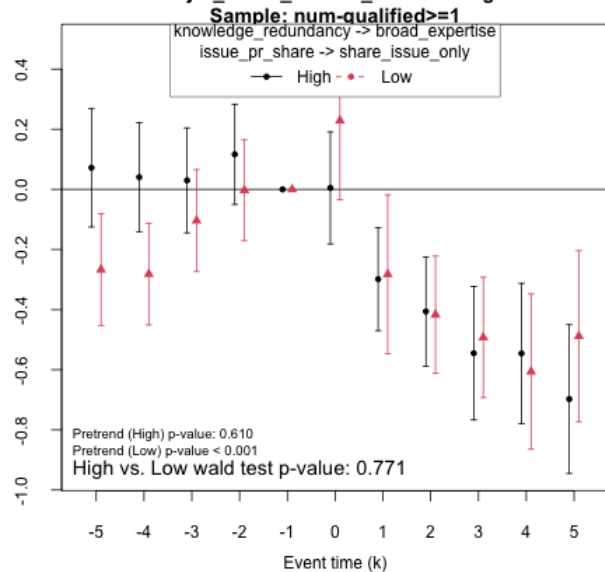
pull\_request\_merged rolling5



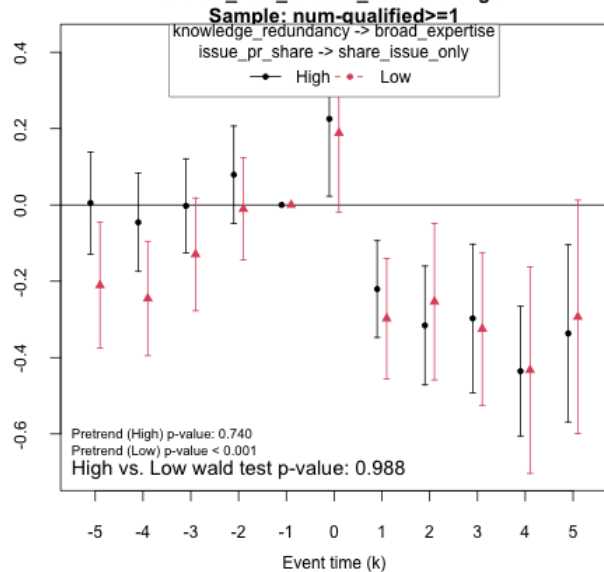
pull\_request\_opened rolling5



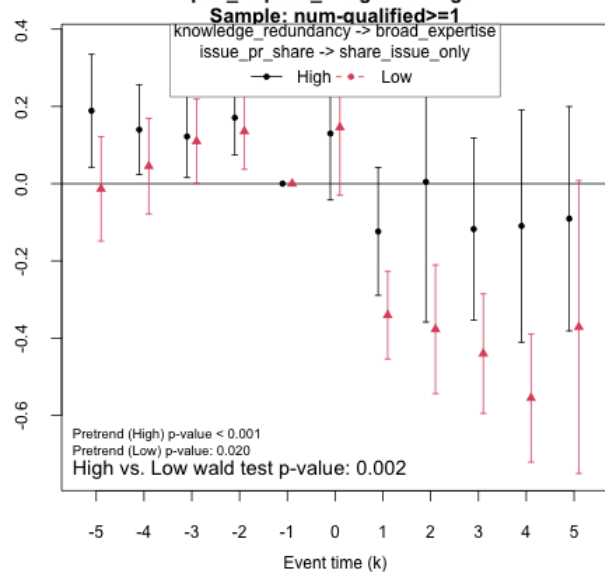
major\_minor\_release\_count\_rolling5



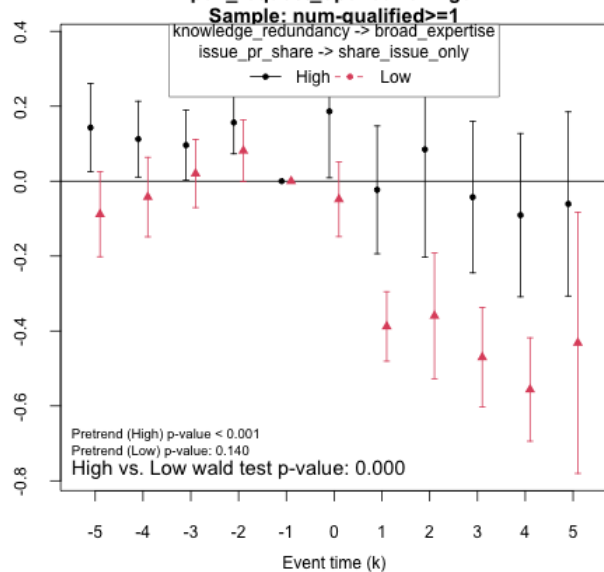
overall\_new\_release\_count\_rolling5



pull\_request\_merged\_rolling5



pull\_request\_opened\_rolling5



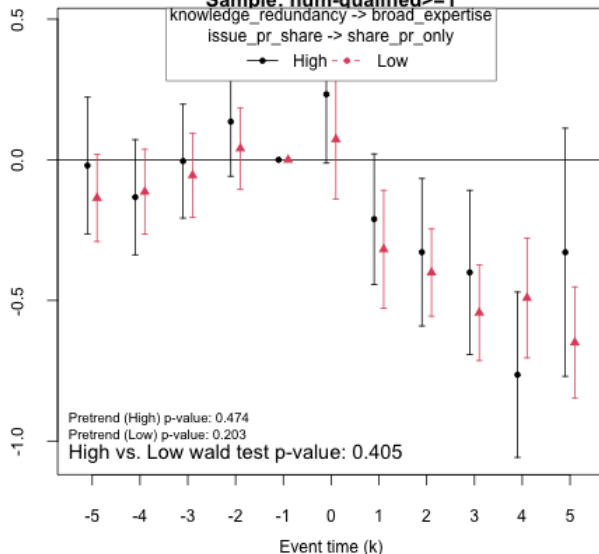
major\_minor\_release\_count rolling5

Sample: num-qualified&gt;=1

knowledge\_redundancy-&gt;broad\_expertise

issue\_pr\_share -&gt; share\_pr\_only

—●— High —●— Low



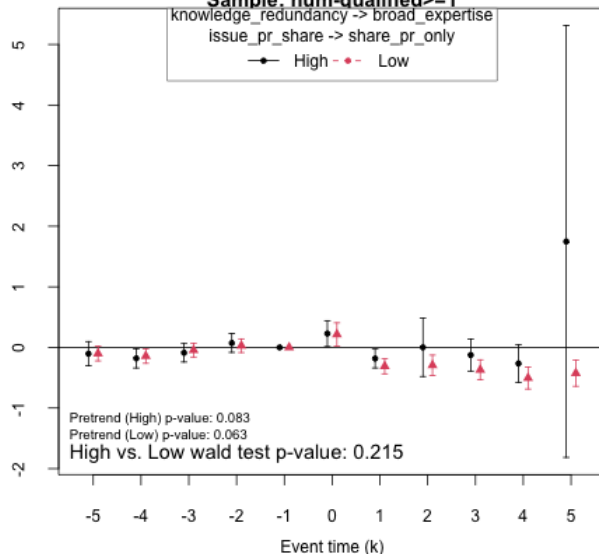
overall\_new\_release\_count rolling5

Sample: num-qualified&gt;=1

knowledge\_redundancy-&gt;broad\_expertise

issue\_pr\_share -&gt; share\_pr\_only

—●— High —●— Low



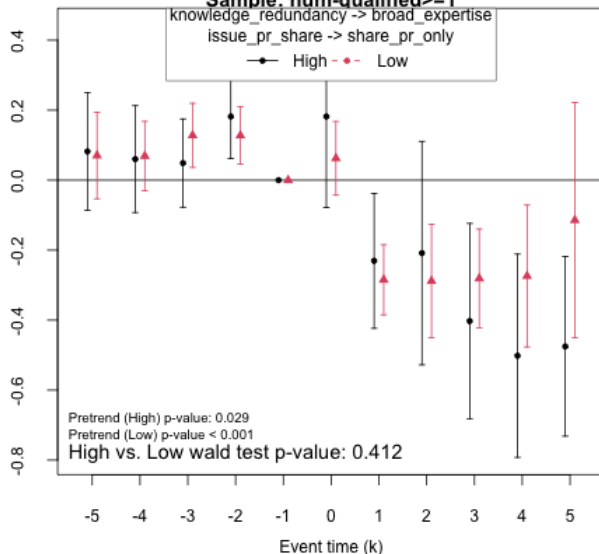
pull\_request\_merged rolling5

Sample: num-qualified&gt;=1

knowledge\_redundancy-&gt;broad\_expertise

issue\_pr\_share -&gt; share\_pr\_only

—●— High —●— Low



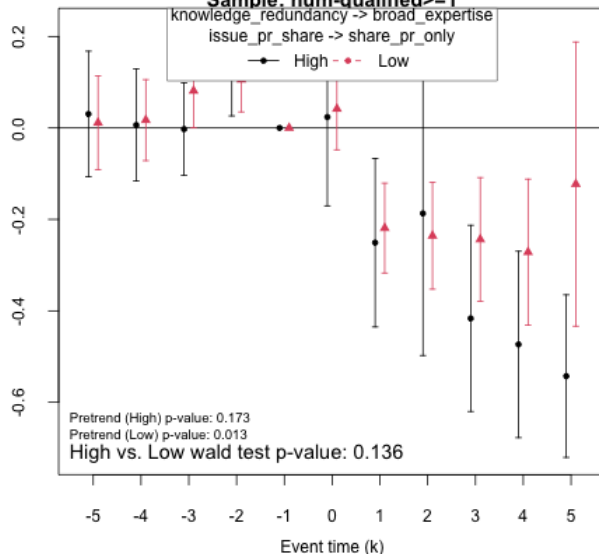
pull\_request\_opened rolling5

Sample: num-qualified&gt;=1

knowledge\_redundancy-&gt;broad\_expertise

issue\_pr\_share -&gt; share\_pr\_only

—●— High —●— Low



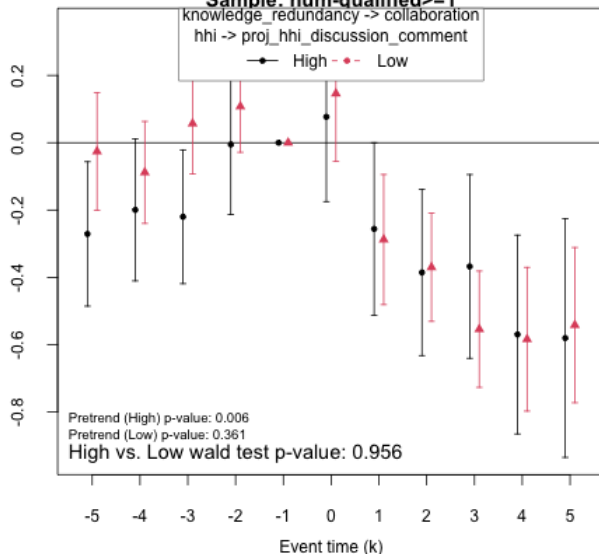


major\_minor\_release\_count\_rolling5

Sample: num-qualified&gt;=1

knowledge\_redundancy -> collaboration  
hhi -> proj\_hhi\_discussion\_comment

—●— High —●— Low

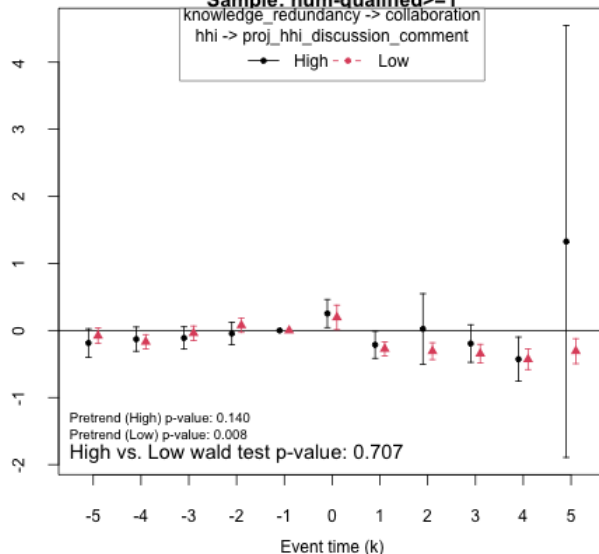


overall\_new\_release\_count\_rolling5

Sample: num-qualified&gt;=1

knowledge\_redundancy -> collaboration  
hhi -> proj\_hhi\_discussion\_comment

—●— High —●— Low

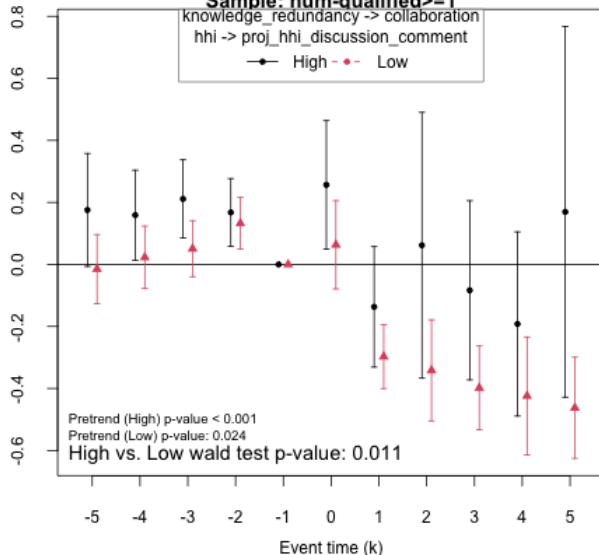


pull\_request\_merged\_rolling5

Sample: num-qualified&gt;=1

knowledge\_redundancy -> collaboration  
hhi -> proj\_hhi\_discussion\_comment

—●— High —●— Low

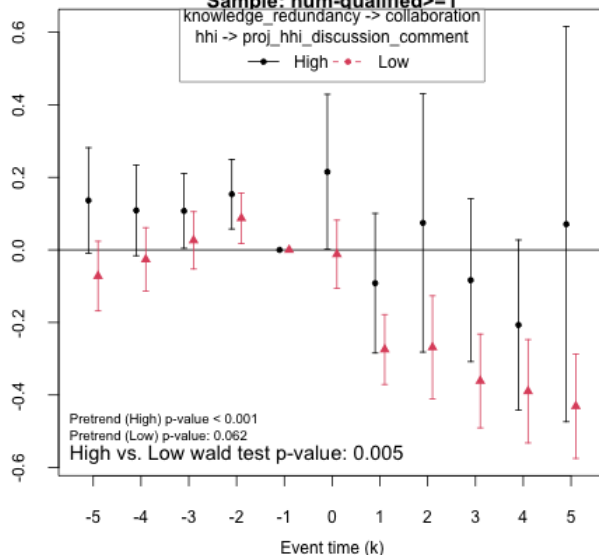


pull\_request\_opened\_rolling5

Sample: num-qualified&gt;=1

knowledge\_redundancy -> collaboration  
hhi -> proj\_hhi\_discussion\_comment

—●— High —●— Low



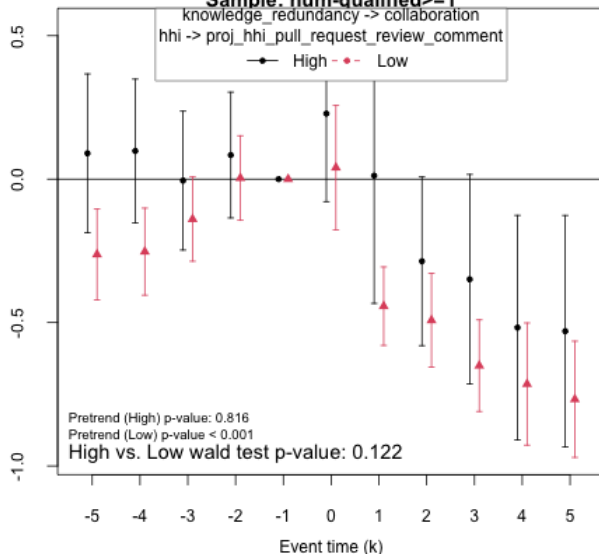
major\_minor\_release\_count\_rolling5

Sample: num-qualified&gt;=1

knowledge\_redundancy -&gt; collaboration

hhi -&gt; proj\_hhi\_pull\_request\_review\_comment

—●— High —●— Low



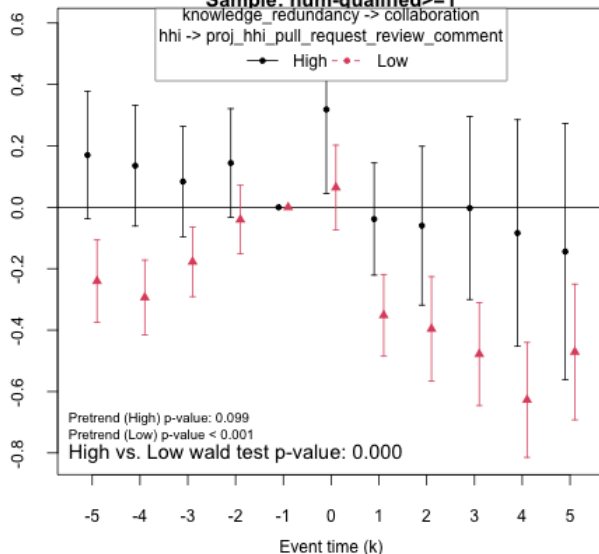
overall\_new\_release\_count\_rolling5

Sample: num-qualified&gt;=1

knowledge\_redundancy -&gt; collaboration

hhi -&gt; proj\_hhi\_pull\_request\_review\_comment

—●— High —●— Low



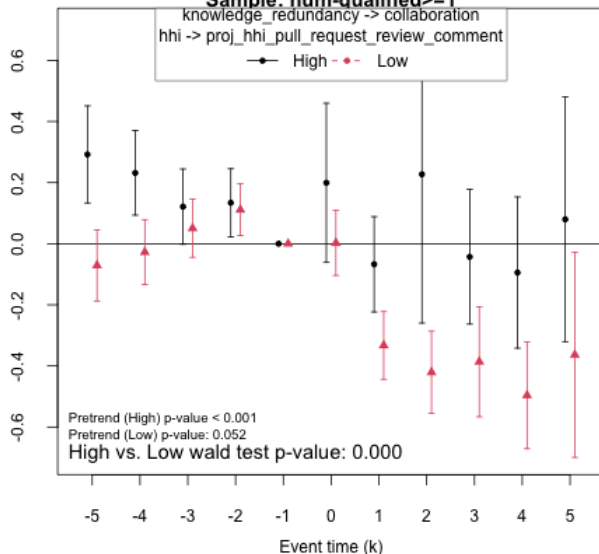
pull\_request\_merged\_rolling5

Sample: num-qualified&gt;=1

knowledge\_redundancy -&gt; collaboration

hhi -&gt; proj\_hhi\_pull\_request\_review\_comment

—●— High —●— Low



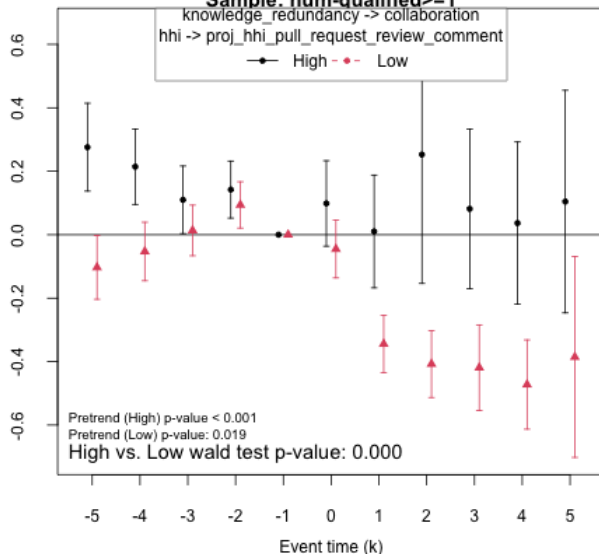
pull\_request\_opened\_rolling5

Sample: num-qualified&gt;=1

knowledge\_redundancy -&gt; collaboration

hhi -&gt; proj\_hhi\_pull\_request\_review\_comment

—●— High —●— Low



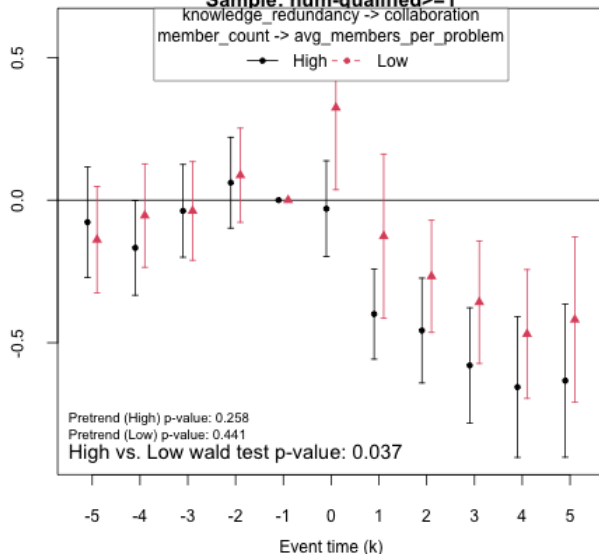
major\_minor\_release\_count rolling5

Sample: num-qualified&gt;=1

knowledge\_redundancy -&gt; collaboration

member\_count -&gt; avg\_members\_per\_problem

—●— High —●— Low



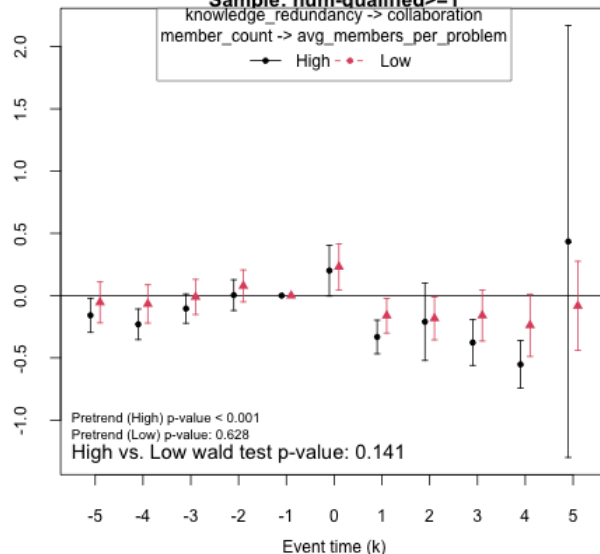
overall\_new\_release\_count rolling5

Sample: num-qualified&gt;=1

knowledge\_redundancy -&gt; collaboration

member\_count -&gt; avg\_members\_per\_problem

—●— High —●— Low



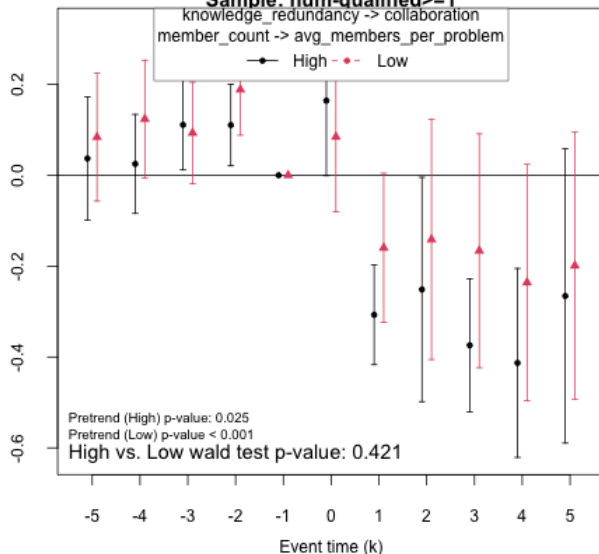
pull\_request\_merged rolling5

Sample: num-qualified&gt;=1

knowledge\_redundancy -&gt; collaboration

member\_count -&gt; avg\_members\_per\_problem

—●— High —●— Low



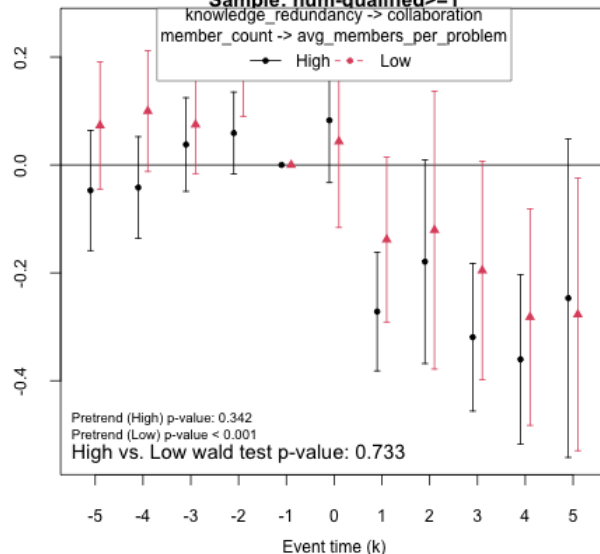
pull\_request\_opened rolling5

Sample: num-qualified&gt;=1

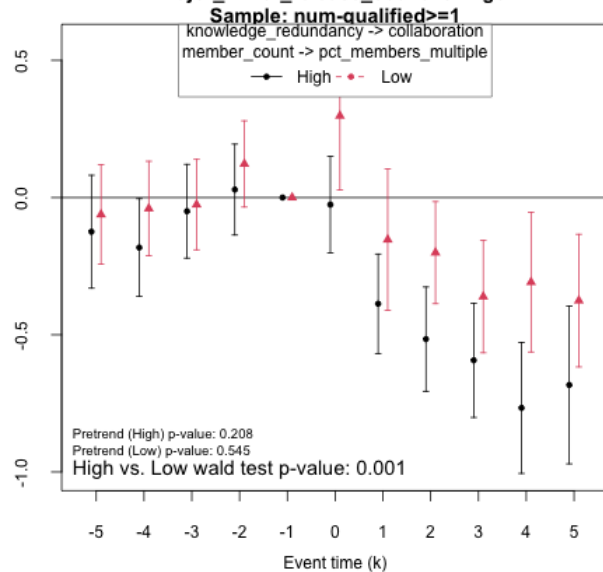
knowledge\_redundancy -&gt; collaboration

member\_count -&gt; avg\_members\_per\_problem

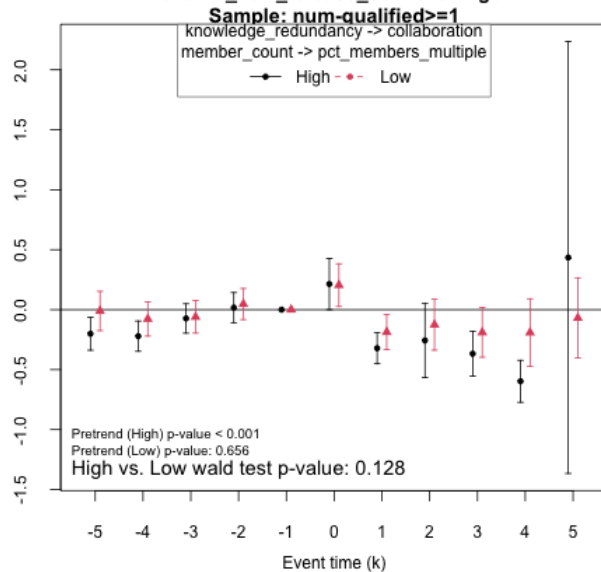
—●— High —●— Low



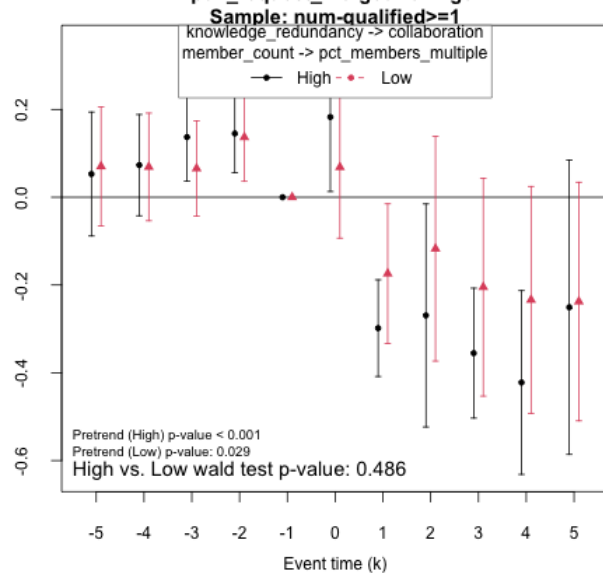
major\_minor\_release\_count rolling5



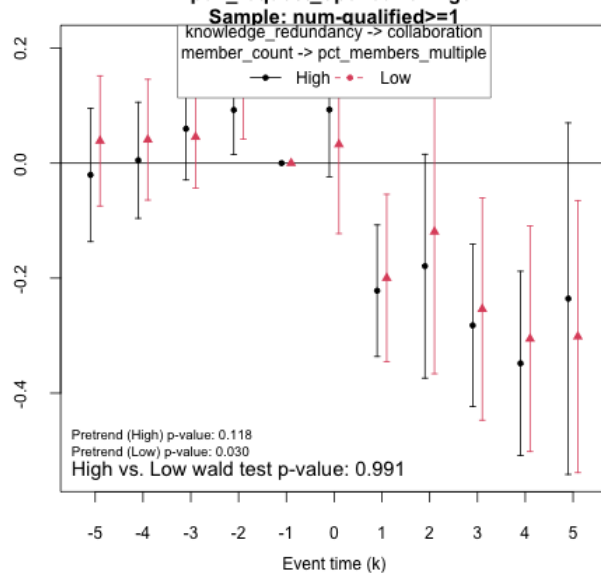
overall\_new\_release\_count rolling5



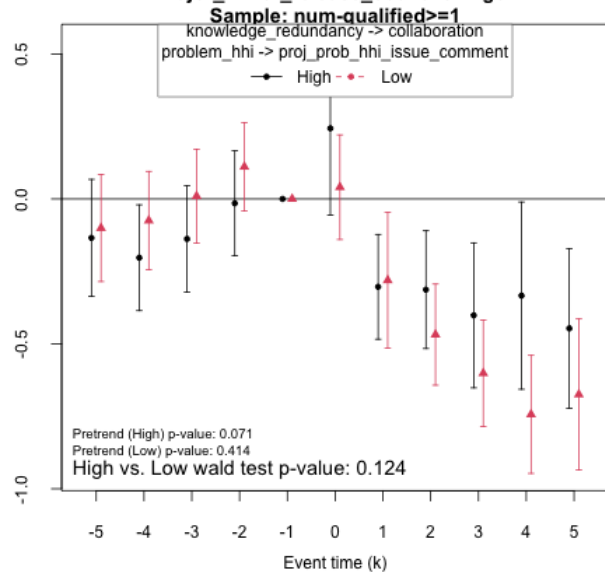
pull\_request\_merged rolling5



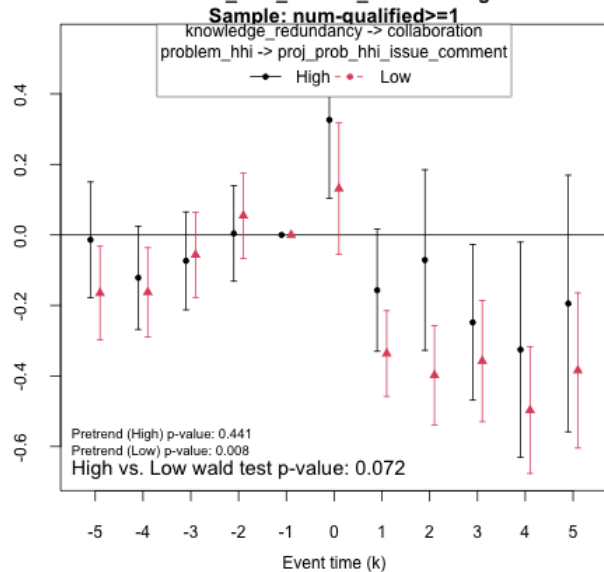
pull\_request\_opened rolling5



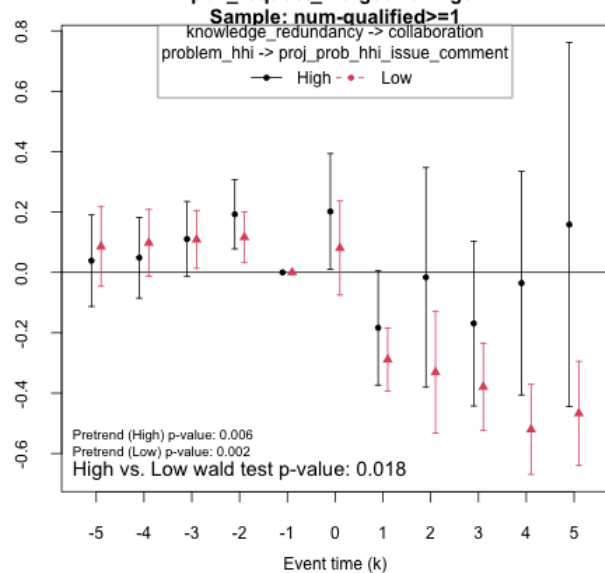
major\_minor\_release\_count rolling5



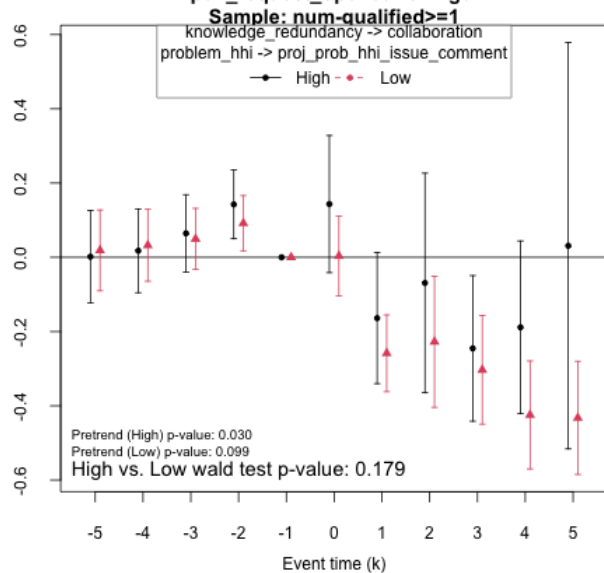
overall\_new\_release\_count rolling5



pull\_request\_merged rolling5



pull\_request\_opened rolling5



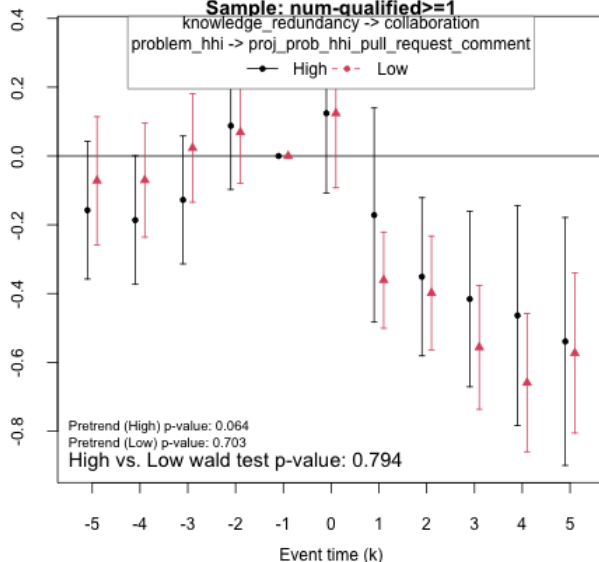
major\_minor\_release\_count rolling5

Sample: num-qualified&gt;=1

knowledge\_redundancy -&gt; collaboration

problem\_hhi -&gt; proj\_prob\_hhi\_pull\_request\_comment

—●— High —●— Low



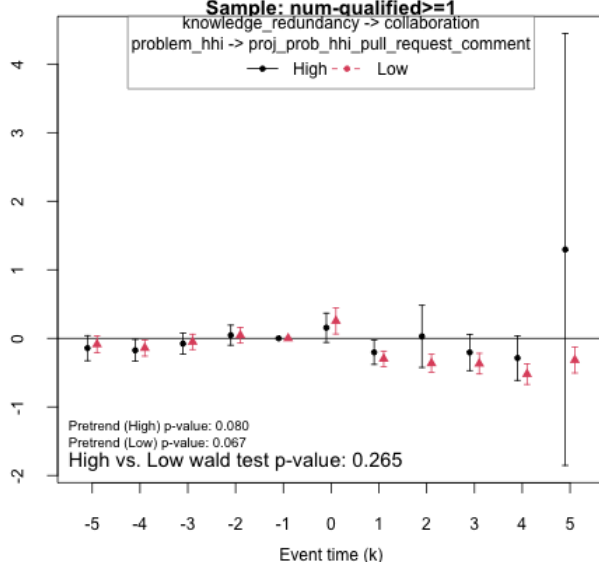
overall\_new\_release\_count rolling5

Sample: num-qualified&gt;=1

knowledge\_redundancy -&gt; collaboration

problem\_hhi -&gt; proj\_prob\_hhi\_pull\_request\_comment

—●— High —●— Low



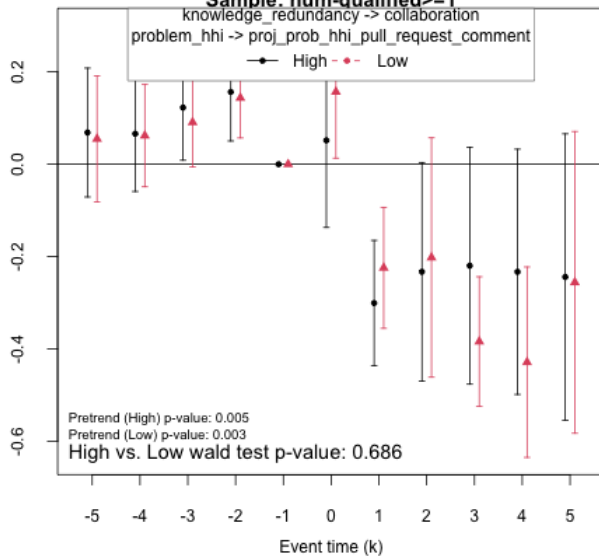
pull\_request\_merged rolling5

Sample: num-qualified&gt;=1

knowledge\_redundancy -&gt; collaboration

problem\_hhi -&gt; proj\_prob\_hhi\_pull\_request\_comment

—●— High —●— Low



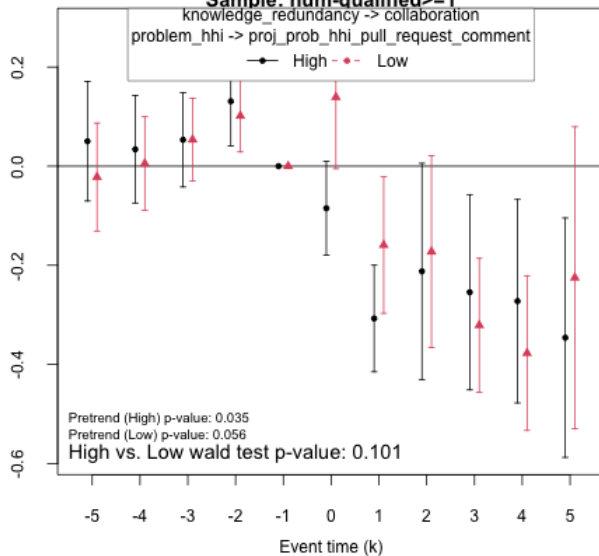
pull\_request\_opened rolling5

Sample: num-qualified&gt;=1

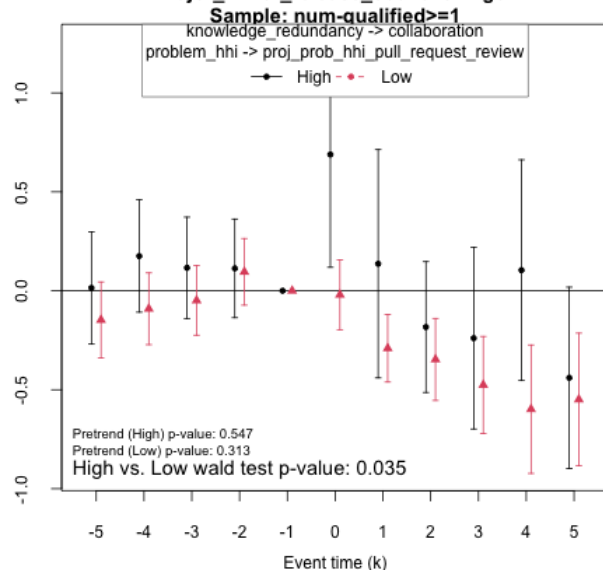
knowledge\_redundancy -&gt; collaboration

problem\_hhi -&gt; proj\_prob\_hhi\_pull\_request\_comment

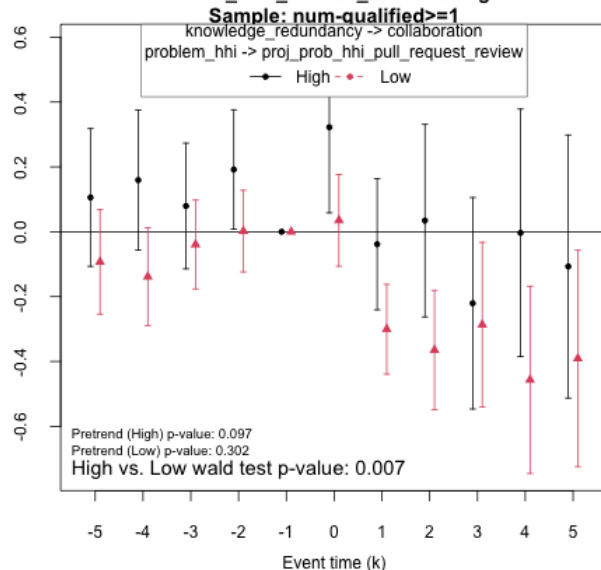
—●— High —●— Low



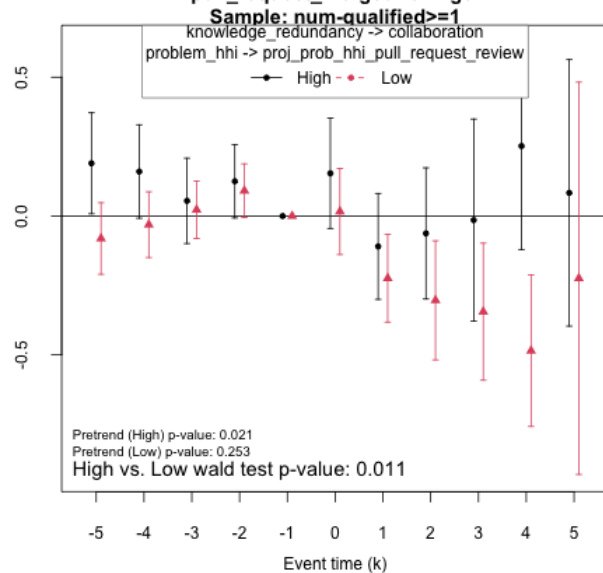
major\_minor\_release\_count rolling5



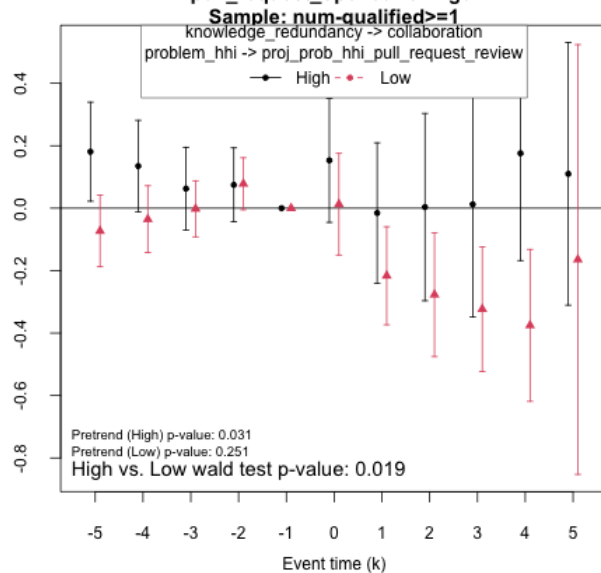
overall\_new\_release\_count rolling5



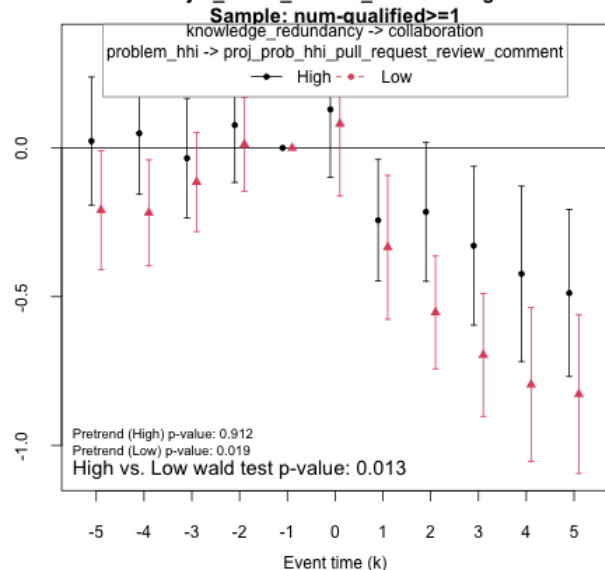
pull\_request\_merged rolling5



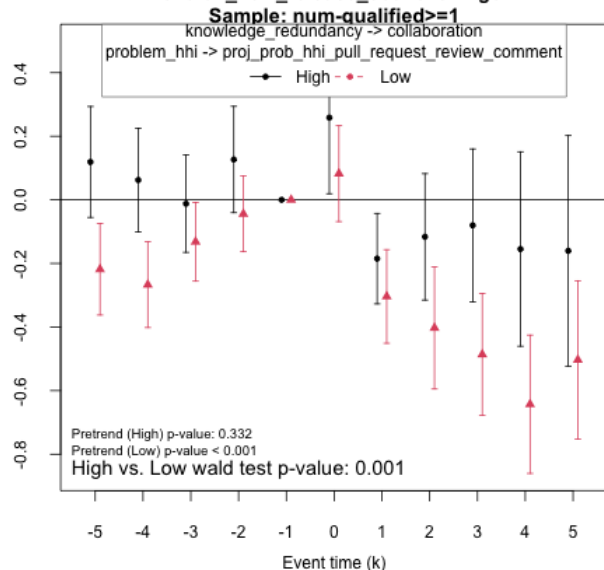
pull\_request\_opened rolling5



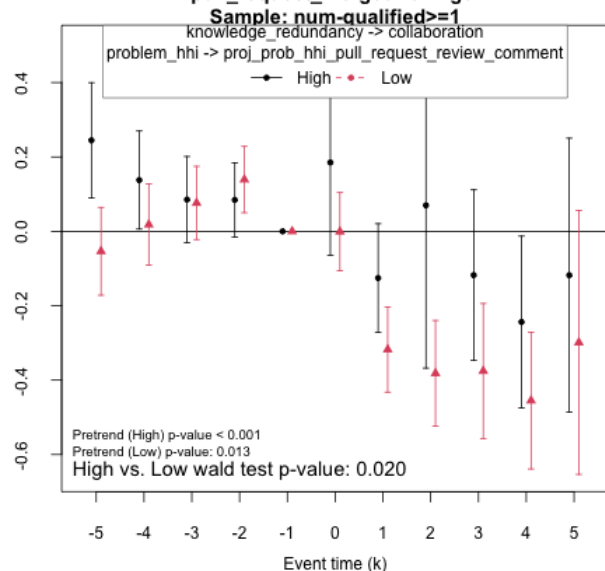
major\_minor\_release\_count\_rolling5



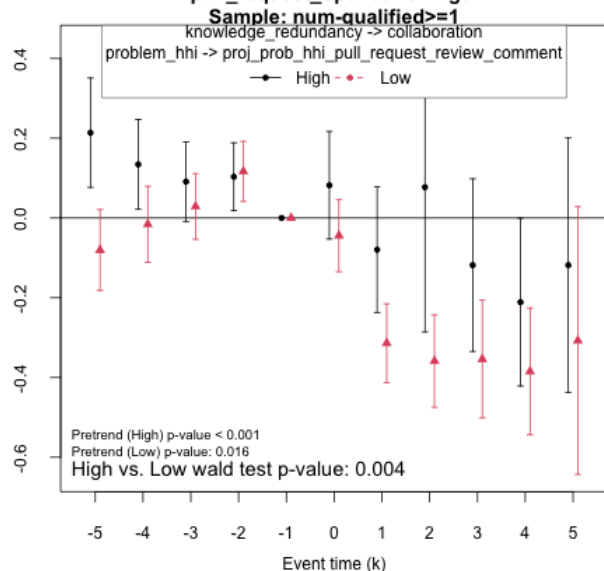
overall\_new\_release\_count\_rolling5



pull\_request\_merged\_rolling5

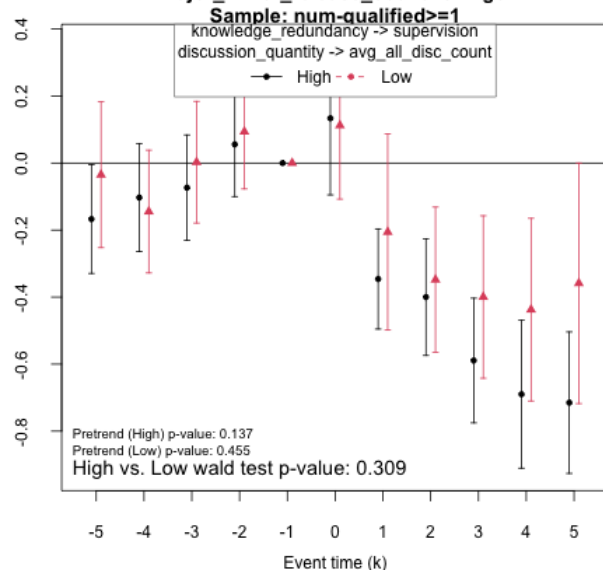


pull\_request\_opened\_rolling5

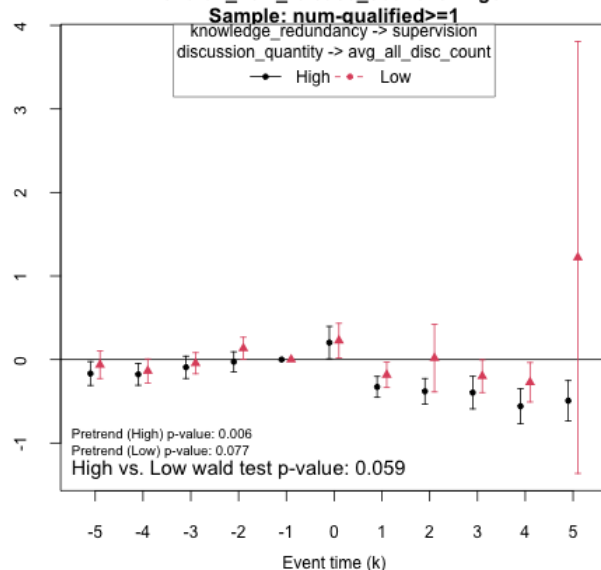




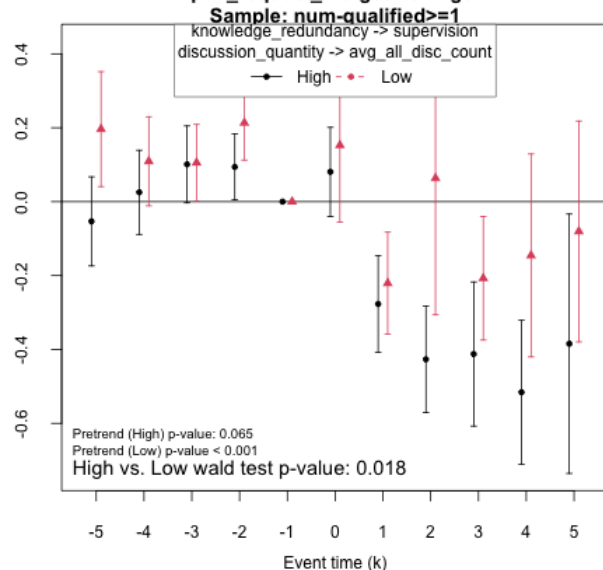
major\_minor\_release\_count rolling5



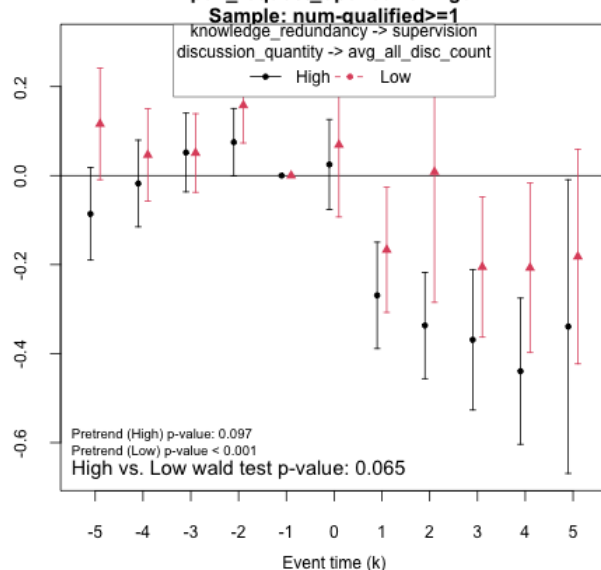
overall\_new\_release\_count rolling5



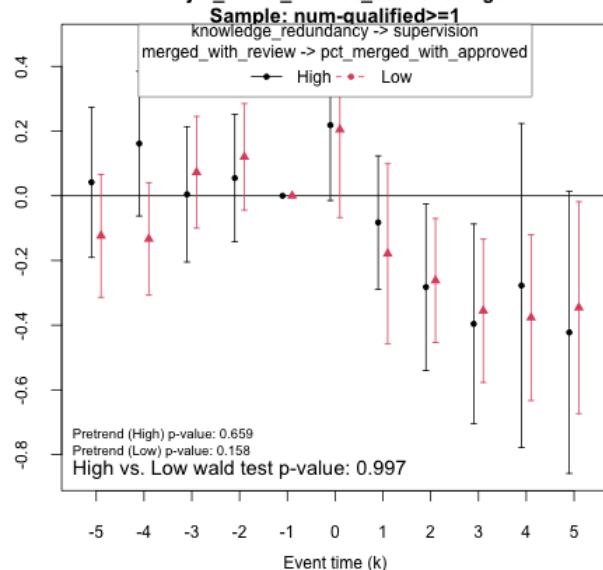
pull\_request\_merged rolling5



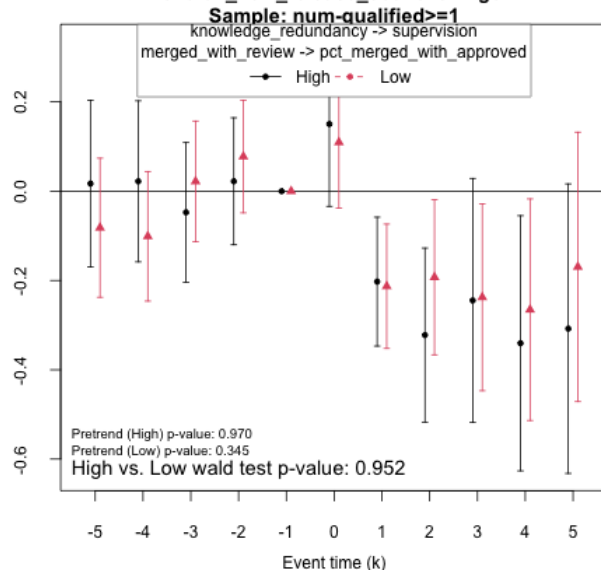
pull\_request\_opened rolling5



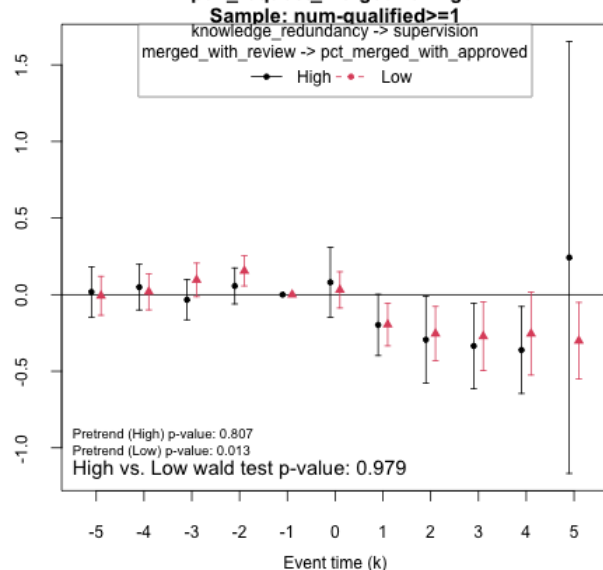
major\_minor\_release\_count rolling5



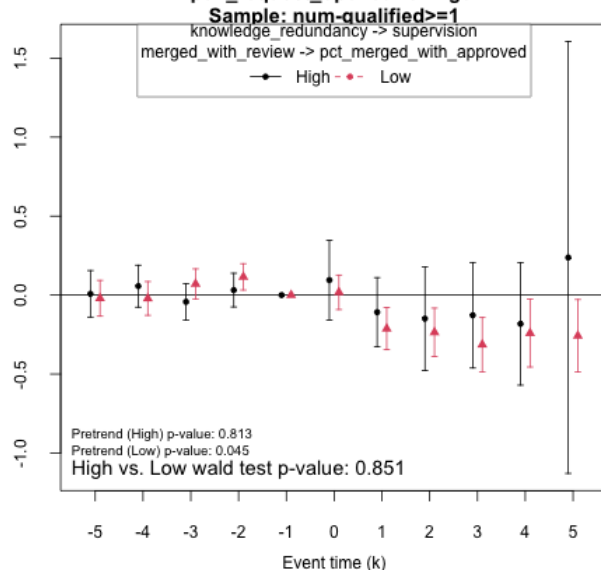
overall\_new\_release\_count rolling5



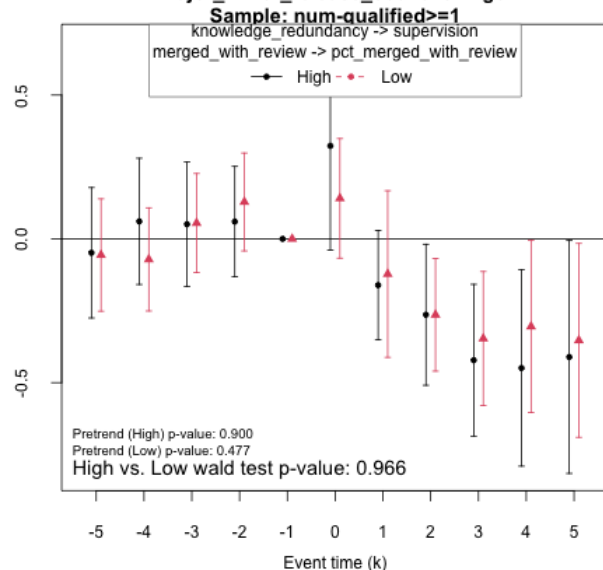
pull\_request\_merged rolling5



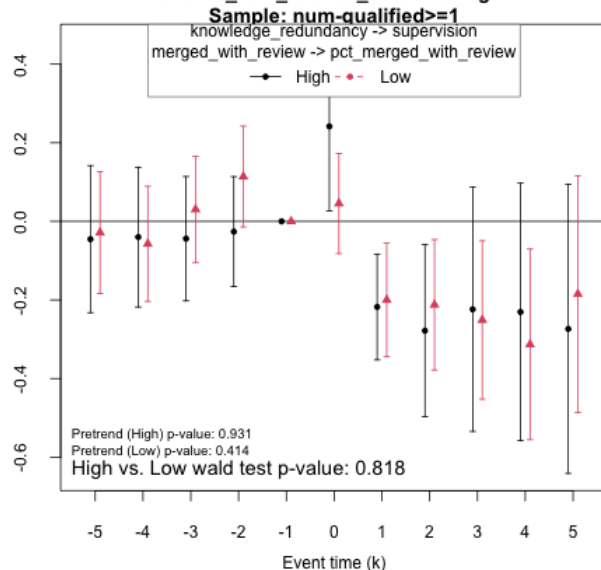
pull\_request\_opened rolling5



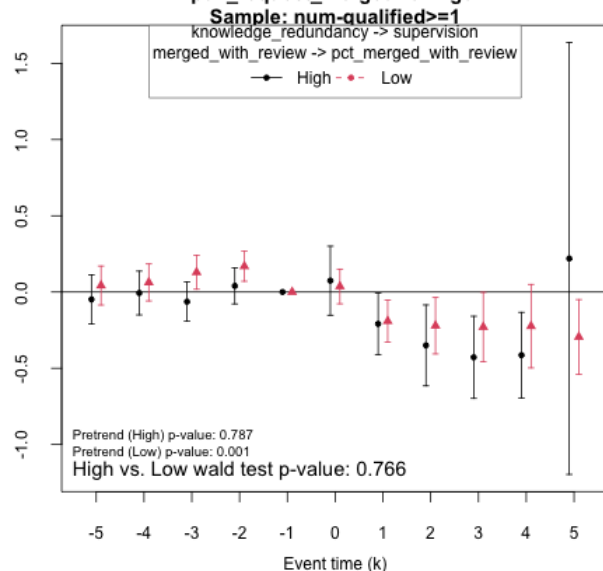
major\_minor\_release\_count rolling5



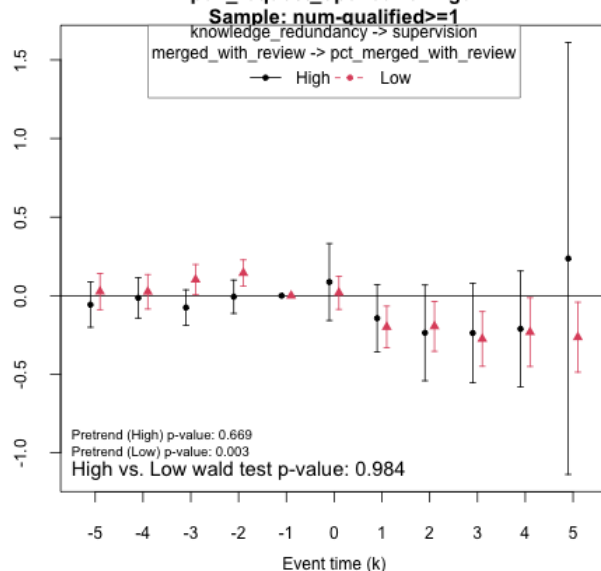
overall\_new\_release\_count rolling5



pull\_request\_merged rolling5



pull\_request\_opened rolling5

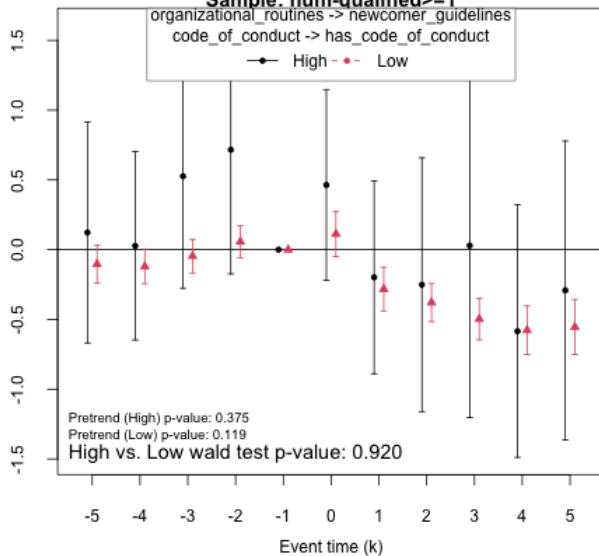


major\_minor\_release\_count rolling5

Sample: num-qualified&gt;=1

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

—●— High —●— Low

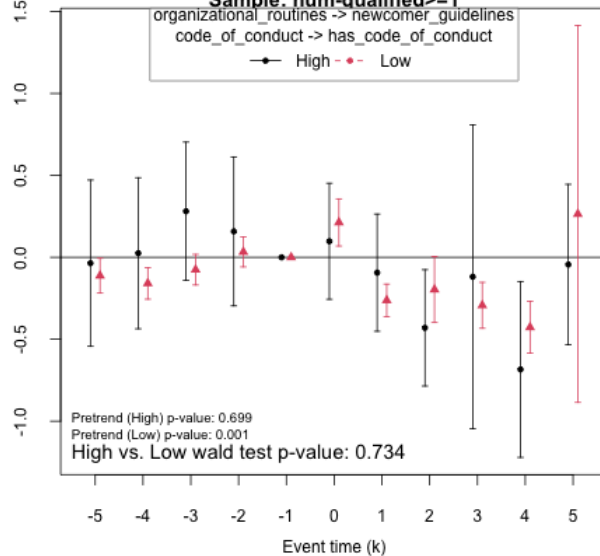


overall\_new\_release\_count rolling5

Sample: num-qualified&gt;=1

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

—●— High —●— Low

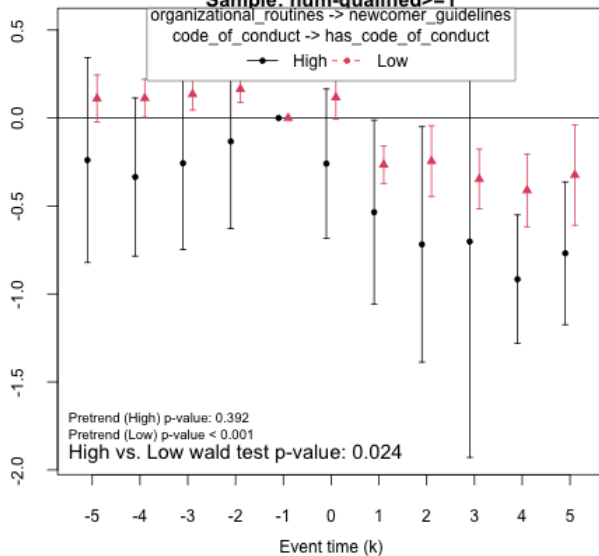


pull\_request\_merged rolling5

Sample: num-qualified&gt;=1

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

—●— High —●— Low

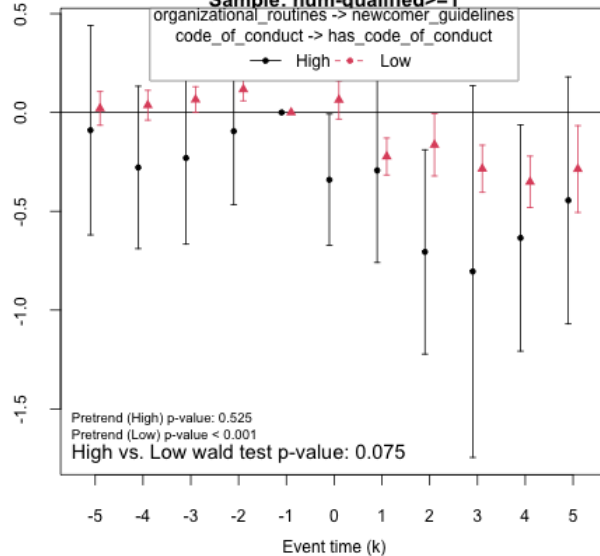


pull\_request\_opened rolling5

Sample: num-qualified&gt;=1

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

—●— High —●— Low

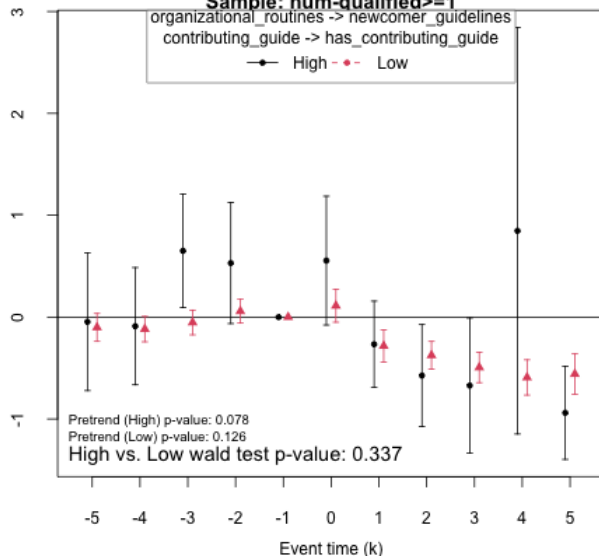


major\_minor\_release\_count rolling5

Sample: num-qualified&gt;=1

organizational\_routines -> newcomer\_guidelines  
contributing\_guide -> has\_contributing\_guide

—●— High —●— Low

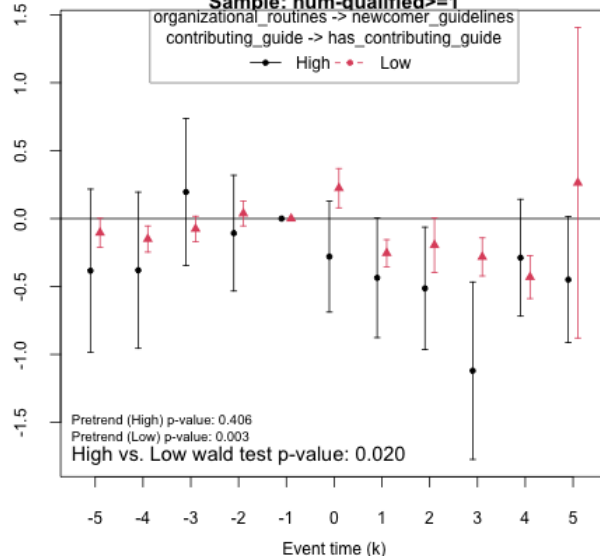


overall\_new\_release\_count rolling5

Sample: num-qualified&gt;=1

organizational\_routines -> newcomer\_guidelines  
contributing\_guide -> has\_contributing\_guide

—●— High —●— Low

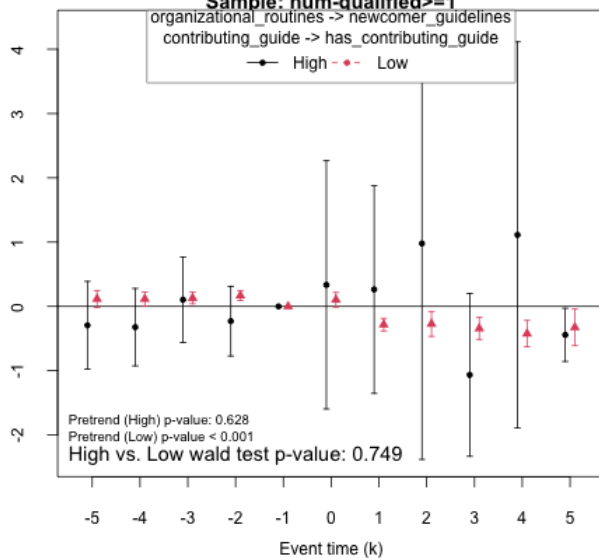


pull\_request\_merged rolling5

Sample: num-qualified&gt;=1

organizational\_routines -> newcomer\_guidelines  
contributing\_guide -> has\_contributing\_guide

—●— High —●— Low

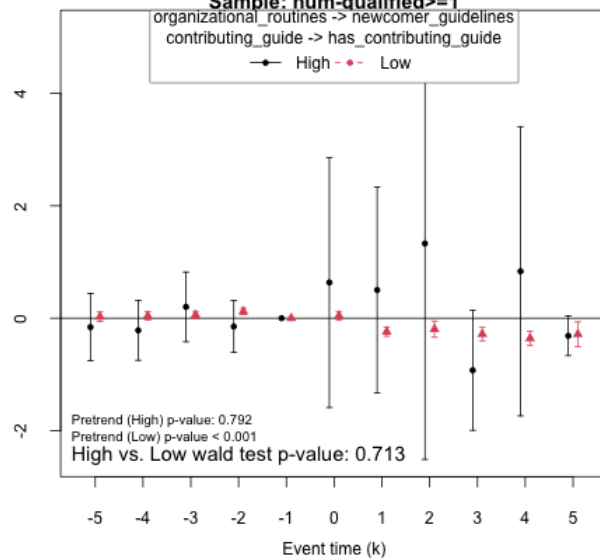


pull\_request\_opened rolling5

Sample: num-qualified&gt;=1

organizational\_routines -> newcomer\_guidelines  
contributing\_guide -> has\_contributing\_guide

—●— High —●— Low

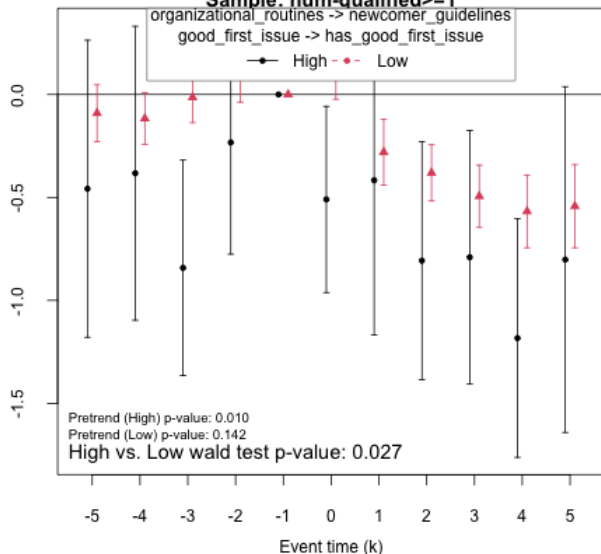


major\_minor\_release\_count rolling5

Sample: num-qualified&gt;=1

organizational\_routines -> newcomer\_guidelines  
good\_first\_issue -> has\_good\_first\_issue

—●— High —●— Low

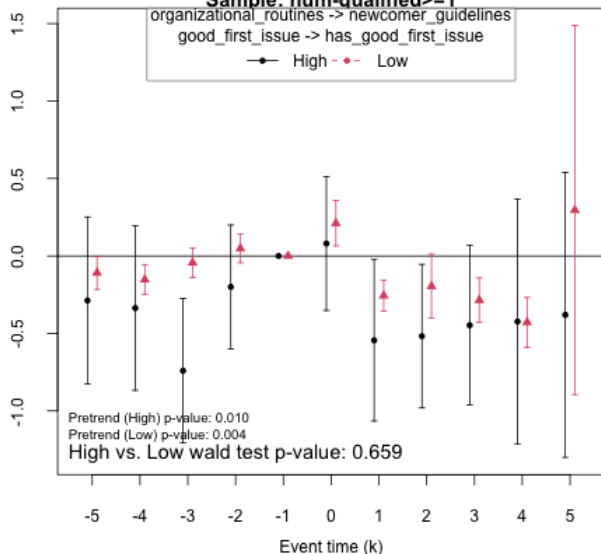


overall\_new\_release\_count rolling5

Sample: num-qualified&gt;=1

organizational\_routines -> newcomer\_guidelines  
good\_first\_issue -> has\_good\_first\_issue

—●— High —●— Low

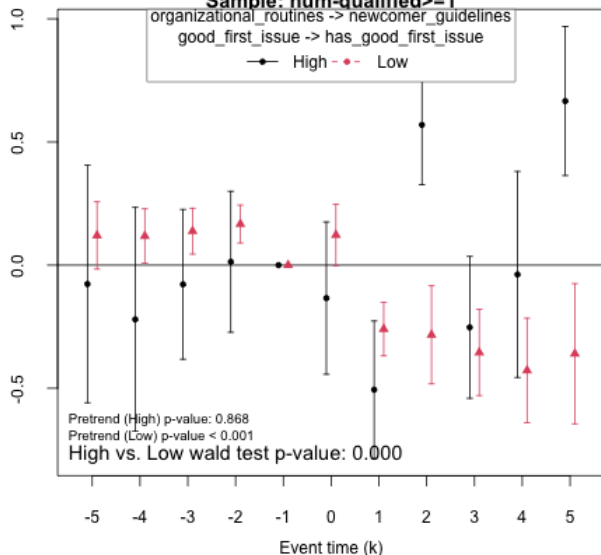


pull\_request\_merged rolling5

Sample: num-qualified&gt;=1

organizational\_routines -> newcomer\_guidelines  
good\_first\_issue -> has\_good\_first\_issue

—●— High —●— Low

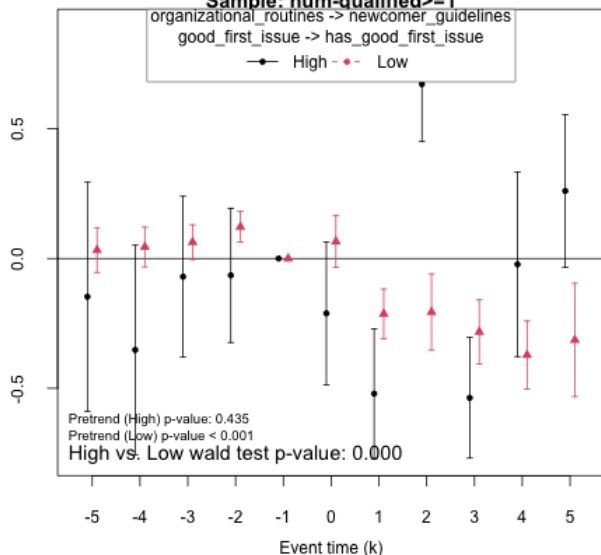


pull\_request\_opened rolling5

Sample: num-qualified&gt;=1

organizational\_routines -> newcomer\_guidelines  
good\_first\_issue -> has\_good\_first\_issue

—●— High —●— Low

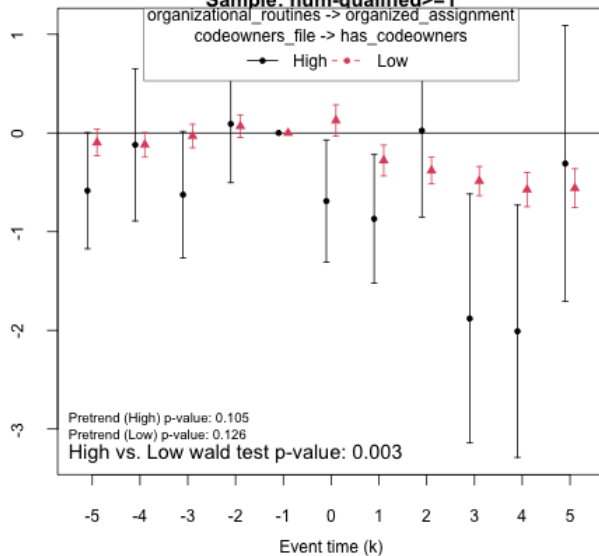


major\_minor\_release\_count rolling5

Sample: num-qualified&gt;=1

organizational\_routines -> organized\_assignment  
codeowners\_file -> has\_codeowners

—●— High —●— Low

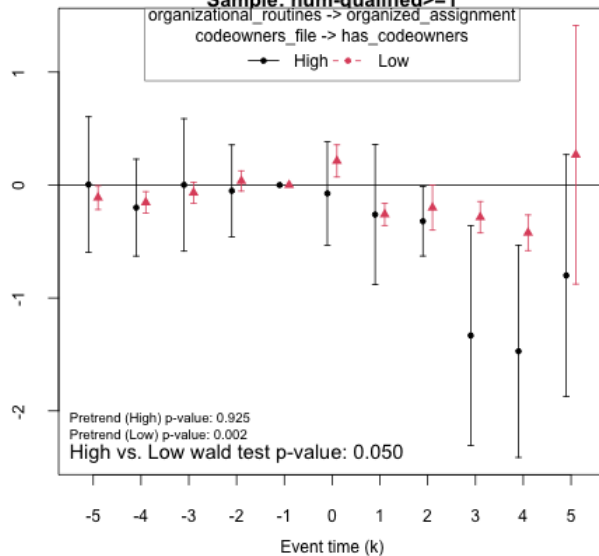


overall\_new\_release\_count rolling5

Sample: num-qualified&gt;=1

organizational\_routines -> organized\_assignment  
codeowners\_file -> has\_codeowners

—●— High —●— Low

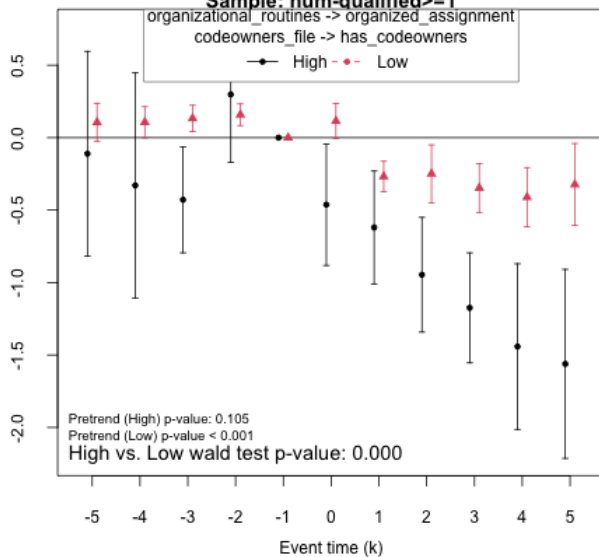


pull\_request\_merged rolling5

Sample: num-qualified&gt;=1

organizational\_routines -> organized\_assignment  
codeowners\_file -> has\_codeowners

—●— High —●— Low

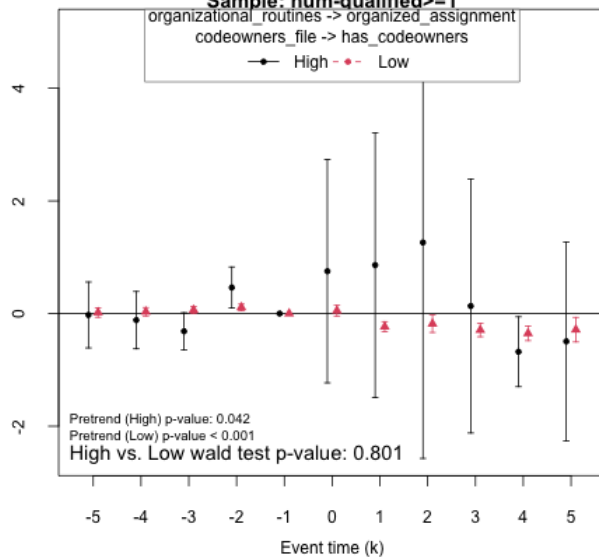


pull\_request\_opened rolling5

Sample: num-qualified&gt;=1

organizational\_routines -> organized\_assignment  
codeowners\_file -> has\_codeowners

—●— High —●— Low

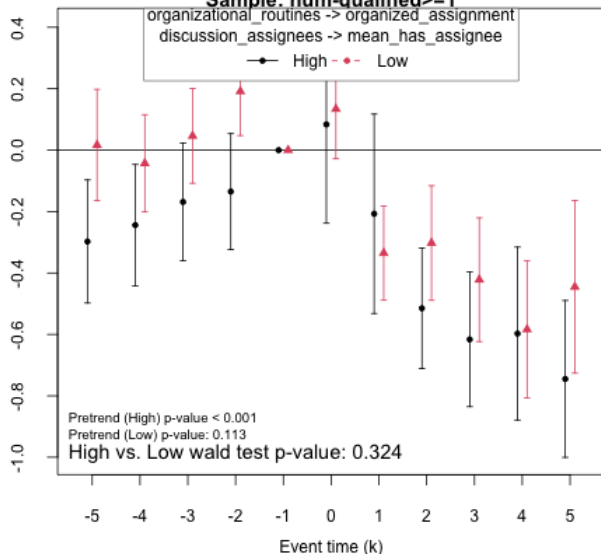


major\_minor\_release\_count rolling5

Sample: num-qualified&gt;=1

organizational\_routines -> organized\_assignment  
discussion\_assignees -> mean\_has\_assignee

—●— High —●— Low

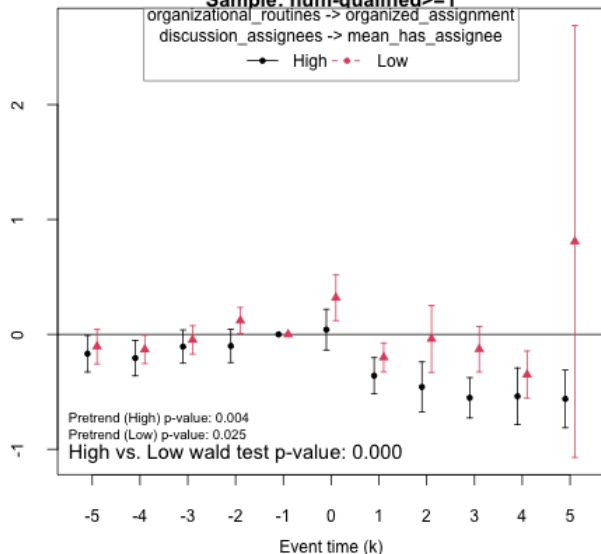


overall\_new\_release\_count rolling5

Sample: num-qualified&gt;=1

organizational\_routines -> organized\_assignment  
discussion\_assignees -> mean\_has\_assignee

—●— High —●— Low

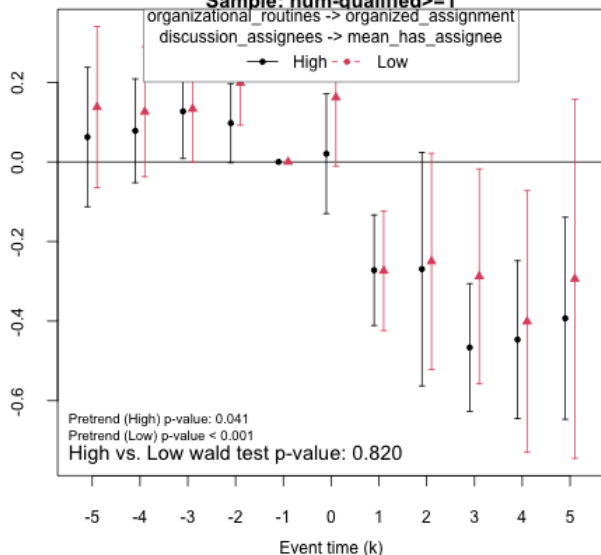


pull\_request\_merged rolling5

Sample: num-qualified&gt;=1

organizational\_routines -> organized\_assignment  
discussion\_assignees -> mean\_has\_assignee

—●— High —●— Low

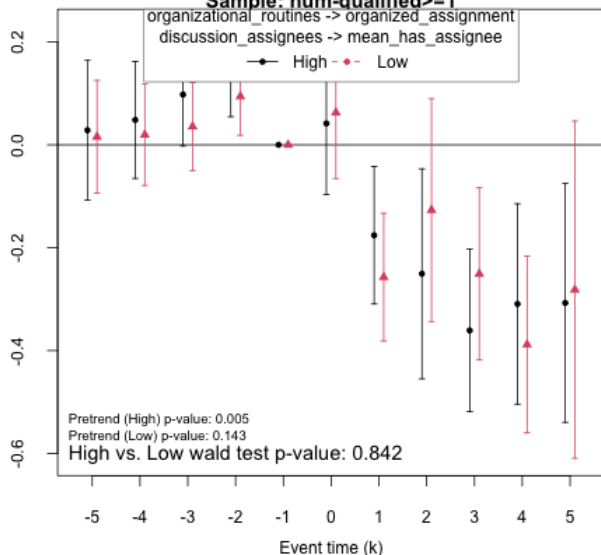


pull\_request\_opened rolling5

Sample: num-qualified&gt;=1

organizational\_routines -> organized\_assignment  
discussion\_assignees -> mean\_has\_assignee

—●— High —●— Low



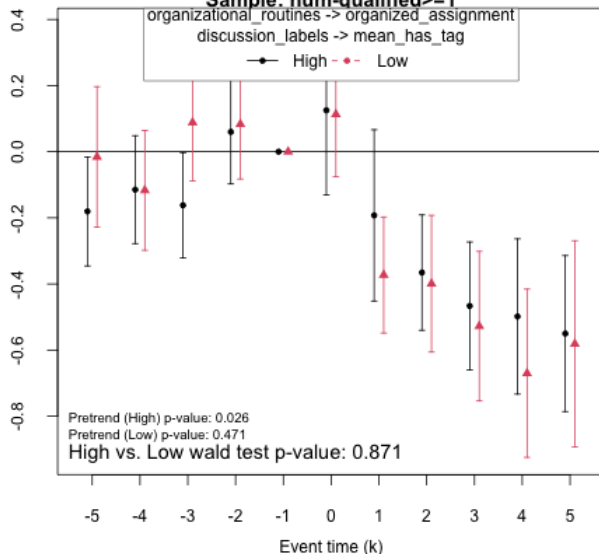


major\_minor\_release\_count rolling5

Sample: num-qualified&gt;=1

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

—●— High —●— Low

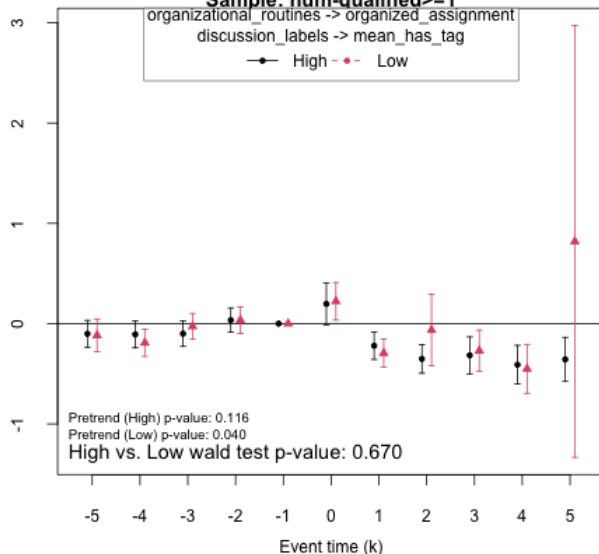


overall\_new\_release\_count rolling5

Sample: num-qualified&gt;=1

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

—●— High —●— Low

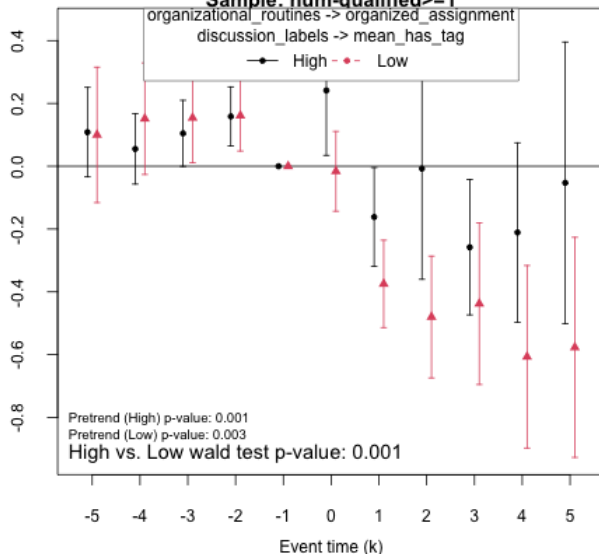


pull\_request\_merged rolling5

Sample: num-qualified&gt;=1

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

—●— High —●— Low

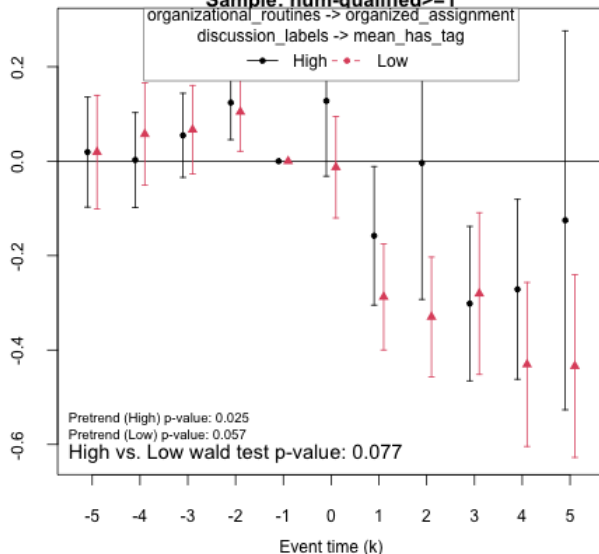


pull\_request\_opened rolling5

Sample: num-qualified&gt;=1

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

—●— High —●— Low

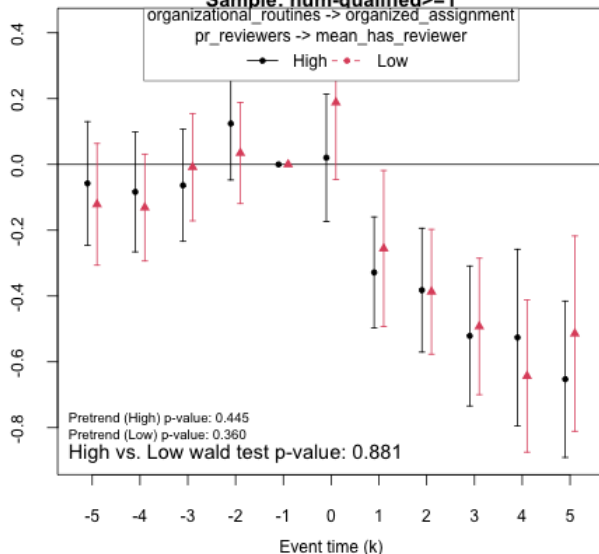


major\_minor\_release\_count rolling5

Sample: num-qualified&gt;=1

organizational\_routines -> organized\_assignment  
pr\_reviewers -> mean\_has\_reviewer

—●— High —●— Low

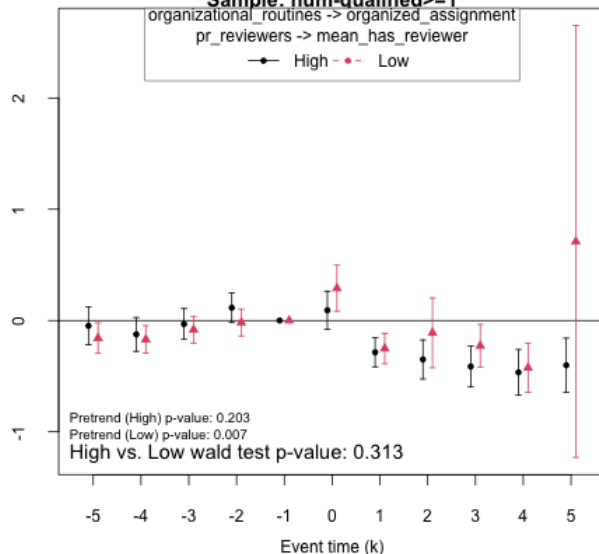


overall\_new\_release\_count rolling5

Sample: num-qualified&gt;=1

organizational\_routines -> organized\_assignment  
pr\_reviewers -> mean\_has\_reviewer

—●— High —●— Low

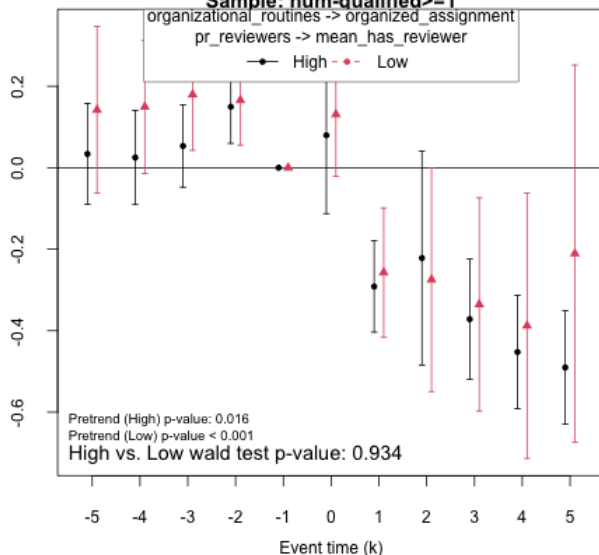


pull\_request\_merged rolling5

Sample: num-qualified&gt;=1

organizational\_routines -> organized\_assignment  
pr\_reviewers -> mean\_has\_reviewer

—●— High —●— Low

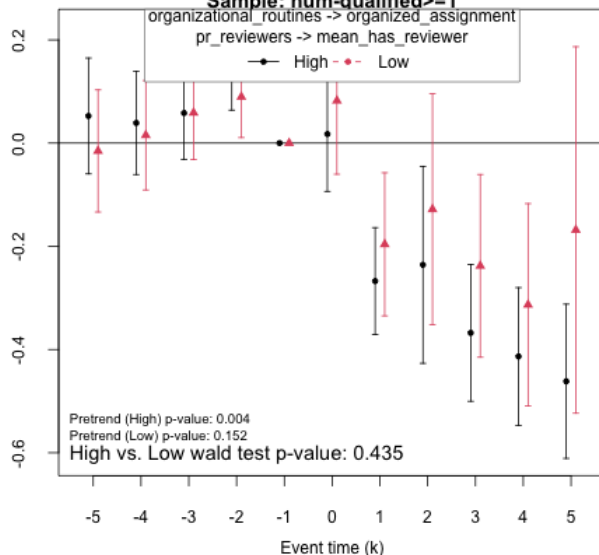


pull\_request\_opened rolling5

Sample: num-qualified&gt;=1

organizational\_routines -> organized\_assignment  
pr\_reviewers -> mean\_has\_reviewer

—●— High —●— Low



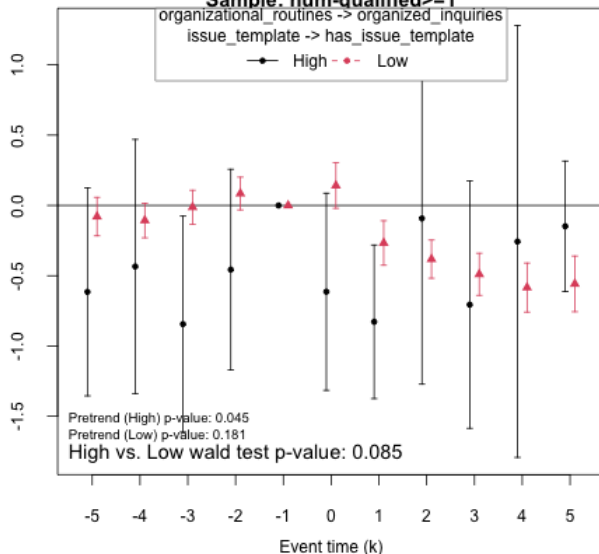
major\_minor\_release\_count rolling5

Sample: num-qualified&gt;=1

organizational\_routines -&gt; organized\_inquiries

issue\_template -&gt; has\_issue\_template

—●— High —●— Low



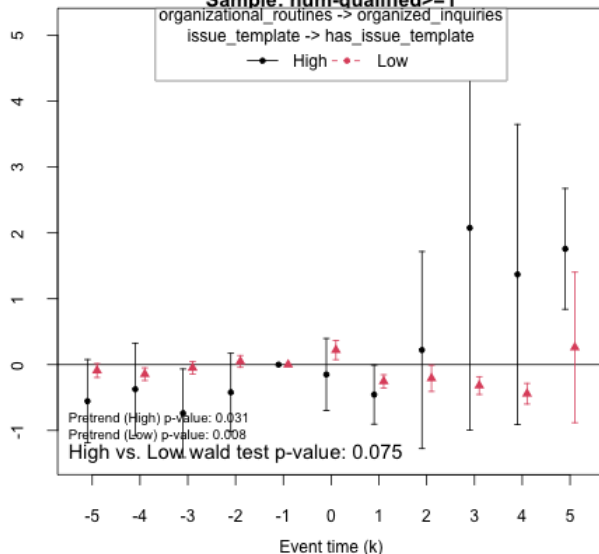
overall\_new\_release\_count rolling5

Sample: num-qualified&gt;=1

organizational\_routines -&gt; organized\_inquiries

issue\_template -&gt; has\_issue\_template

—●— High —●— Low



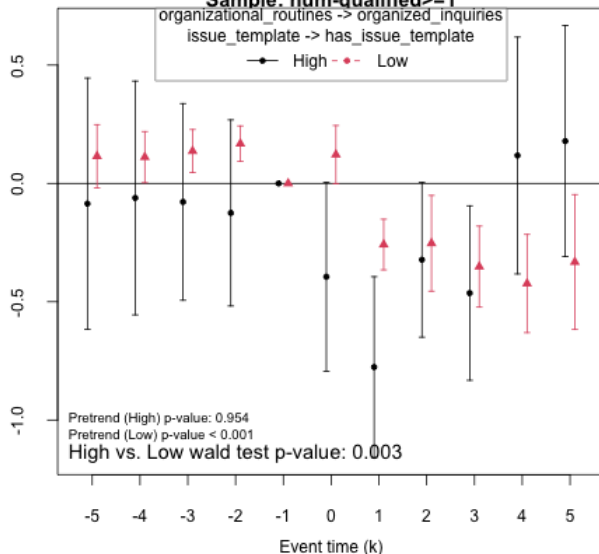
pull\_request\_merged rolling5

Sample: num-qualified&gt;=1

organizational\_routines -&gt; organized\_inquiries

issue\_template -&gt; has\_issue\_template

—●— High —●— Low



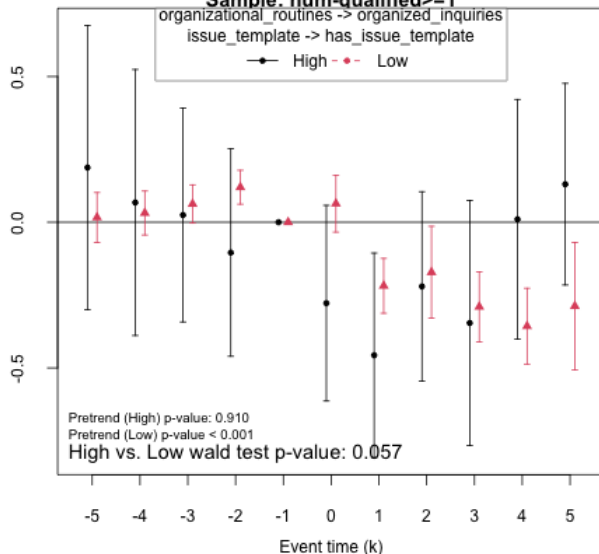
pull\_request\_opened rolling5

Sample: num-qualified&gt;=1

organizational\_routines -&gt; organized\_inquiries

issue\_template -&gt; has\_issue\_template

—●— High —●— Low



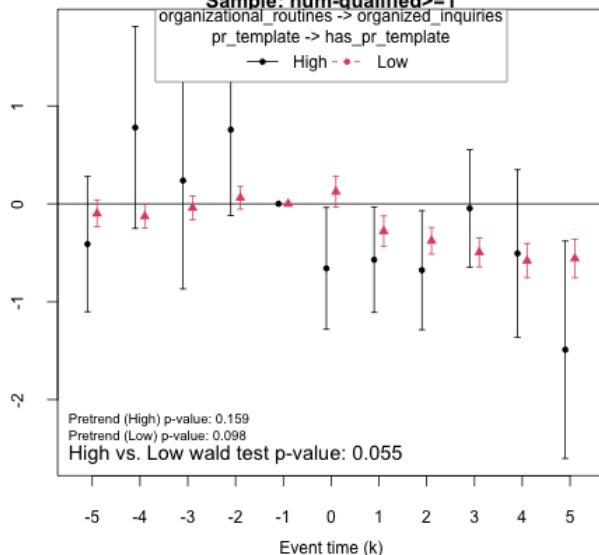
major\_minor\_release\_count rolling5

Sample: num-qualified&gt;=1

organizational\_routines -&gt; organized\_inquiries

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

—●— High —●— Low



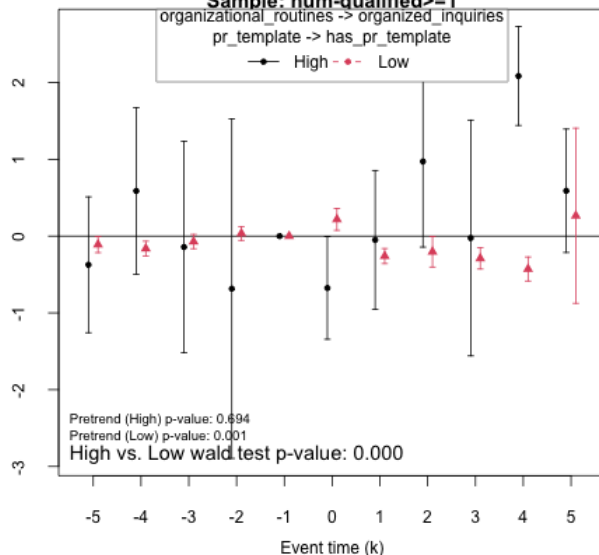
overall\_new\_release\_count rolling5

Sample: num-qualified&gt;=1

organizational\_routines -&gt; organized\_inquiries

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

—●— High —●— Low



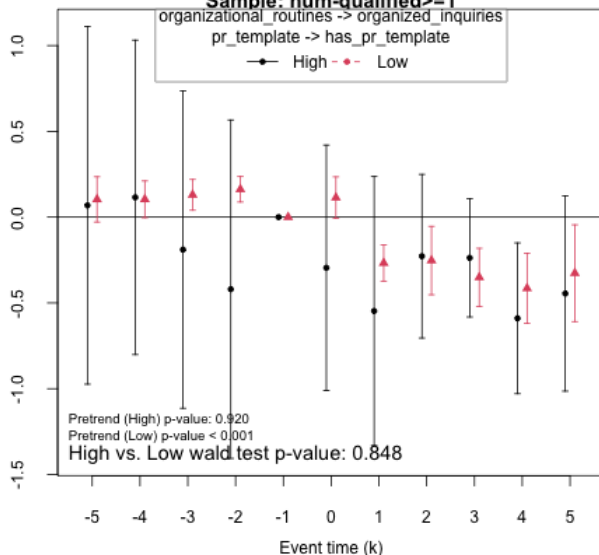
pull\_request\_merged rolling5

Sample: num-qualified&gt;=1

organizational\_routines -&gt; organized\_inquiries

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

—●— High —●— Low



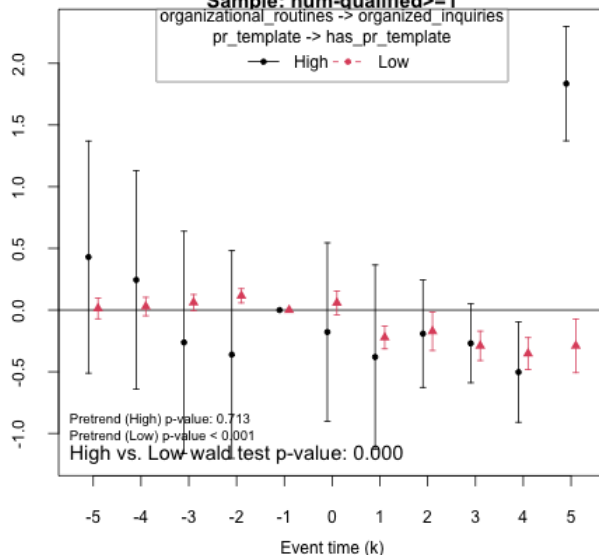
pull\_request\_opened rolling5

Sample: num-qualified&gt;=1

organizational\_routines -&gt; organized\_inquiries

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

—●— High —●— Low



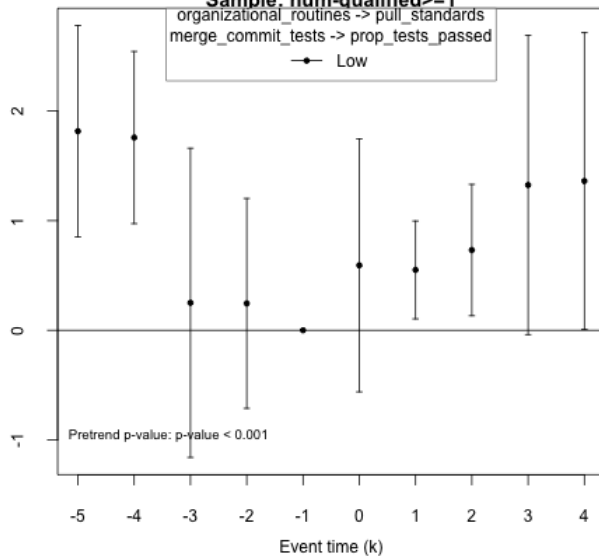
major\_minor\_release\_count rolling5

Sample: num-qualified&gt;=1

organizational\_routines -&gt; pull\_standards

merge\_commit\_tests -&gt; prop\_tests\_passed

● Low



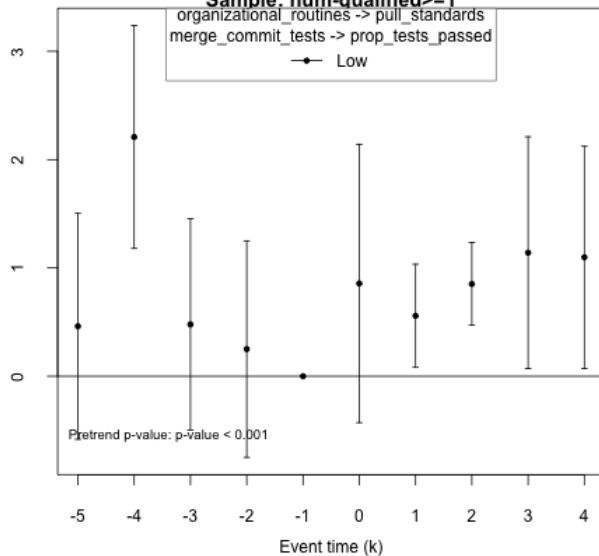
overall\_new\_release\_count rolling5

Sample: num-qualified&gt;=1

organizational\_routines -&gt; pull\_standards

merge\_commit\_tests -&gt; prop\_tests\_passed

● Low



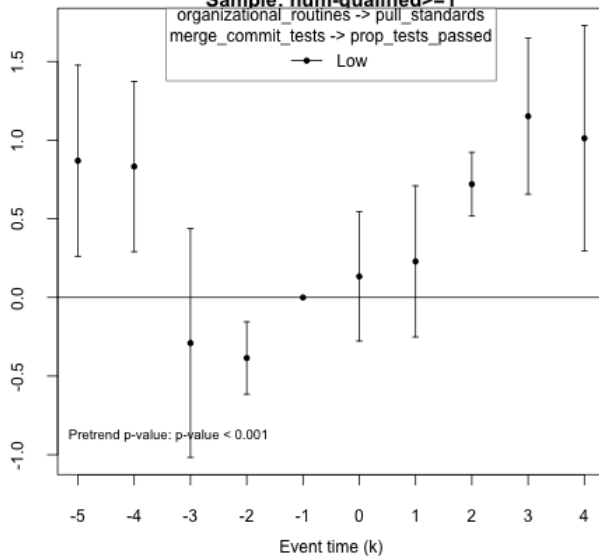
pull\_request\_merged rolling5

Sample: num-qualified&gt;=1

organizational\_routines -&gt; pull\_standards

merge\_commit\_tests -&gt; prop\_tests\_passed

● Low



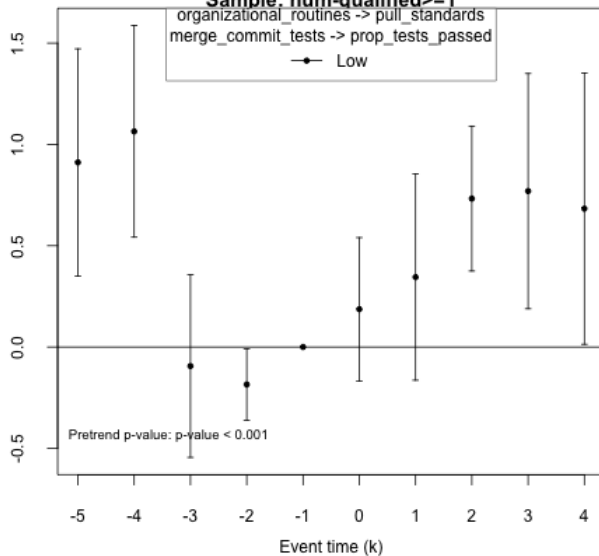
pull\_request\_opened rolling5

Sample: num-qualified&gt;=1

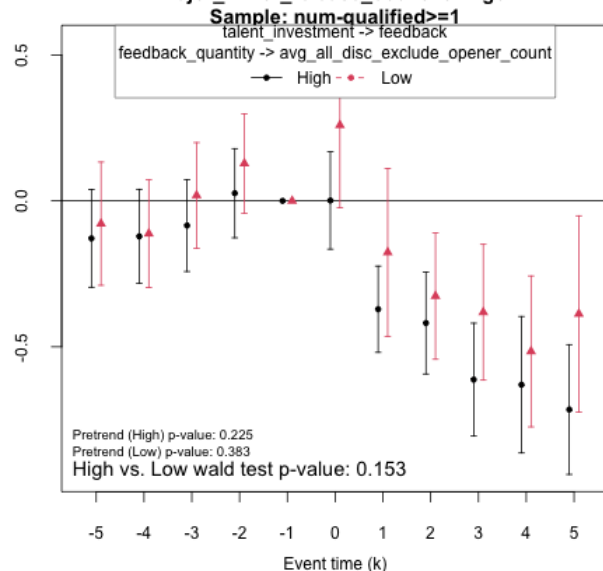
organizational\_routines -&gt; pull\_standards

merge\_commit\_tests -&gt; prop\_tests\_passed

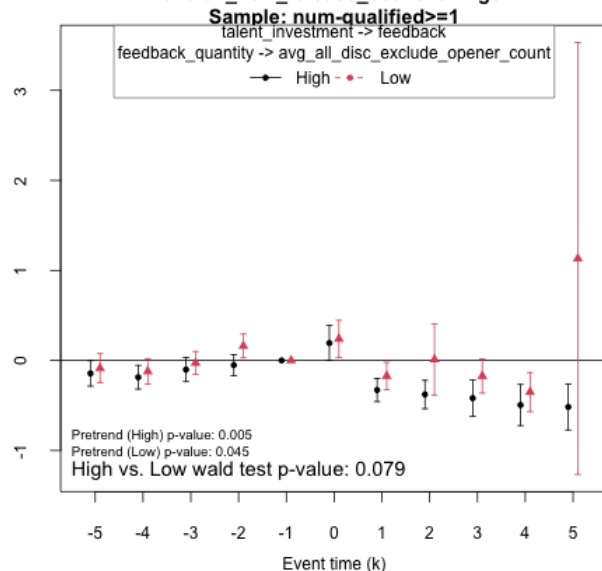
● Low



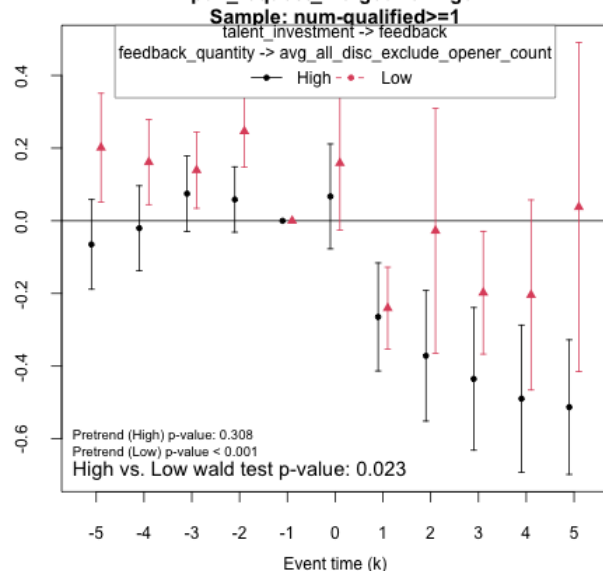
major\_minor\_release\_count rolling5



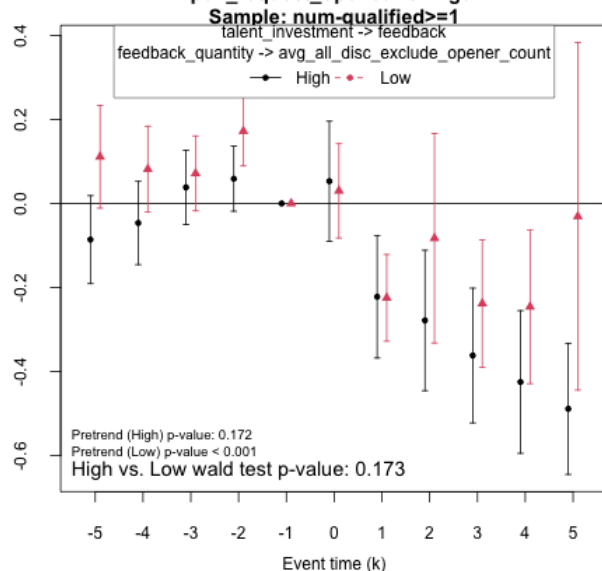
overall\_new\_release\_count rolling5



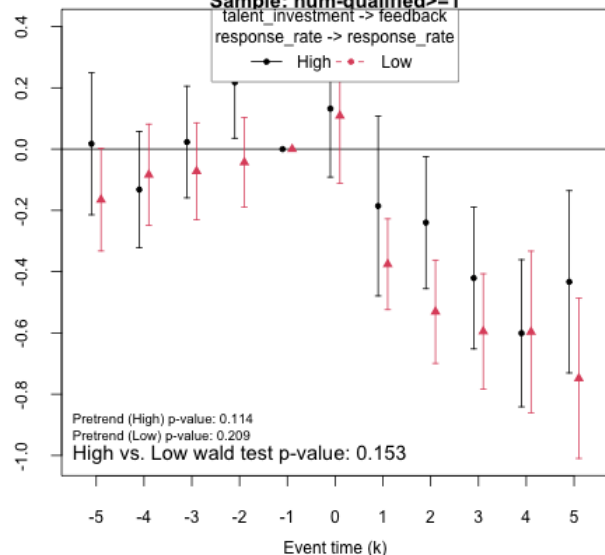
pull\_request\_merged rolling5



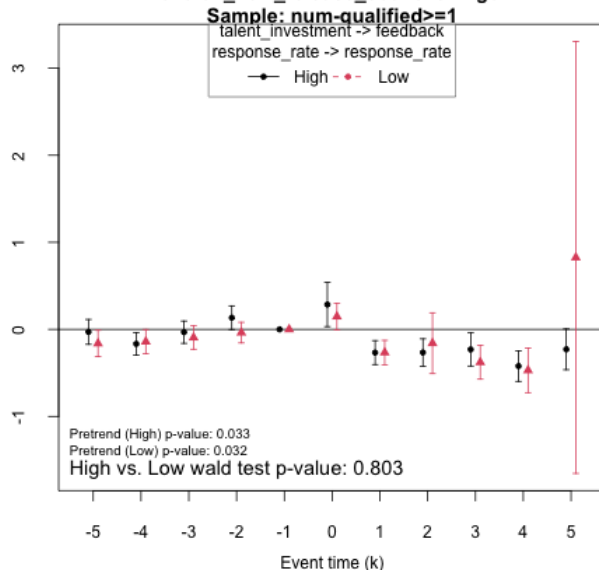
pull\_request\_opened rolling5



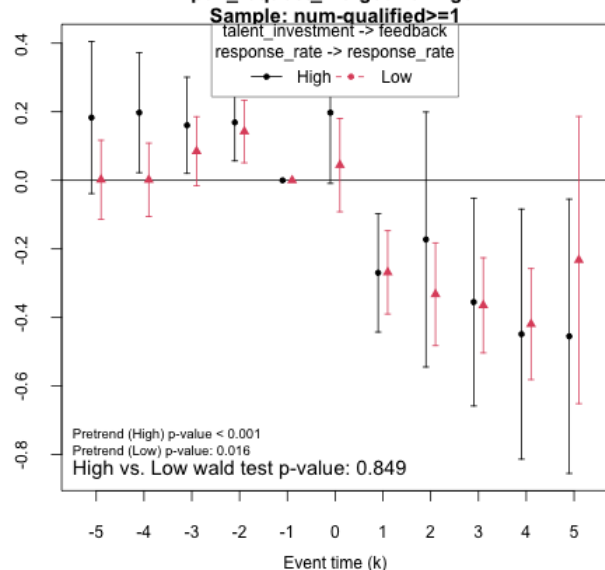
major\_minor\_release\_count rolling5



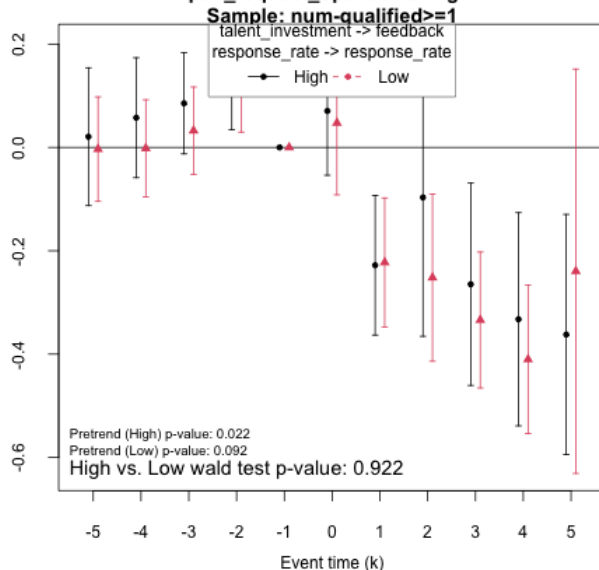
overall\_new\_release\_count rolling5



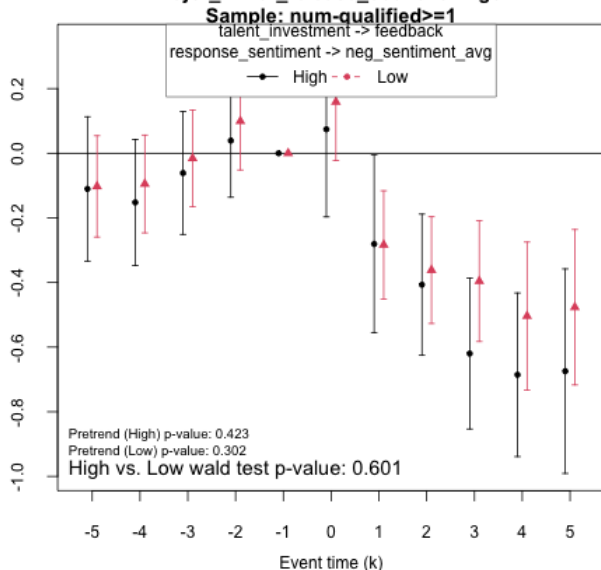
pull\_request\_merged rolling5



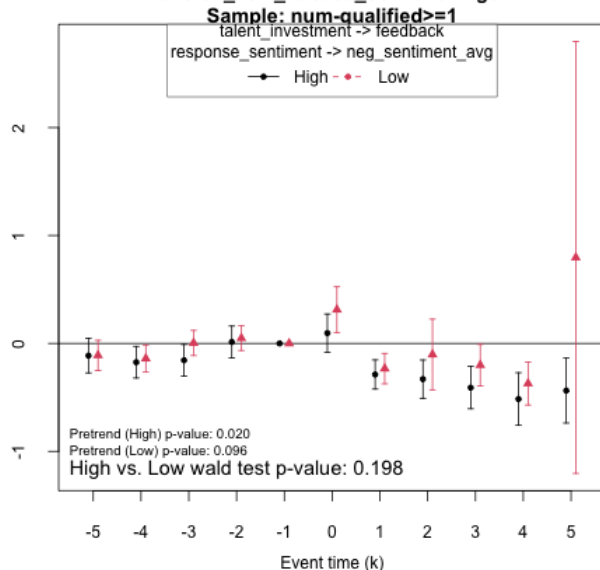
pull\_request\_opened rolling5



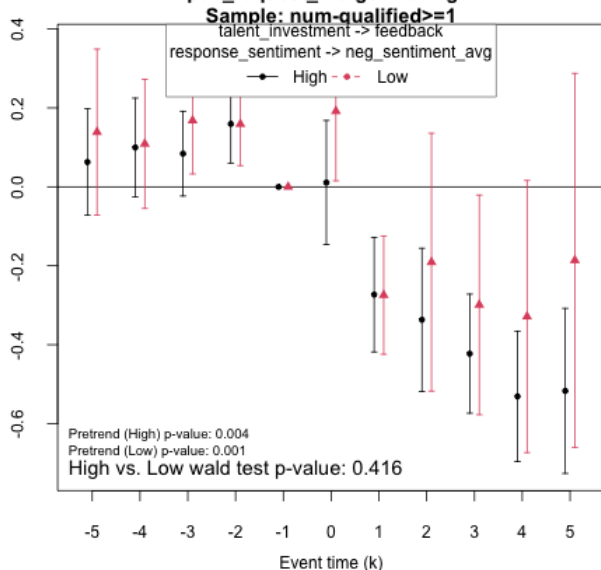
major\_minor\_release\_count rolling5



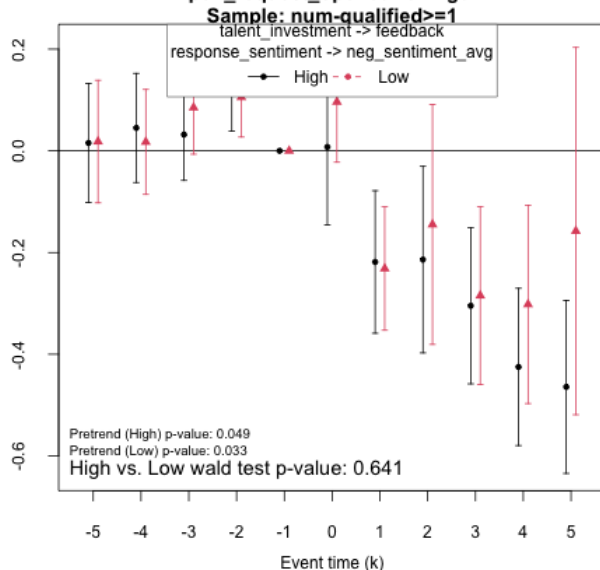
overall\_new\_release\_count rolling5



pull\_request\_merged rolling5

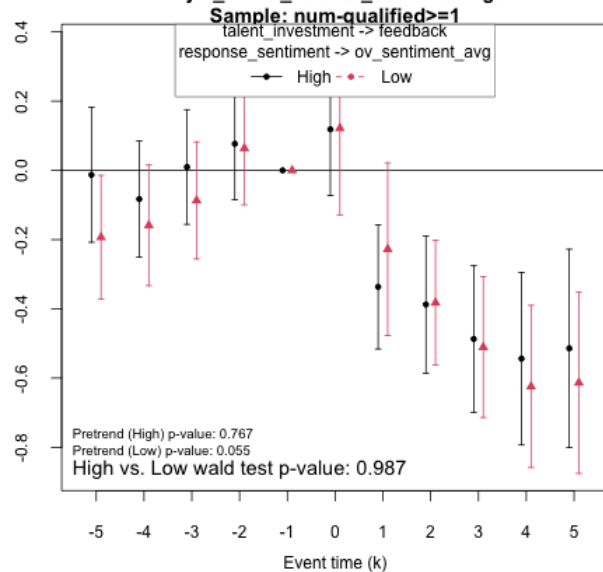


pull\_request\_opened rolling5

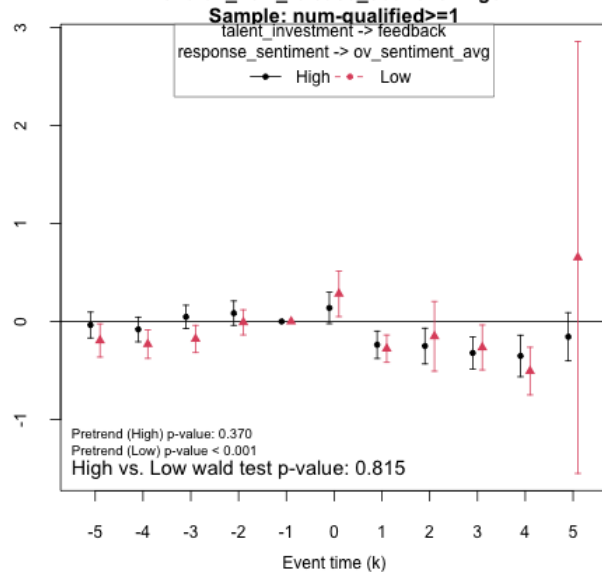




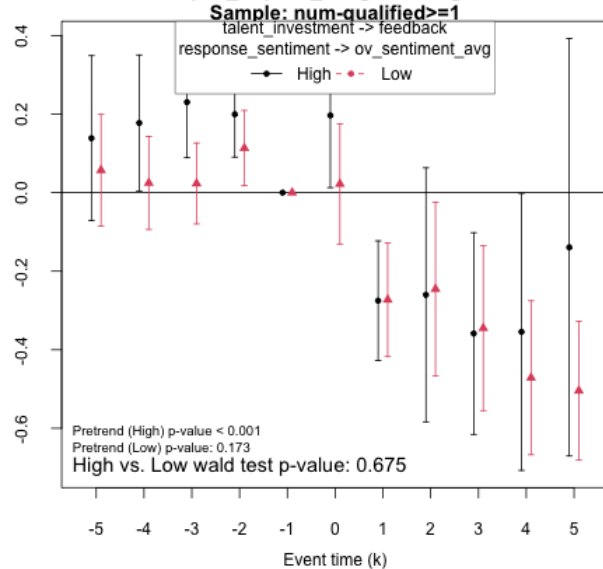
major\_minor\_release\_count rolling5



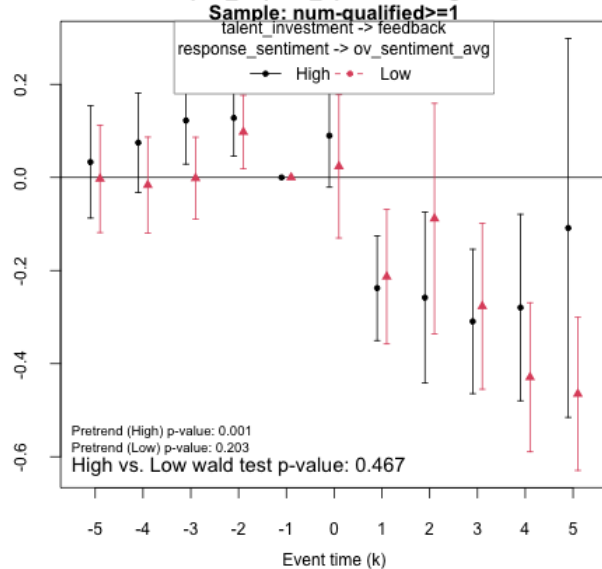
overall\_new\_release\_count rolling5



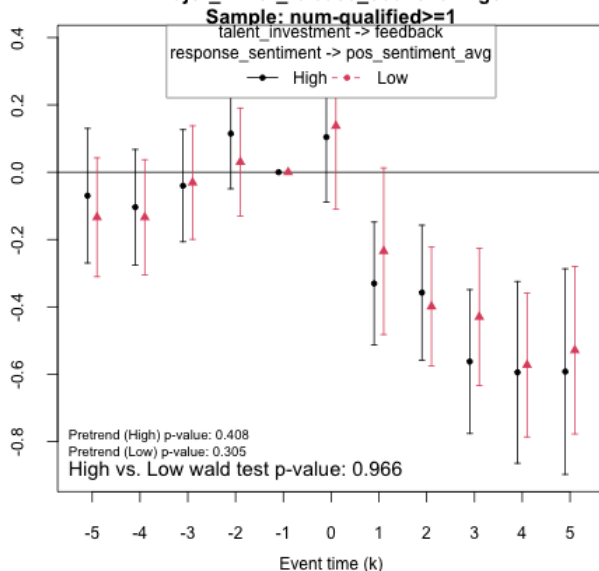
pull\_request\_merged rolling5



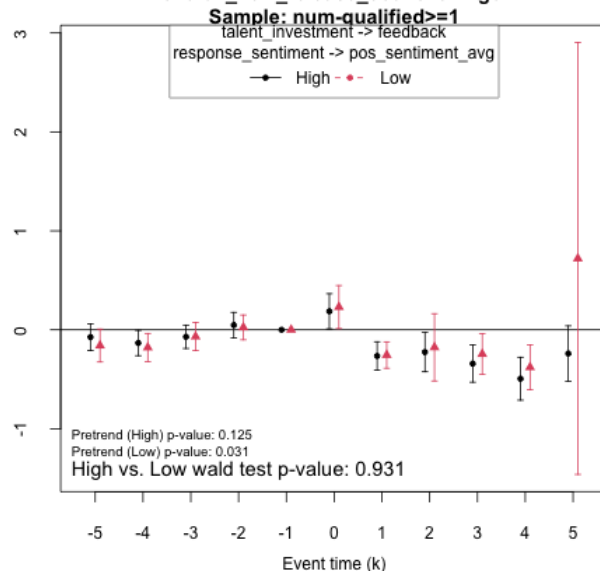
pull\_request\_opened rolling5



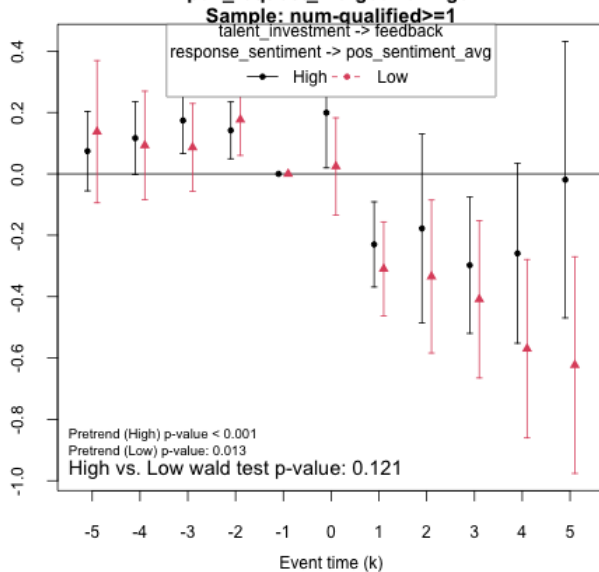
major\_minor\_release\_count rolling5



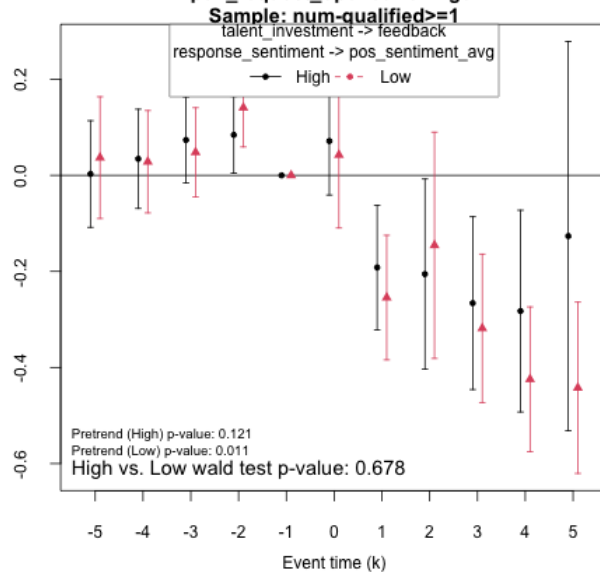
overall\_new\_release\_count rolling5



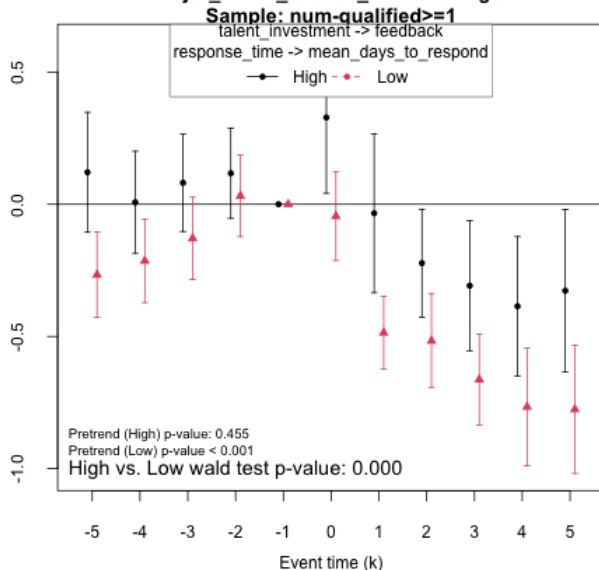
pull\_request\_merged rolling5



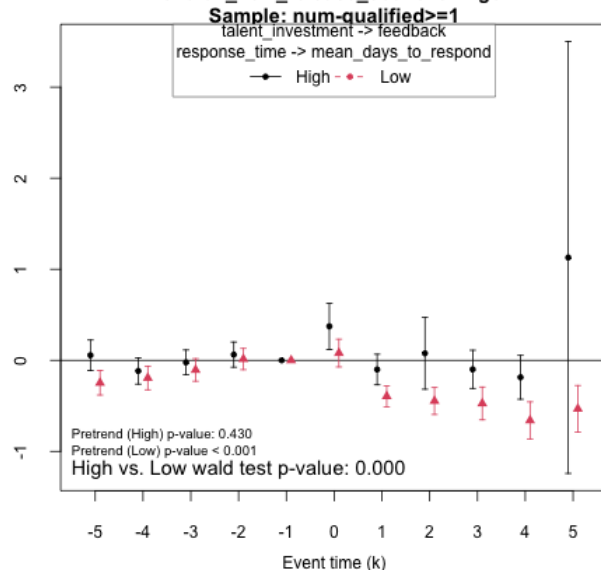
pull\_request\_opened rolling5



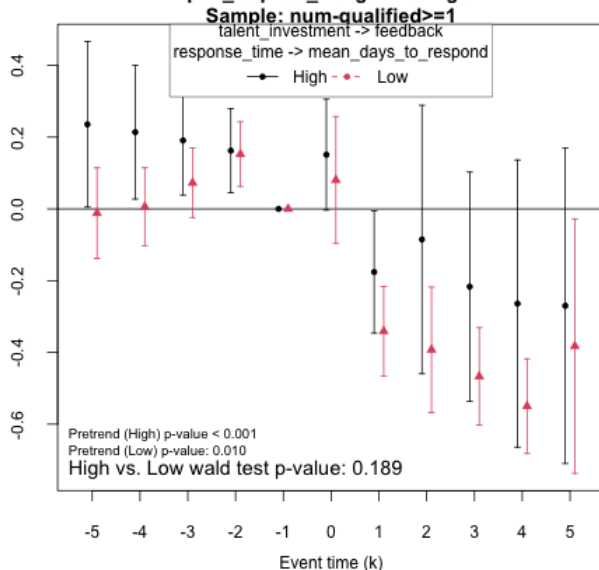
major\_minor\_release\_count rolling5



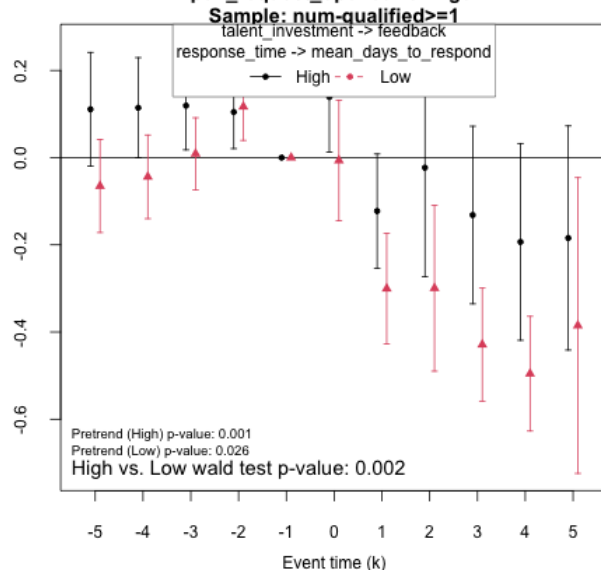
overall\_new\_release\_count rolling5



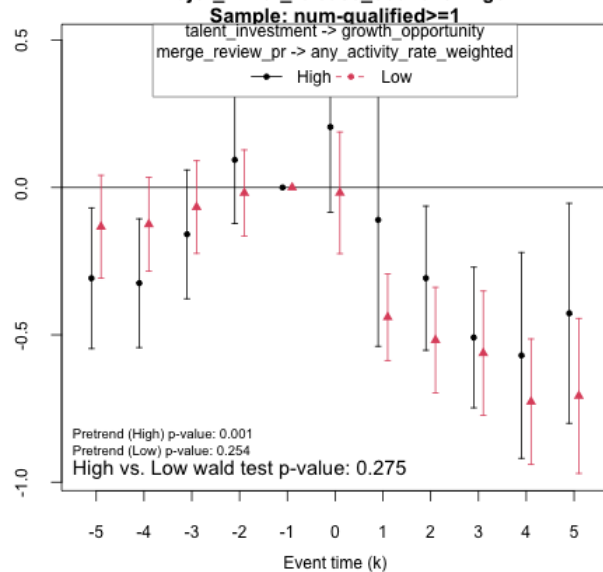
pull\_request\_merged rolling5



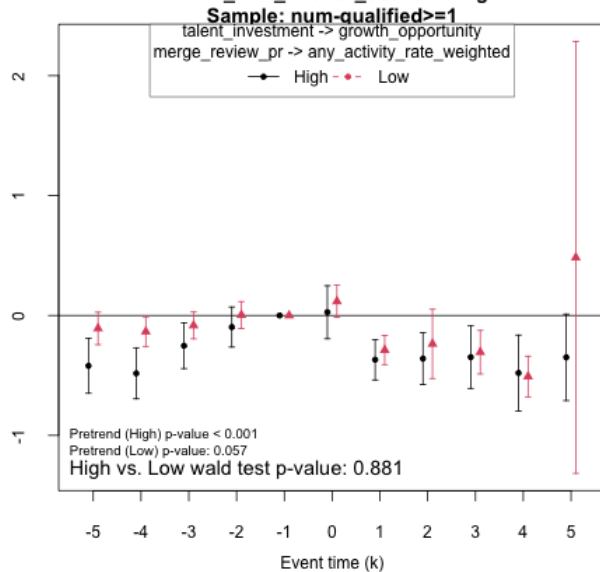
pull\_request\_opened rolling5



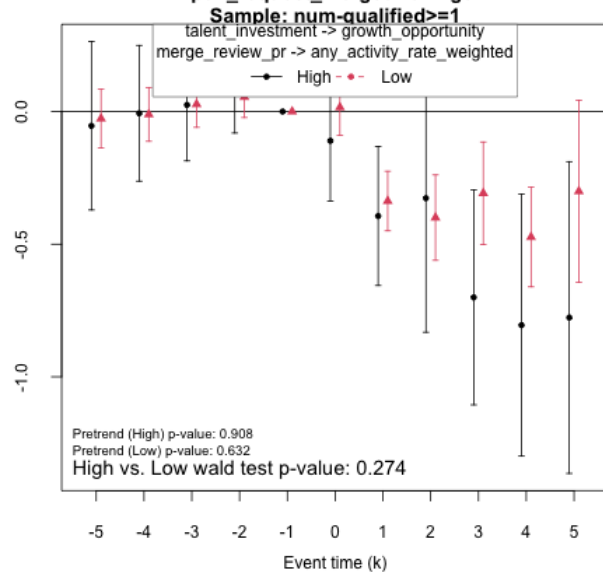
major\_minor\_release\_count rolling5



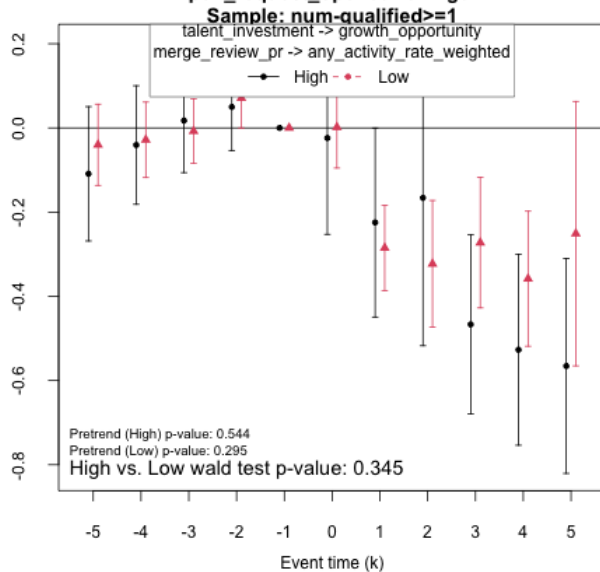
overall\_new\_release\_count rolling5



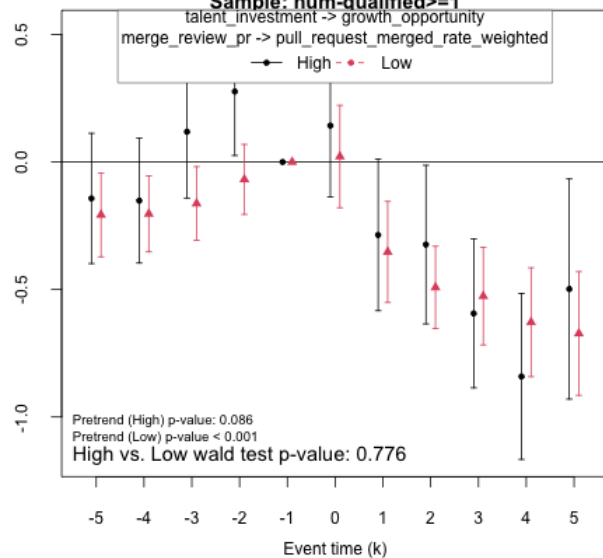
pull\_request\_merged rolling5



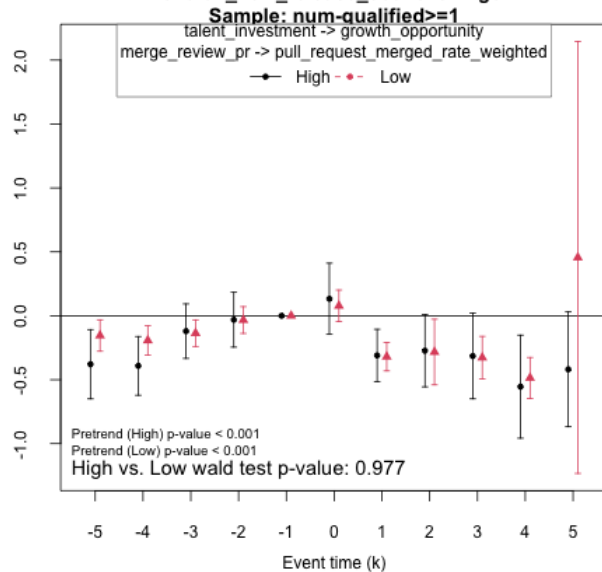
pull\_request\_opened rolling5



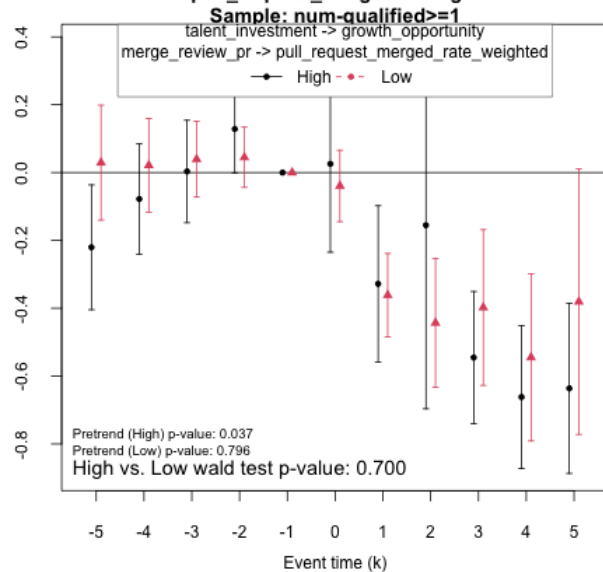
major\_minor\_release\_count rolling5



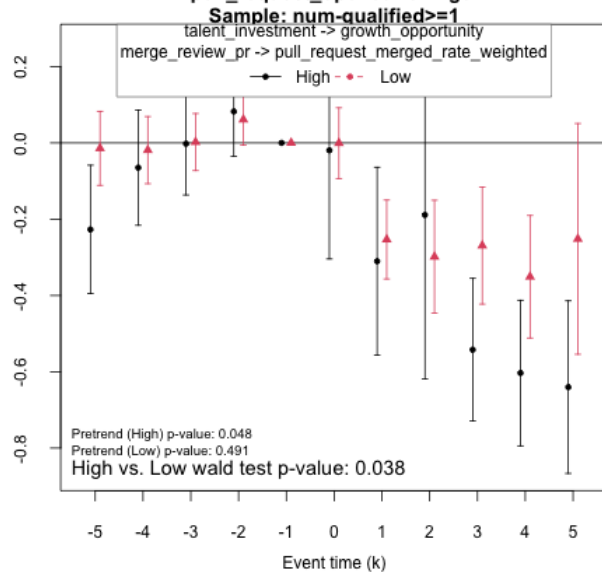
overall\_new\_release\_count rolling5



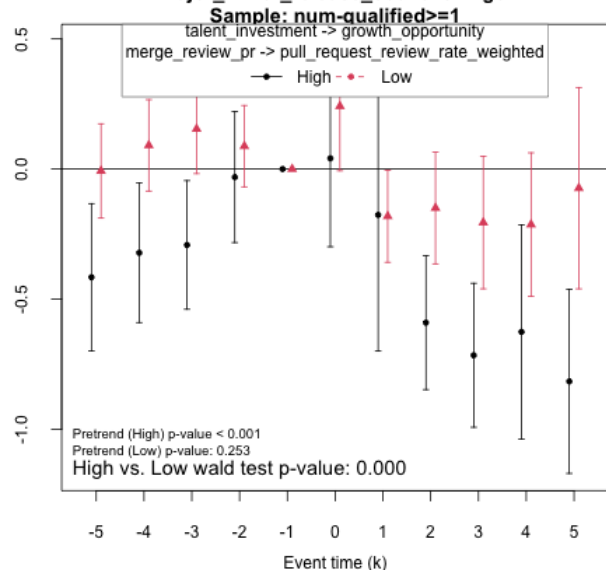
pull\_request\_merged rolling5



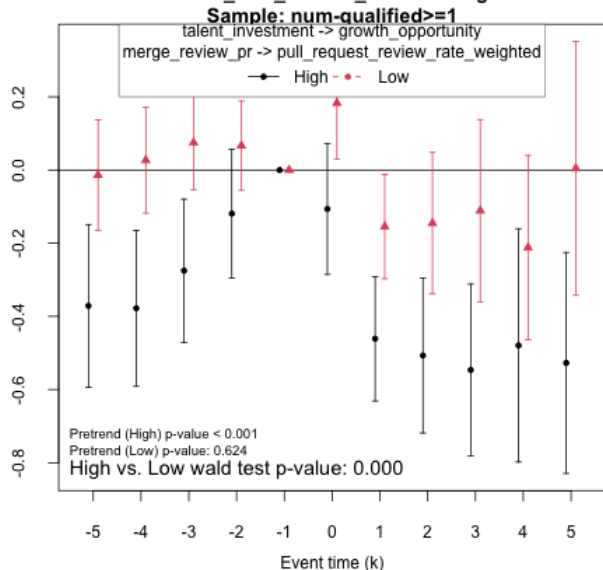
pull\_request\_opened rolling5



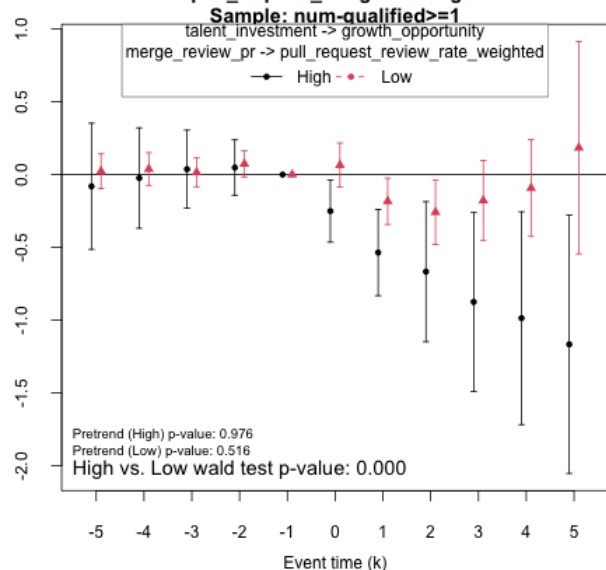
major\_minor\_release\_count rolling5



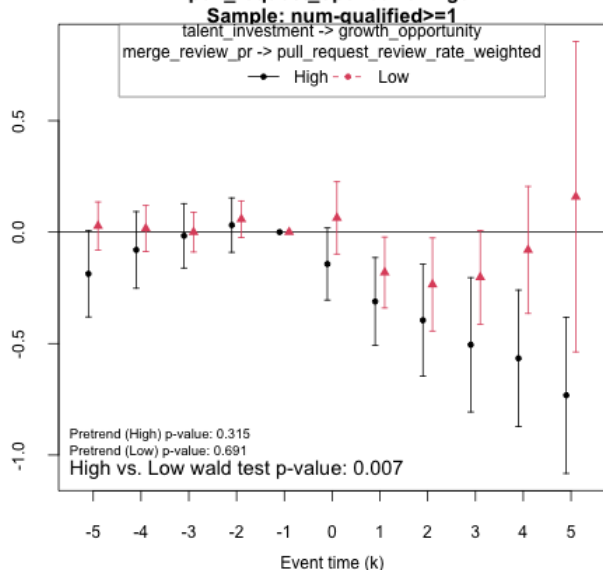
overall\_new\_release\_count rolling5



pull\_request\_merged rolling5



pull\_request\_opened rolling5

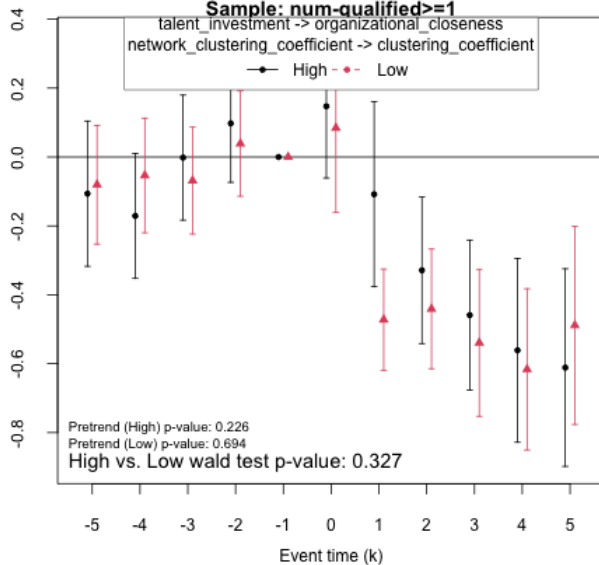


major\_minor\_release\_count rolling5

Sample: num-qualified&gt;=1

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

—●— High —●— Low

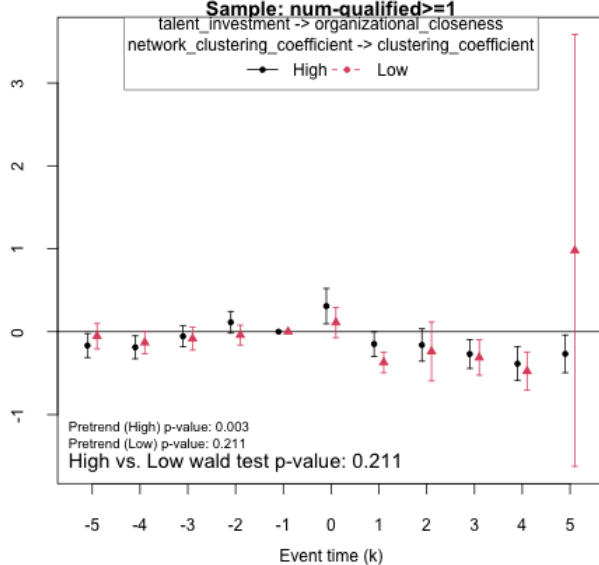


overall\_new\_release\_count rolling5

Sample: num-qualified&gt;=1

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

—●— High —●— Low

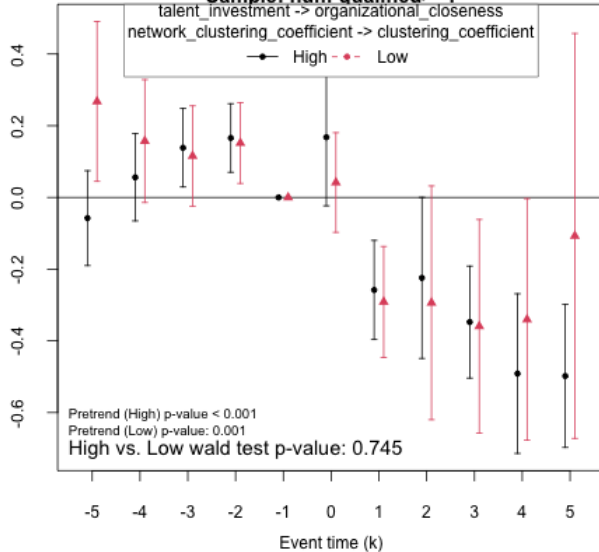


pull\_request\_merged rolling5

Sample: num-qualified&gt;=1

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

—●— High —●— Low



pull\_request\_opened rolling5

Sample: num-qualified&gt;=1

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

—●— High —●— Low

