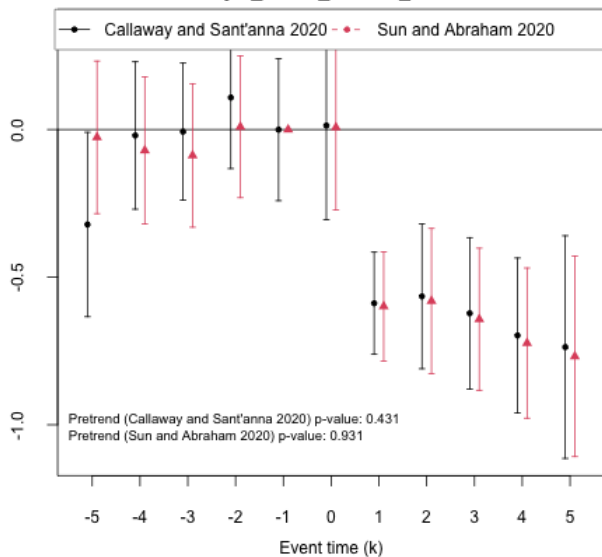
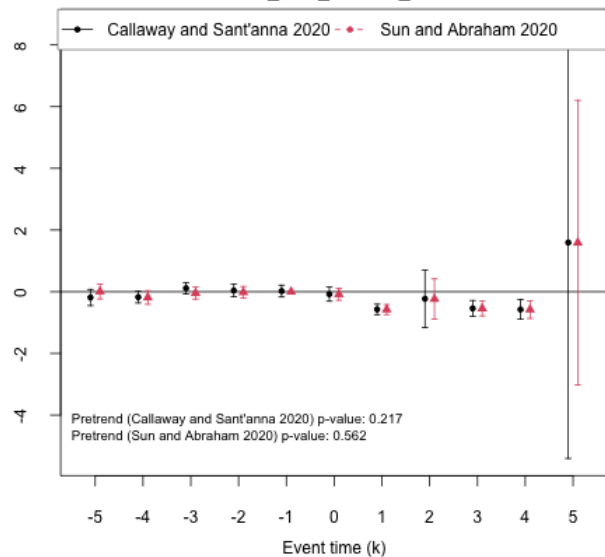


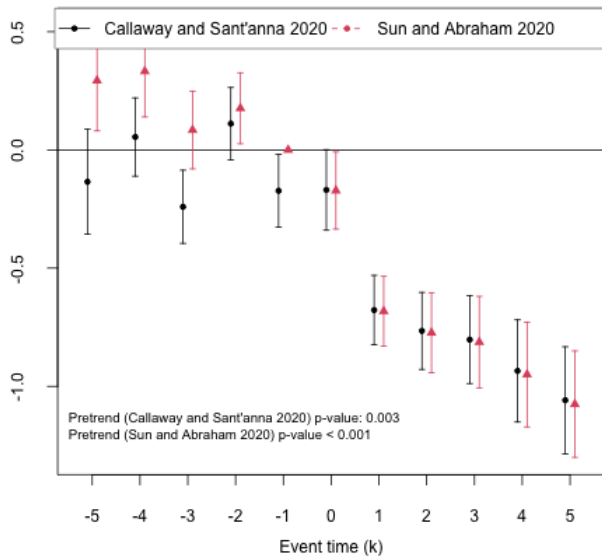
major\_minor\_release\_count



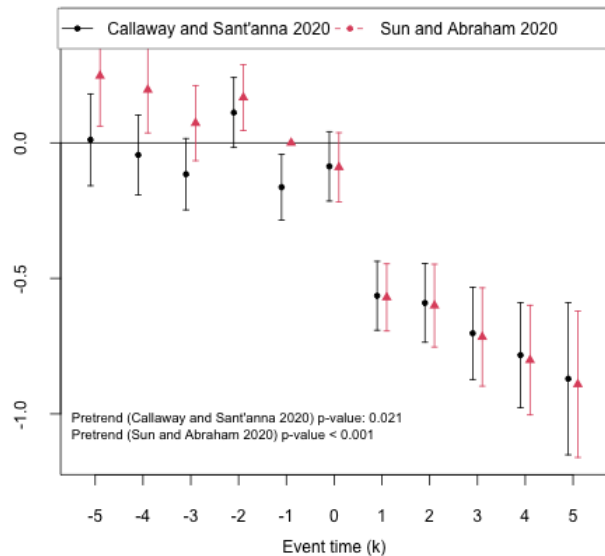
overall\_new\_release\_count



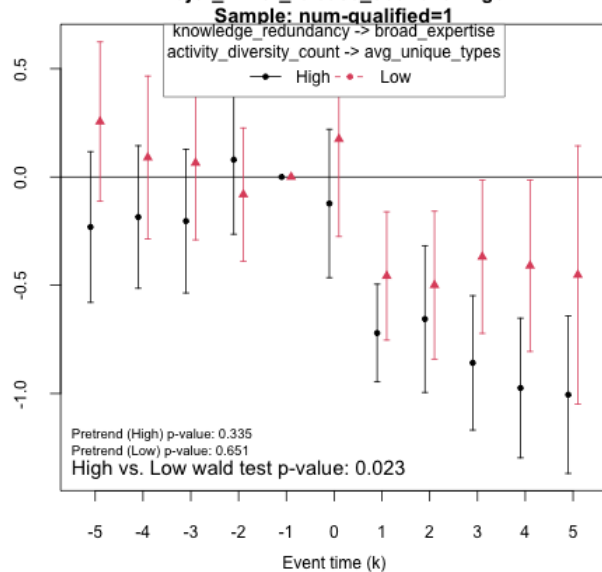
pull\_request\_merged



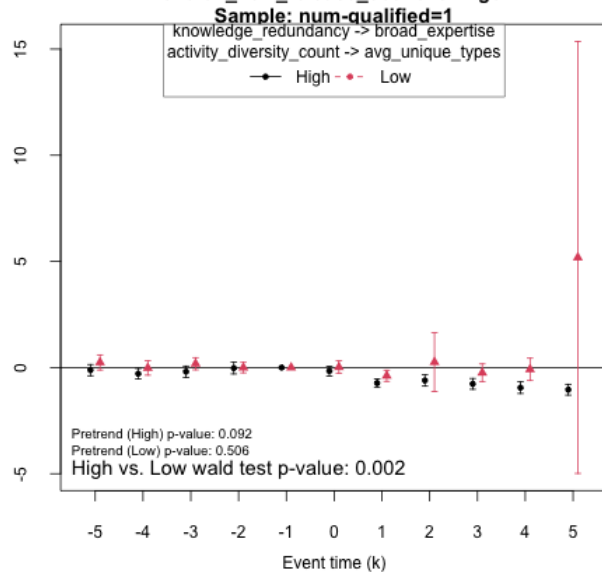
pull\_request\_opened



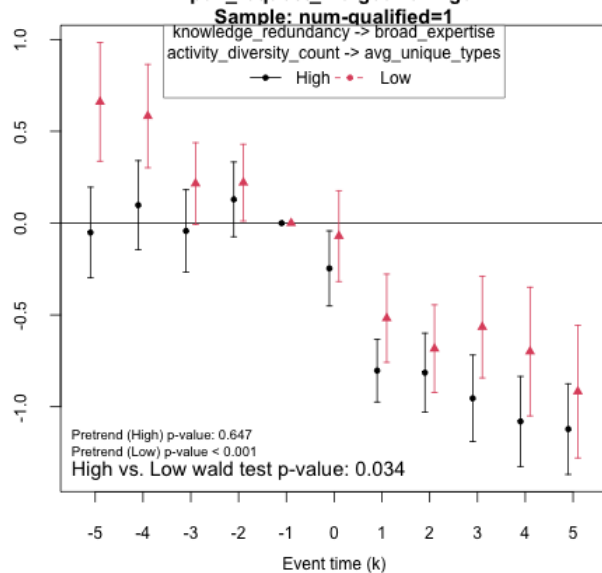
major\_minor\_release\_count rolling5



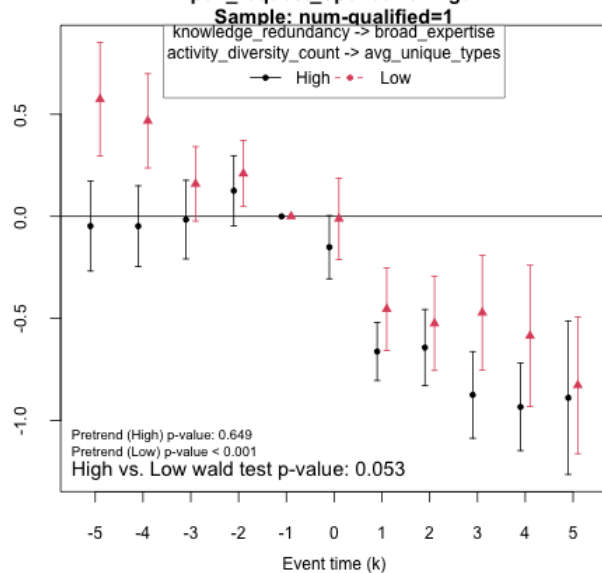
overall\_new\_release\_count rolling5



pull\_request\_merged rolling5



pull\_request\_opened rolling5

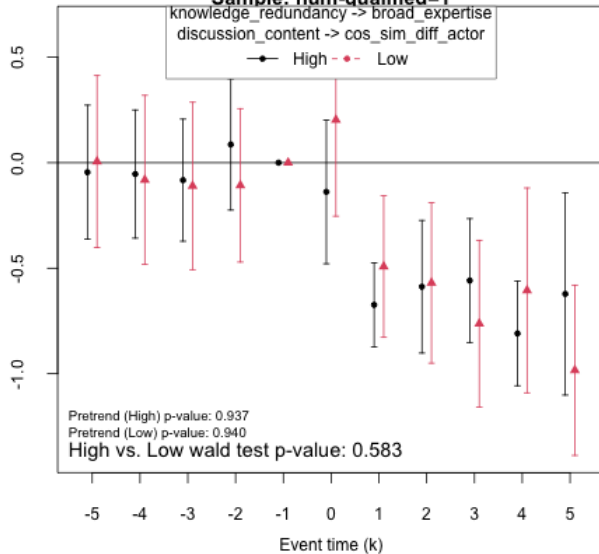


major\_minor\_release\_count rolling5

Sample: num-qualified=1

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

—●— High —●— Low

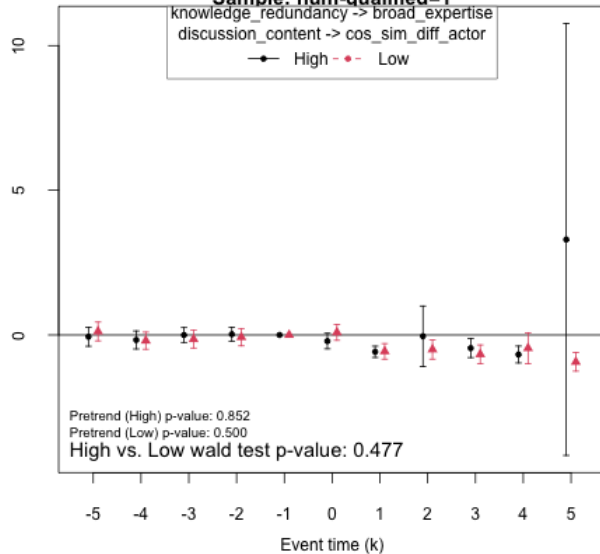


overall\_new\_release\_count rolling5

Sample: num-qualified=1

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

—●— High —●— Low

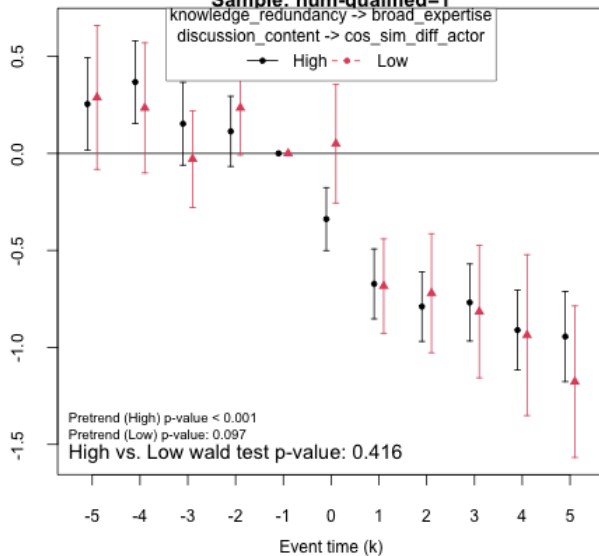


pull\_request\_merged rolling5

Sample: num-qualified=1

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

—●— High —●— Low

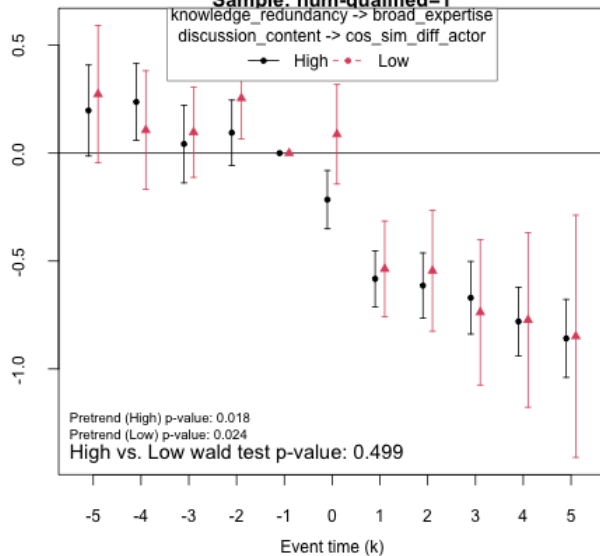


pull\_request\_opened rolling5

Sample: num-qualified=1

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

—●— High —●— Low

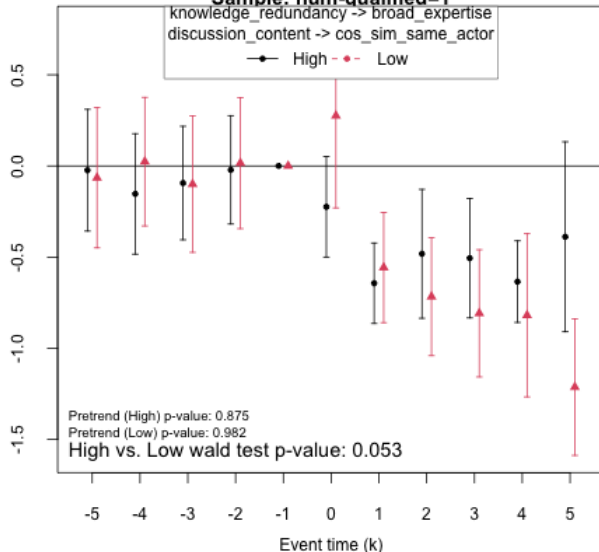


major\_minor\_release\_count rolling5

Sample: num-qualified=1

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

—●— High —●— Low

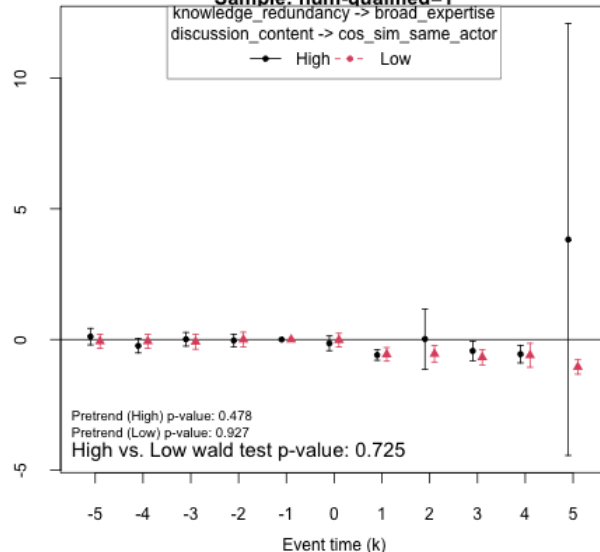


overall\_new\_release\_count rolling5

Sample: num-qualified=1

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

—●— High —●— Low

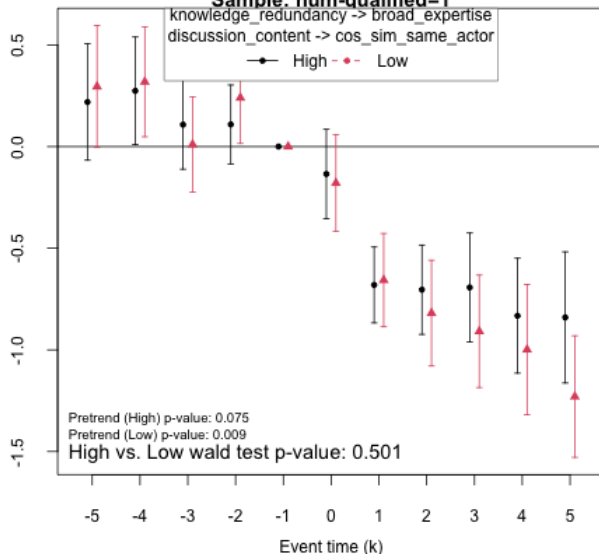


pull\_request\_merged rolling5

Sample: num-qualified=1

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

—●— High —●— Low

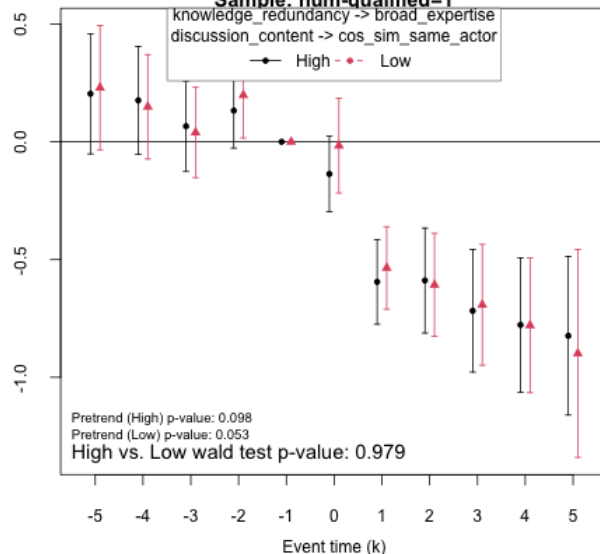


pull\_request\_opened rolling5

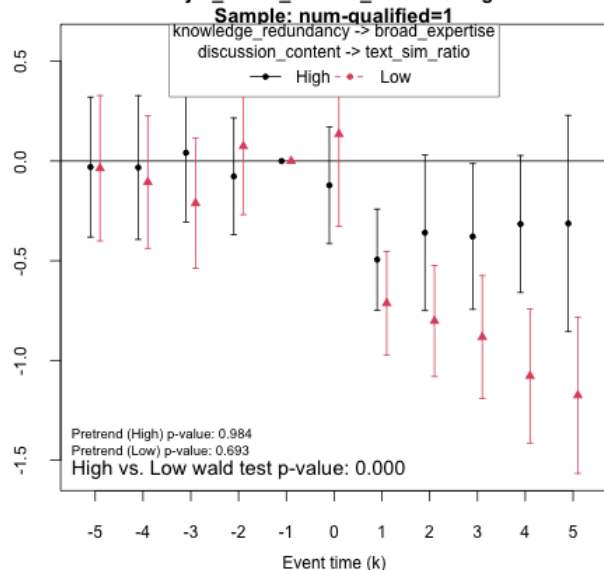
Sample: num-qualified=1

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

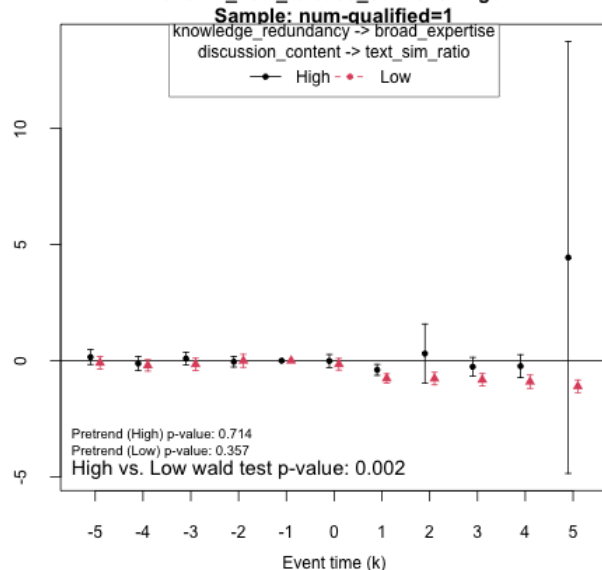
—●— High —●— Low



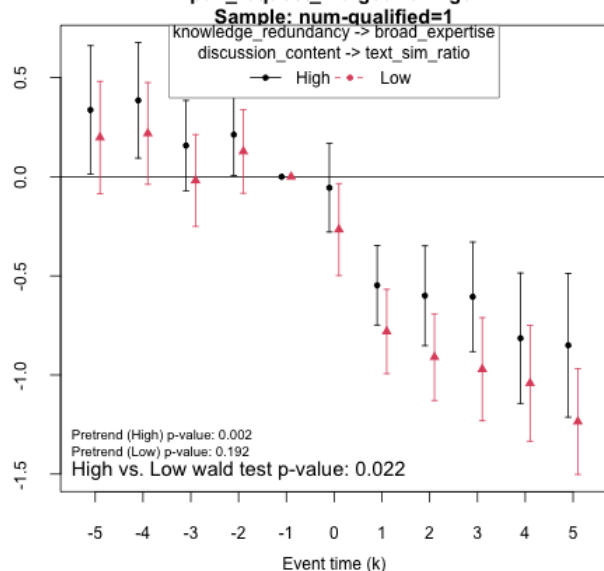
major\_minor\_release\_count rolling5



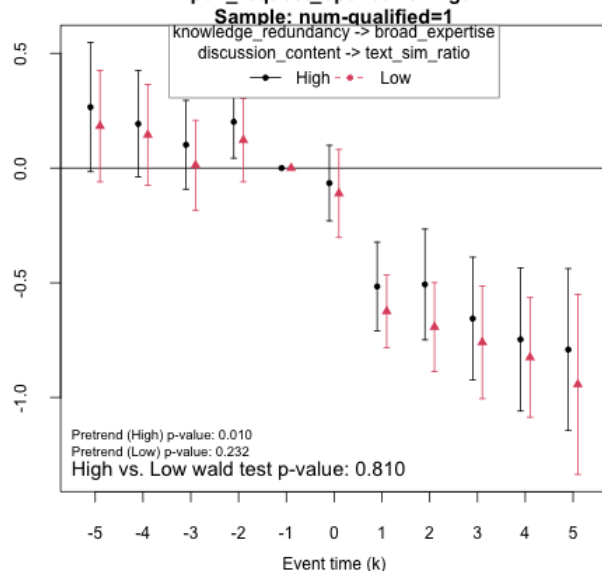
overall\_new\_release\_count rolling5



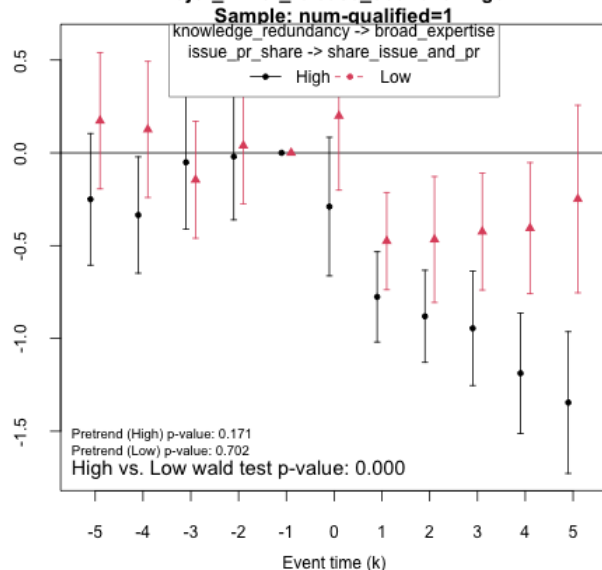
pull\_request\_merged rolling5



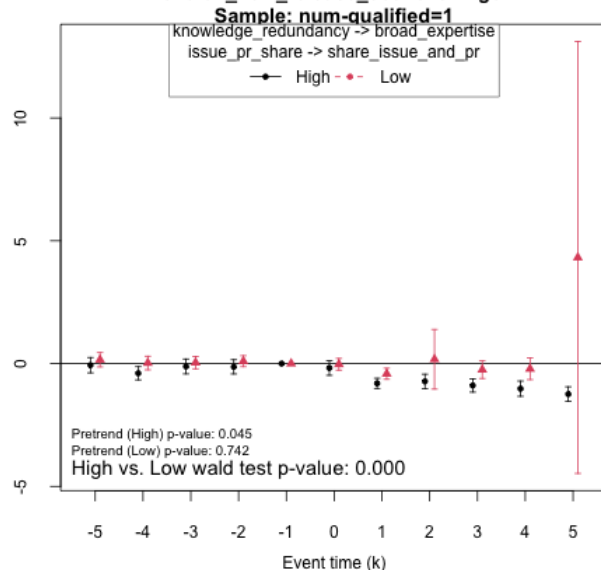
pull\_request\_opened rolling5



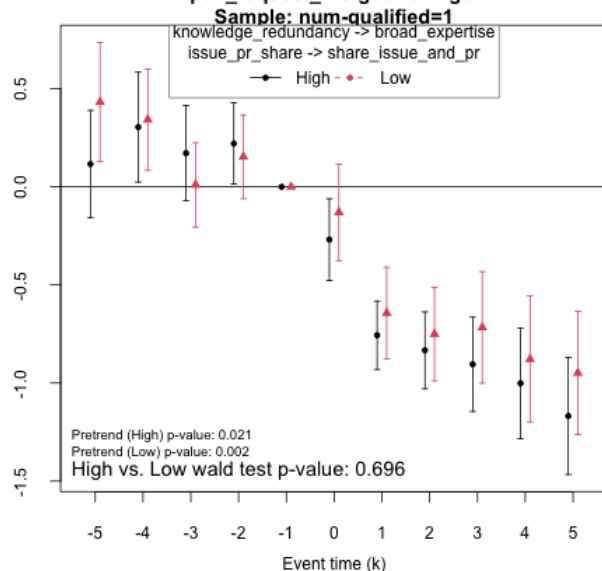
major\_minor\_release\_count rolling5



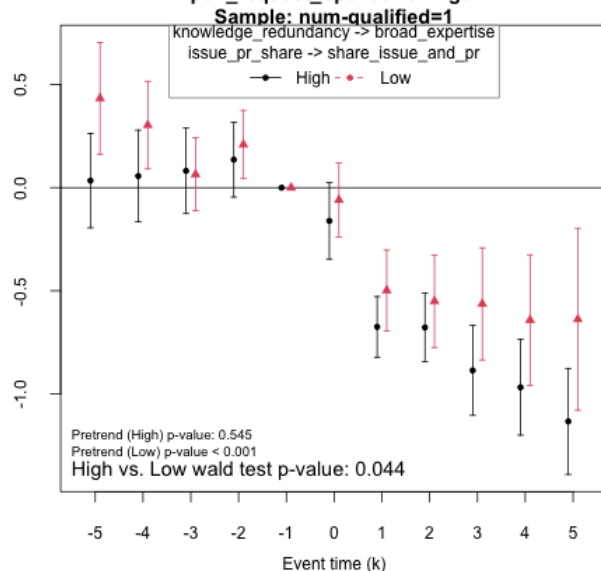
overall\_new\_release\_count rolling5



pull\_request\_merged rolling5



pull\_request\_opened rolling5

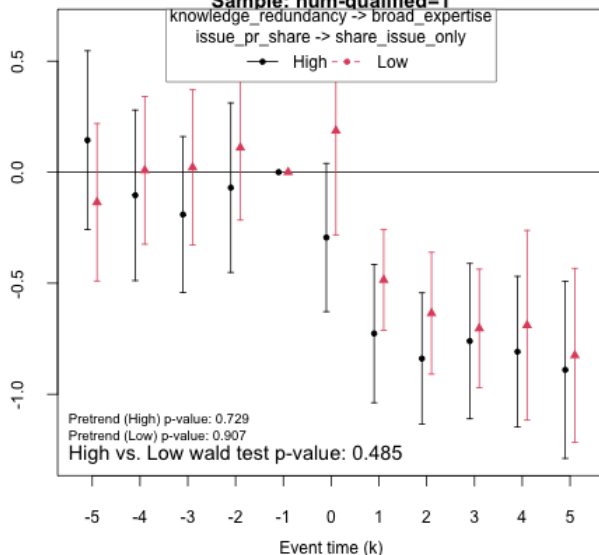


major\_minor\_release\_count rolling5

Sample: num-qualified=1

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

—●— High —●— Low

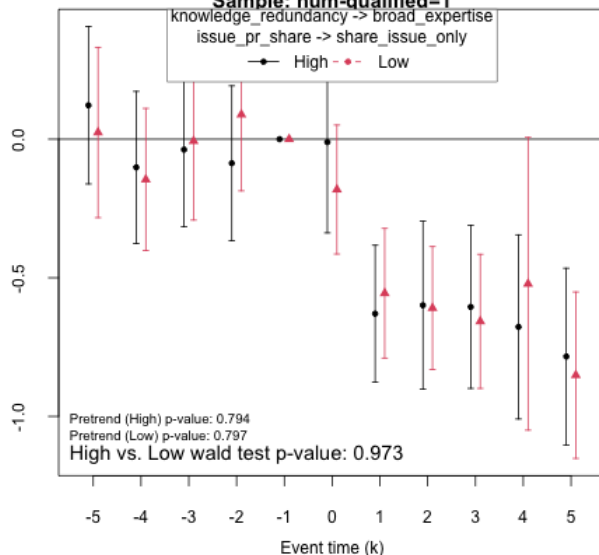


overall\_new\_release\_count rolling5

Sample: num-qualified=1

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

—●— High —●— Low

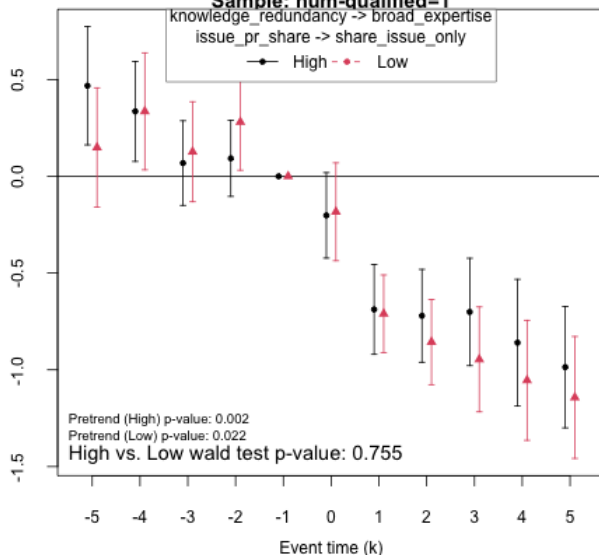


pull\_request\_merged rolling5

Sample: num-qualified=1

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

—●— High —●— Low

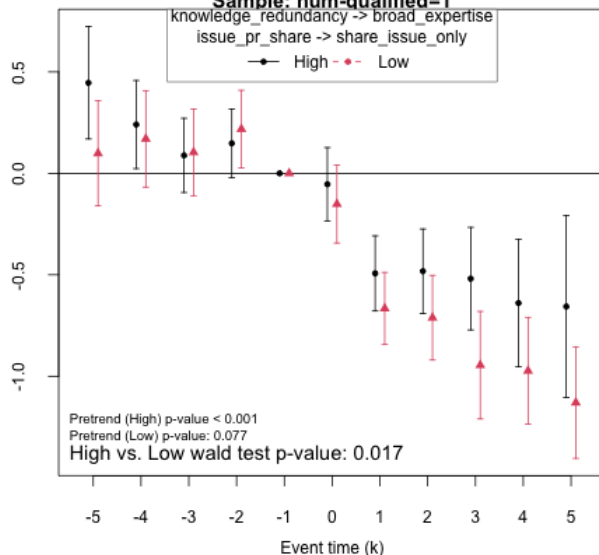


pull\_request\_opened rolling5

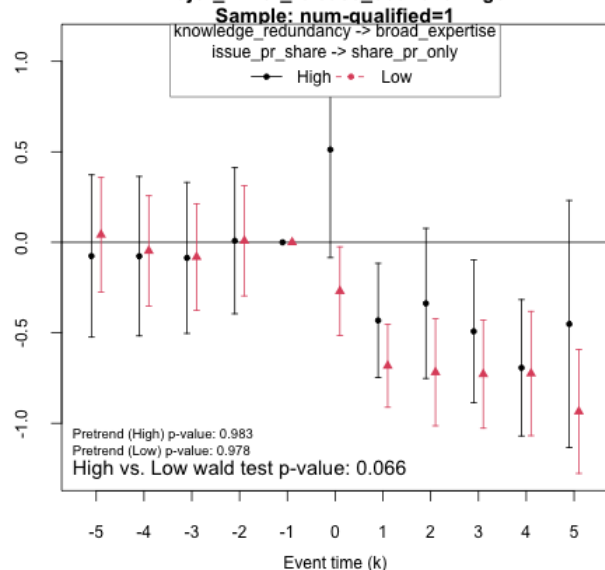
Sample: num-qualified=1

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

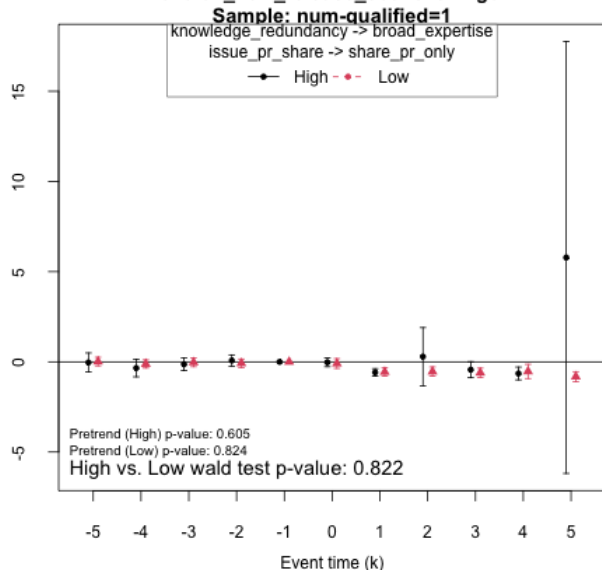
—●— High —●— Low



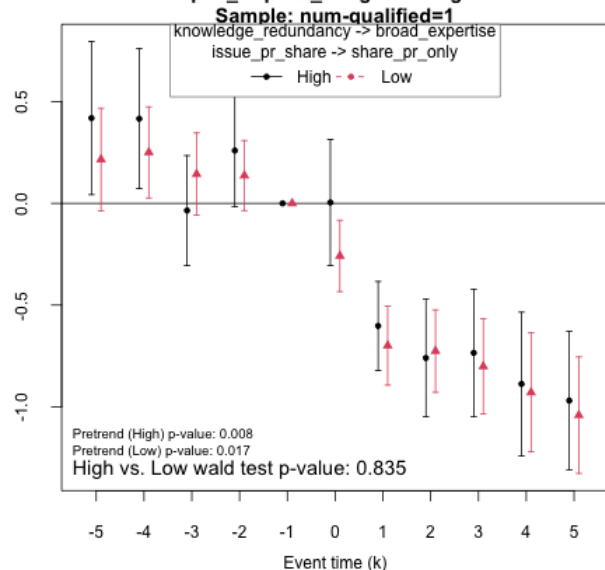
major\_minor\_release\_count rolling5



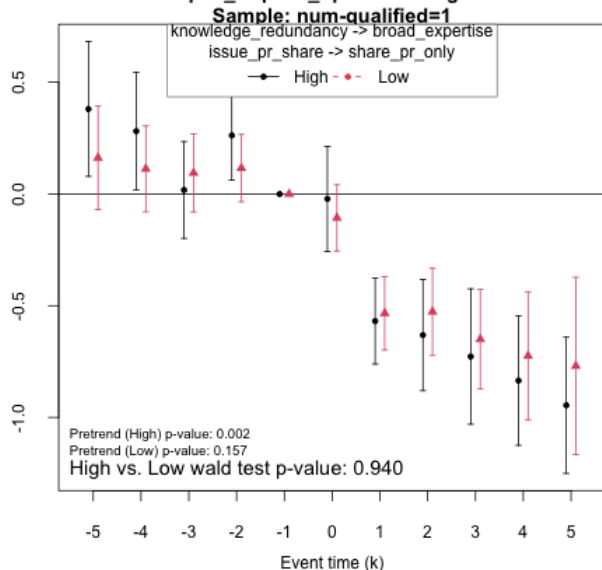
overall\_new\_release\_count rolling5



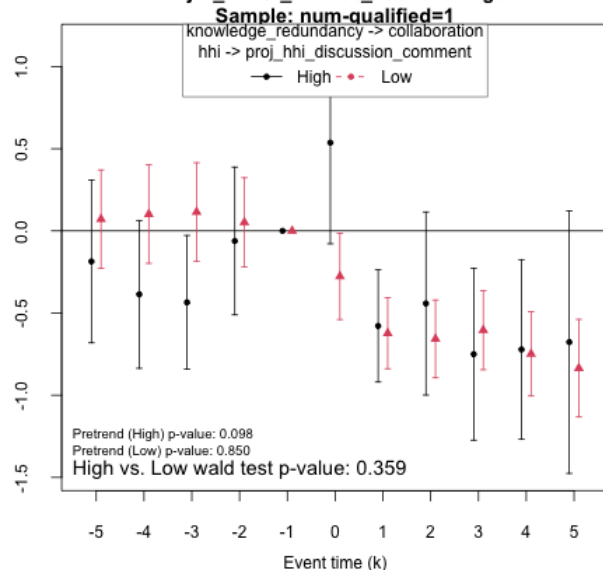
pull\_request\_merged rolling5



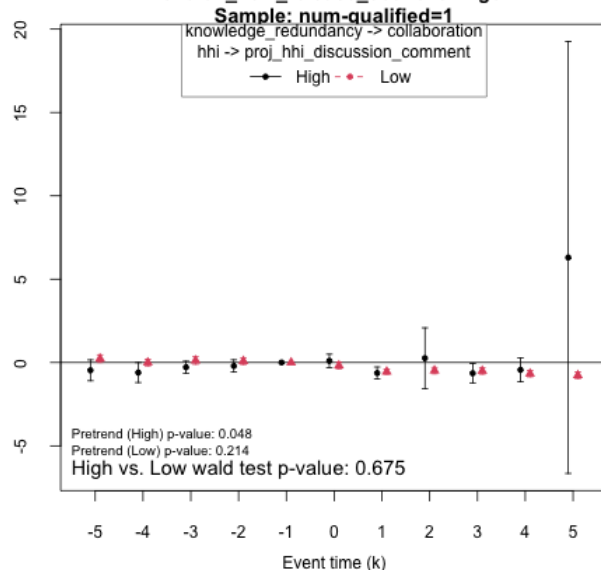
pull\_request\_opened rolling5



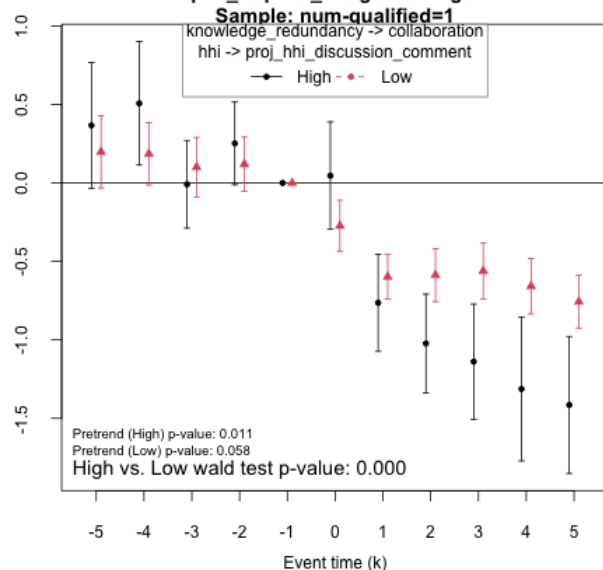
major\_minor\_release\_count rolling5



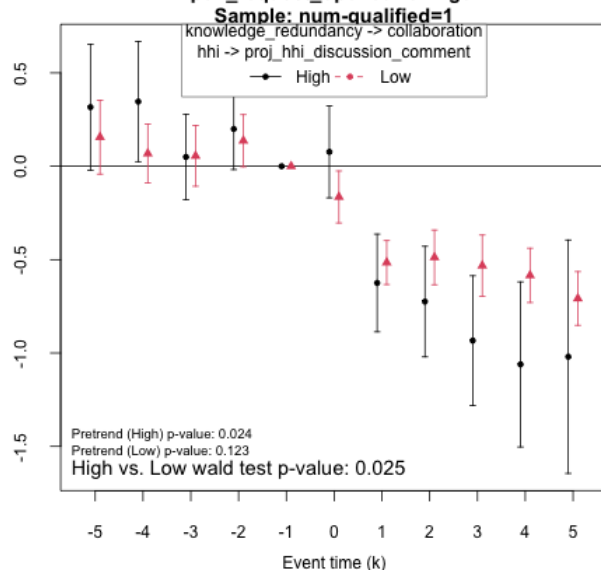
overall\_new\_release\_count rolling5



pull\_request\_merged rolling5



pull\_request\_opened rolling5



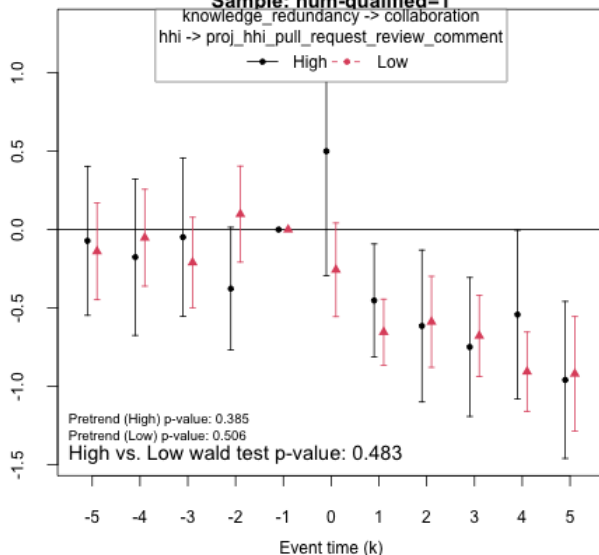
major\_minor\_release\_count rolling5

Sample: num-qualified=1

knowledge\_redundancy -&gt; collaboration

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

—●— High —●— Low



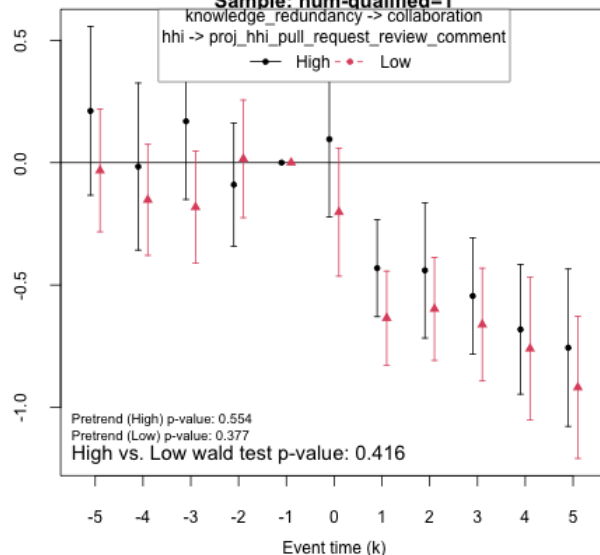
overall\_new\_release\_count rolling5

Sample: num-qualified=1

knowledge\_redundancy -&gt; collaboration

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

—●— High —●— Low



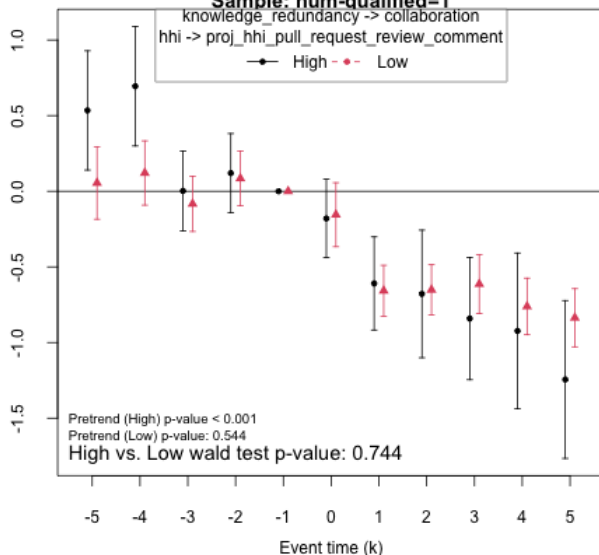
pull\_request\_merged rolling5

Sample: num-qualified=1

knowledge\_redundancy -&gt; collaboration

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

—●— High —●— Low



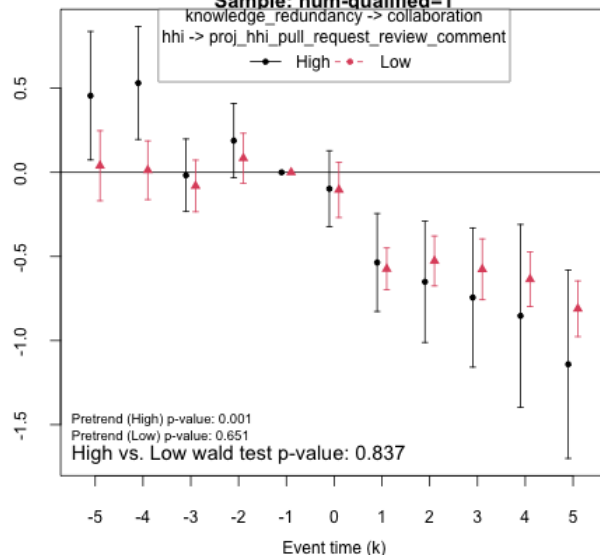
pull\_request\_opened rolling5

Sample: num-qualified=1

knowledge\_redundancy -&gt; collaboration

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

—●— High —●— Low



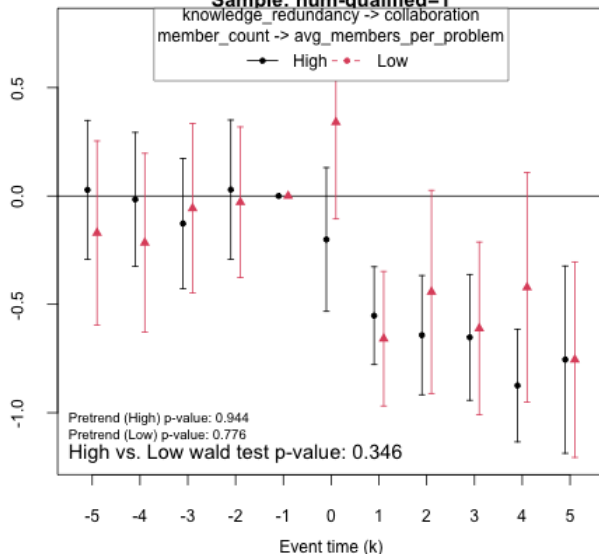
major\_minor\_release\_count rolling5

Sample: num-qualified=1

knowledge\_redundancy -&gt; collaboration

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

—●— High —●— Low



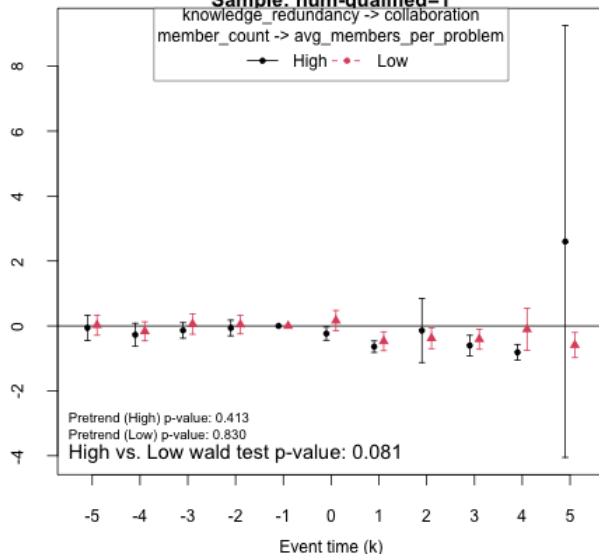
overall\_new\_release\_count rolling5

Sample: num-qualified=1

knowledge\_redundancy -&gt; collaboration

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

—●— High —●— Low



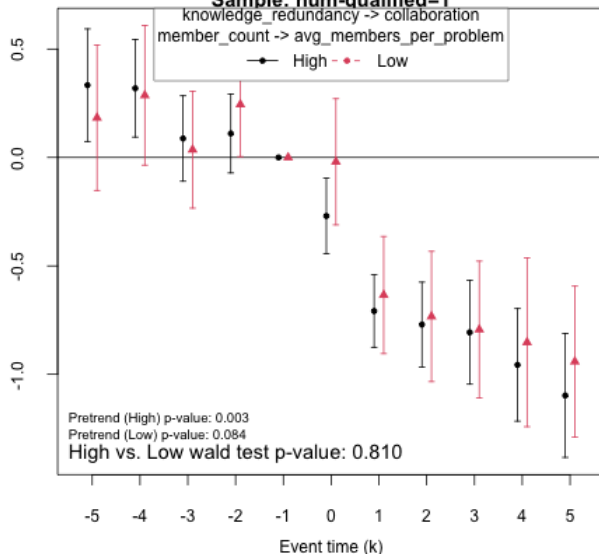
pull\_request\_merged rolling5

Sample: num-qualified=1

knowledge\_redundancy -&gt; collaboration

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

—●— High —●— Low



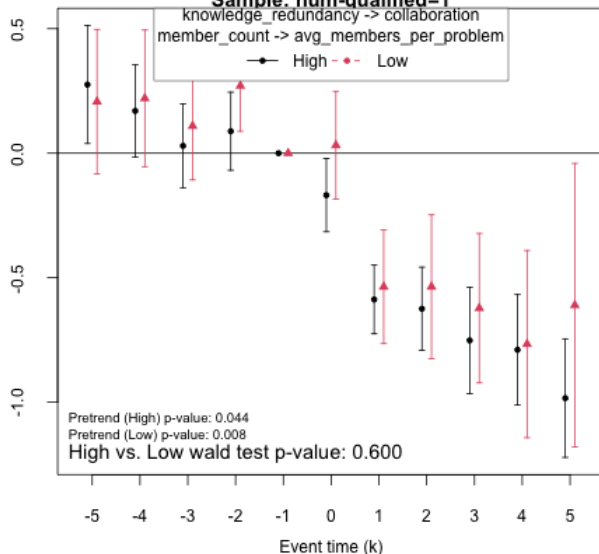
pull\_request\_opened rolling5

Sample: num-qualified=1

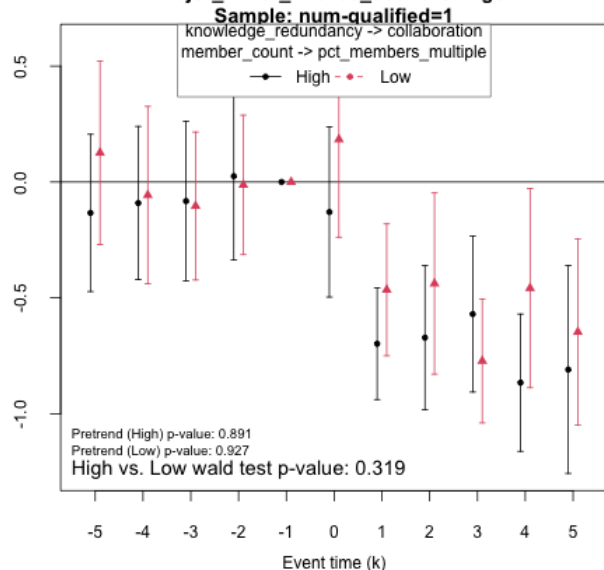
knowledge\_redundancy -&gt; collaboration

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

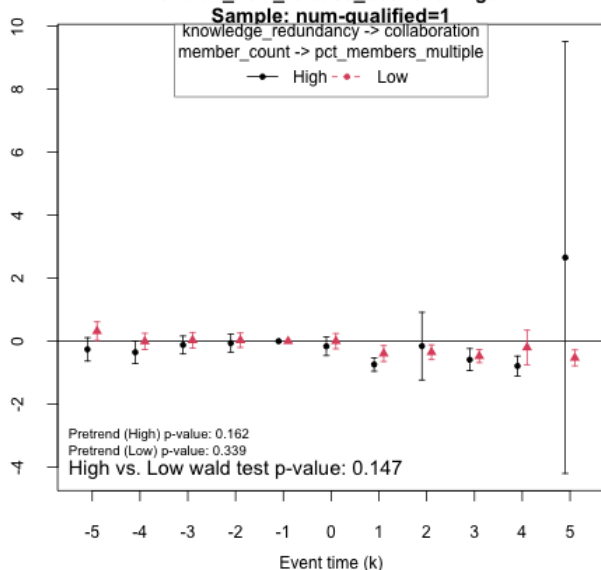
—●— High —●— Low



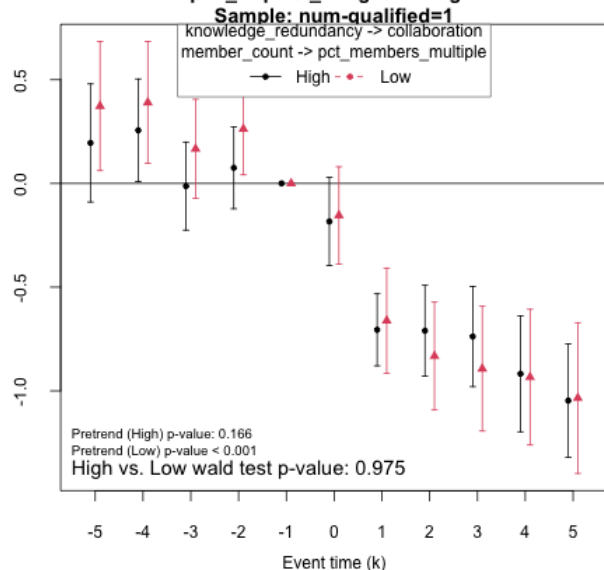
major\_minor\_release\_count rolling5



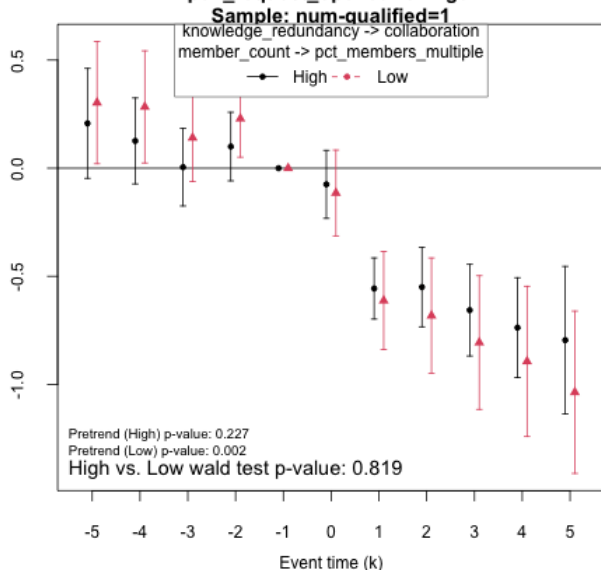
overall\_new\_release\_count rolling5



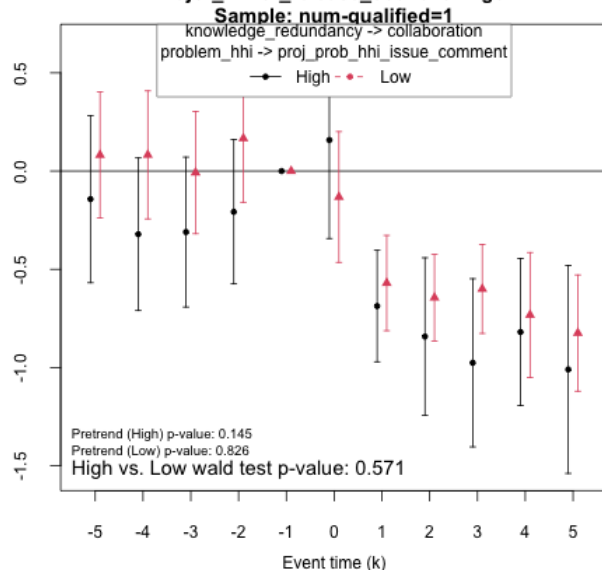
pull\_request\_merged rolling5



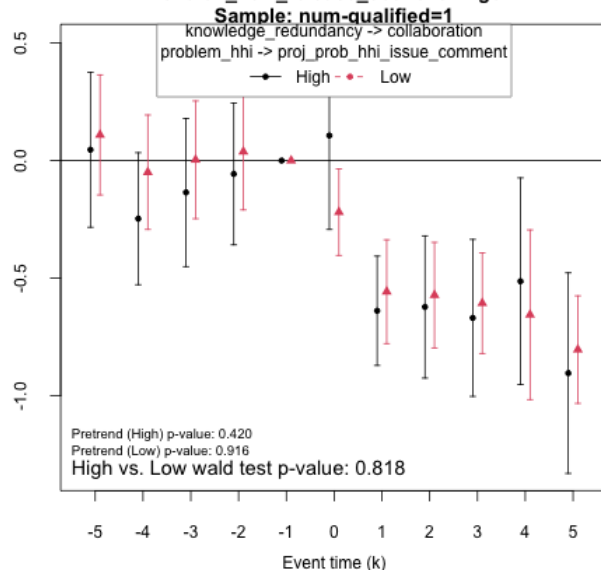
pull\_request\_opened rolling5



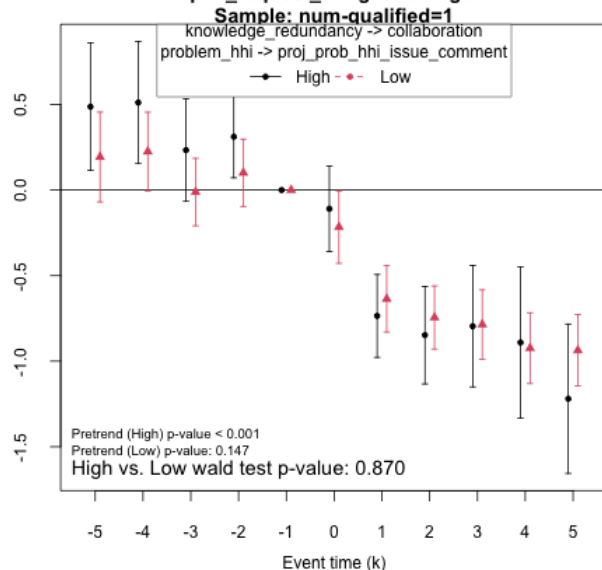
major\_minor\_release\_count rolling5



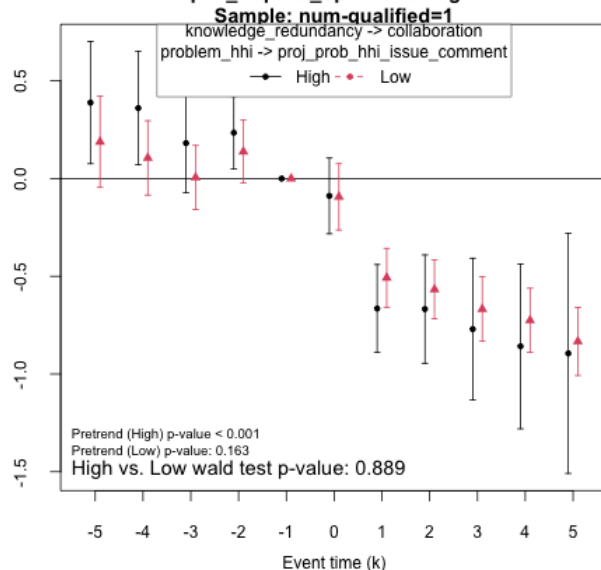
overall\_new\_release\_count rolling5



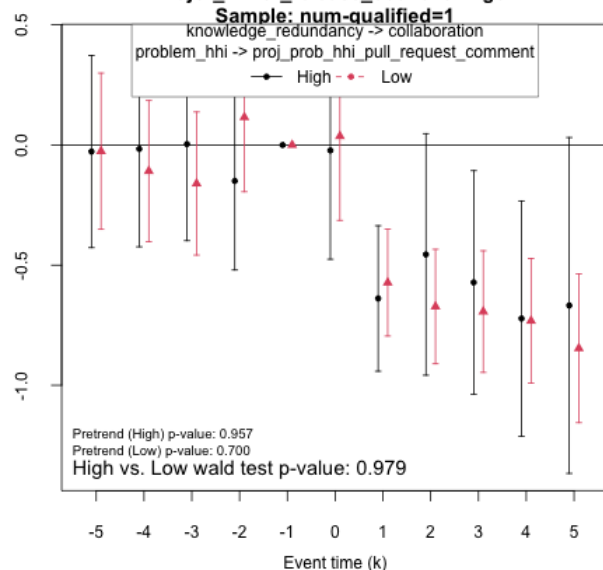
pull\_request\_merged rolling5



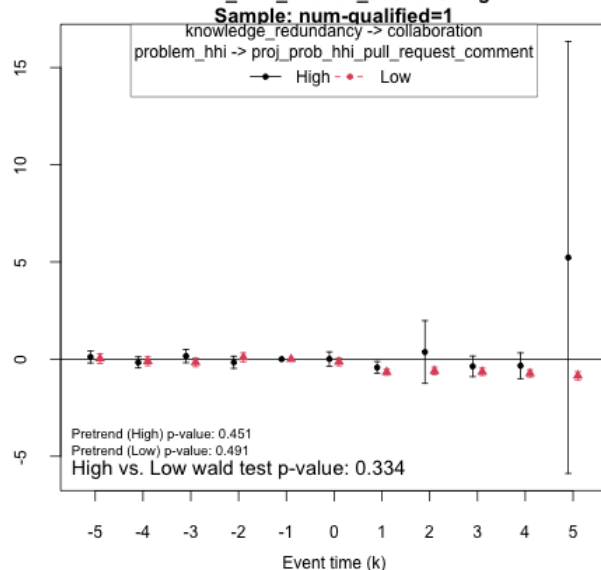
pull\_request\_opened rolling5



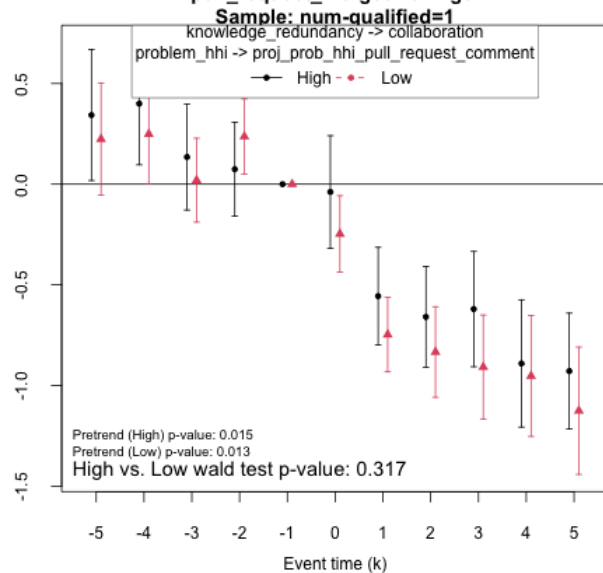
major\_minor\_release\_count rolling5



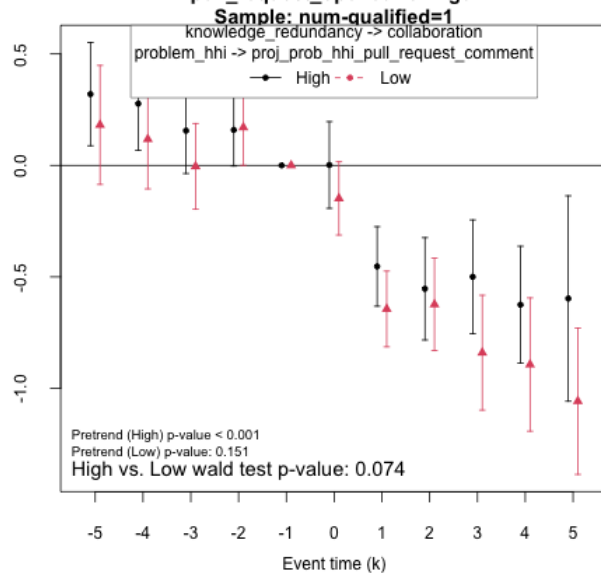
overall\_new\_release\_count rolling5



pull\_request\_merged rolling5



pull\_request\_opened rolling5



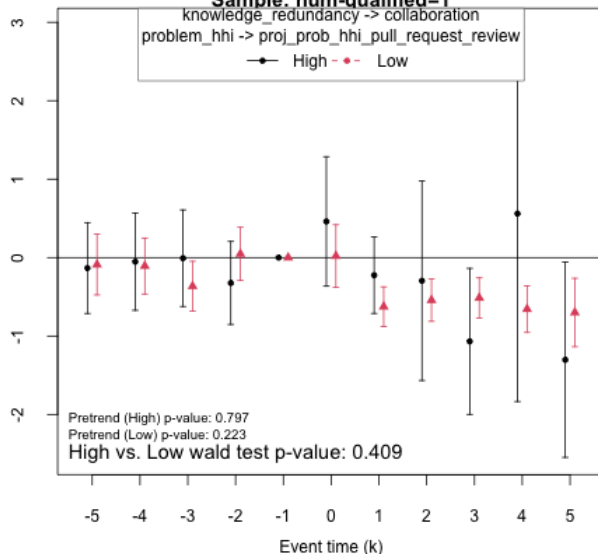
major\_minor\_release\_count rolling5

Sample: num-qualified=1

knowledge\_redundancy -&gt; collaboration

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

● High - ● Low



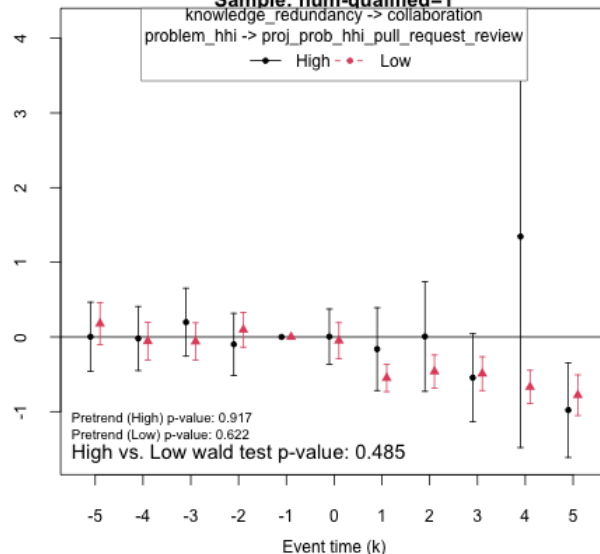
overall\_new\_release\_count rolling5

Sample: num-qualified=1

knowledge\_redundancy -&gt; collaboration

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

● High - ● Low



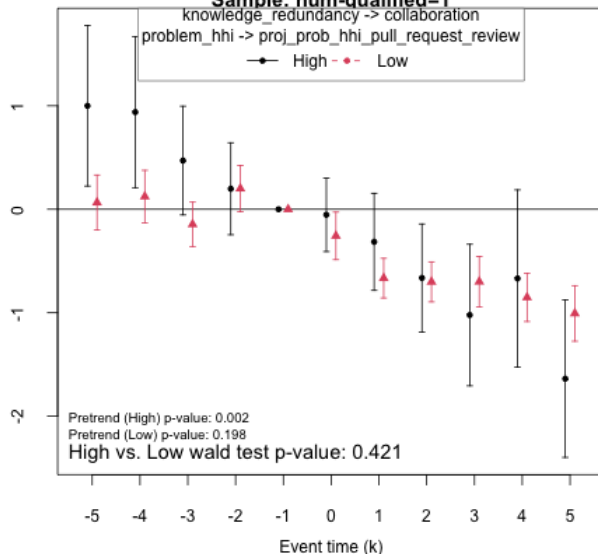
pull\_request\_merged rolling5

Sample: num-qualified=1

knowledge\_redundancy -&gt; collaboration

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

● High - ● Low



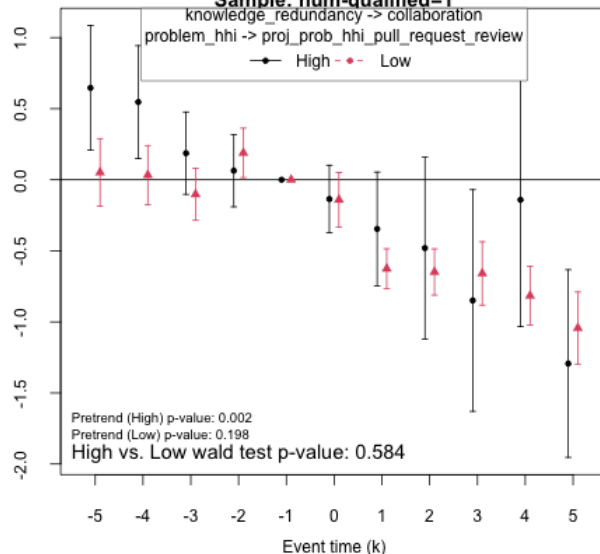
pull\_request\_opened rolling5

Sample: num-qualified=1

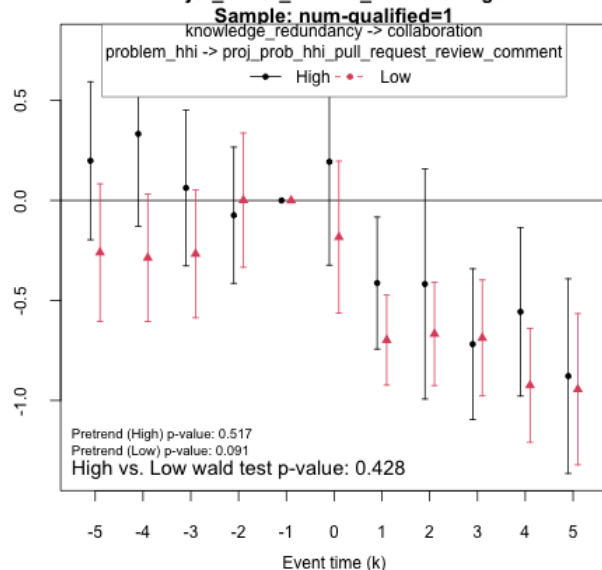
knowledge\_redundancy -&gt; collaboration

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

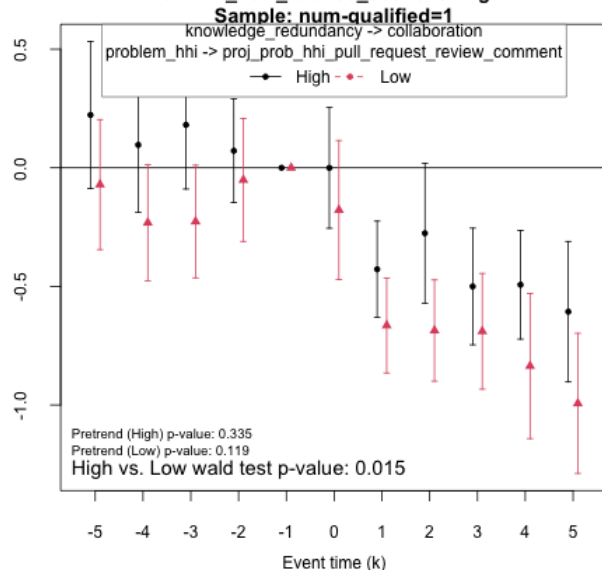
● High - ● Low



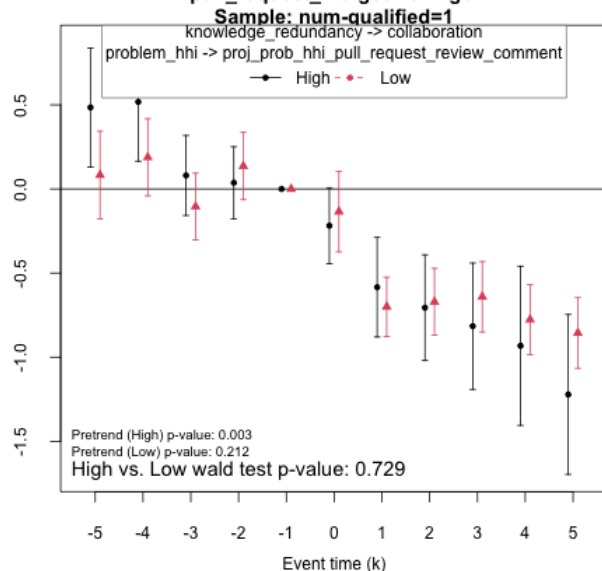
major\_minor\_release\_count rolling5



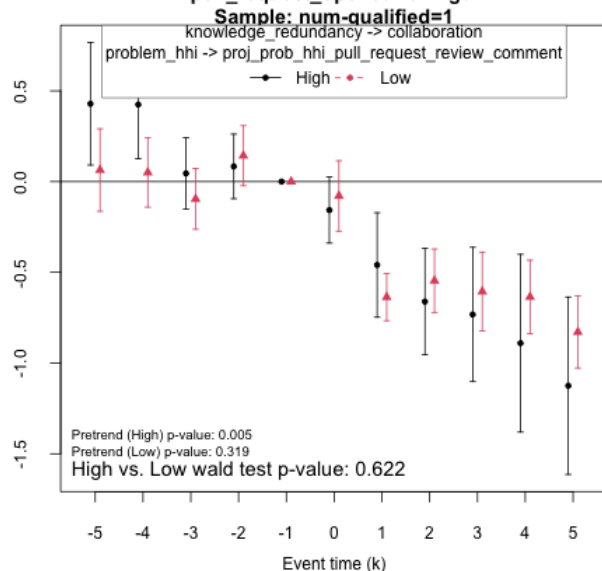
overall\_new\_release\_count rolling5



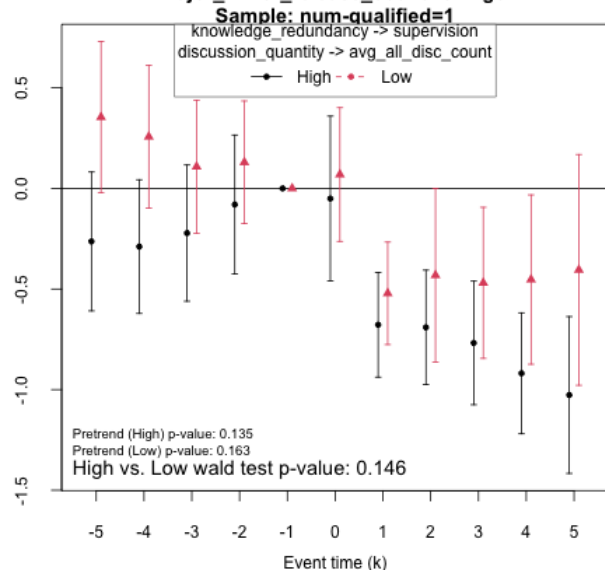
pull\_request\_merged rolling5



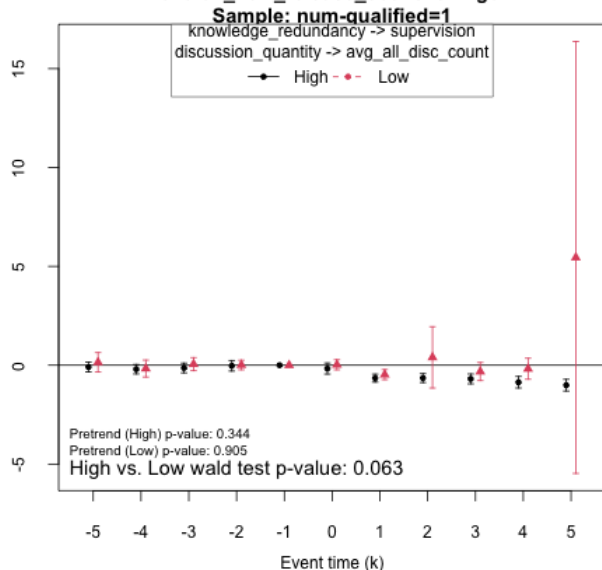
pull\_request\_opened rolling5



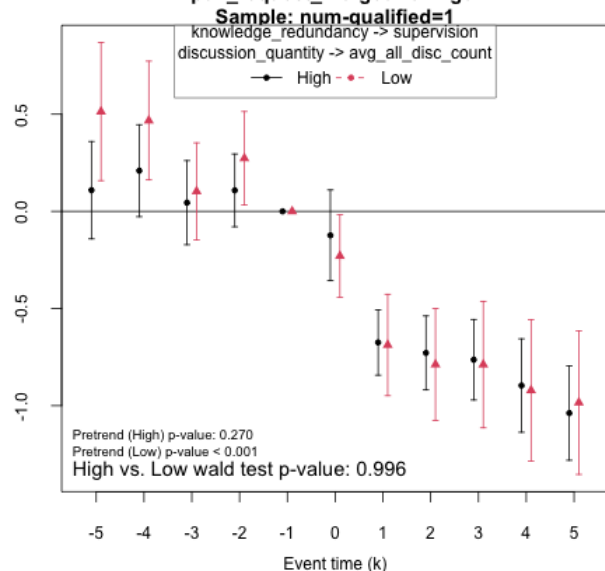
major\_minor\_release\_count rolling5



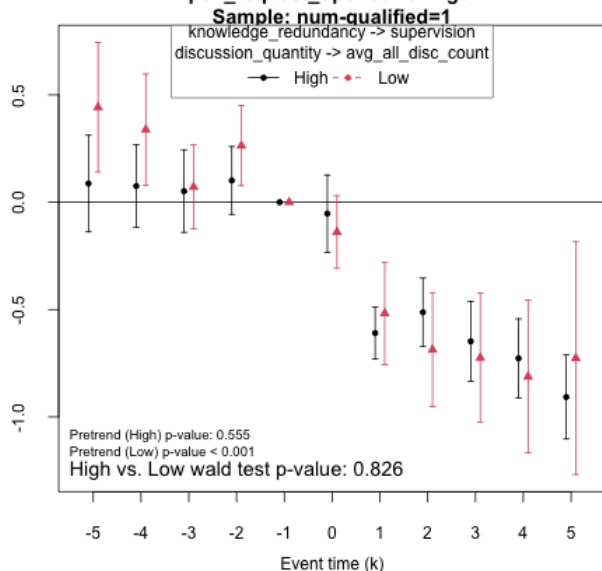
overall\_new\_release\_count rolling5



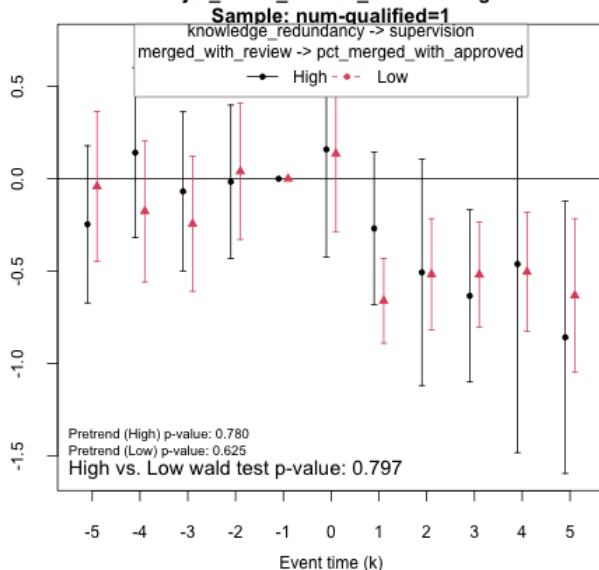
pull\_request\_merged rolling5



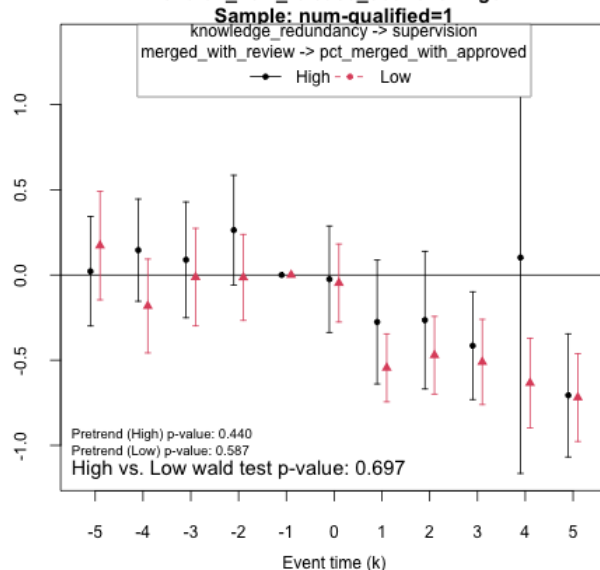
pull\_request\_opened rolling5



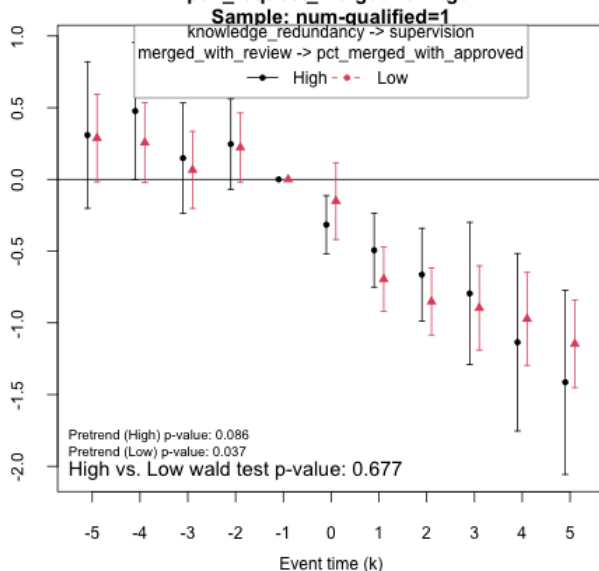
major\_minor\_release\_count rolling5



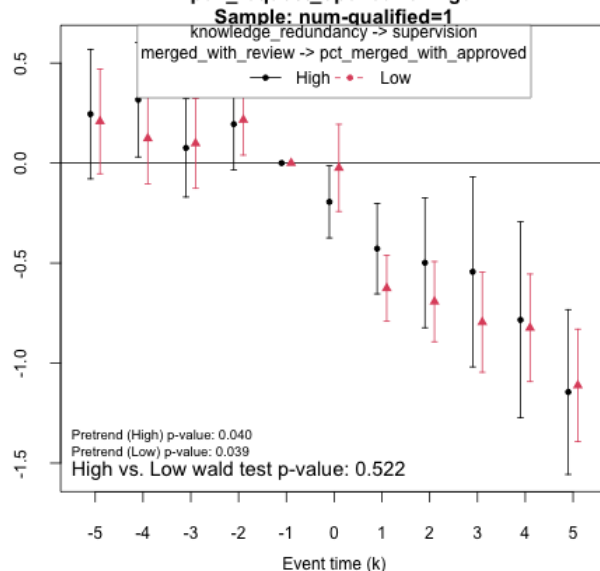
overall\_new\_release\_count rolling5



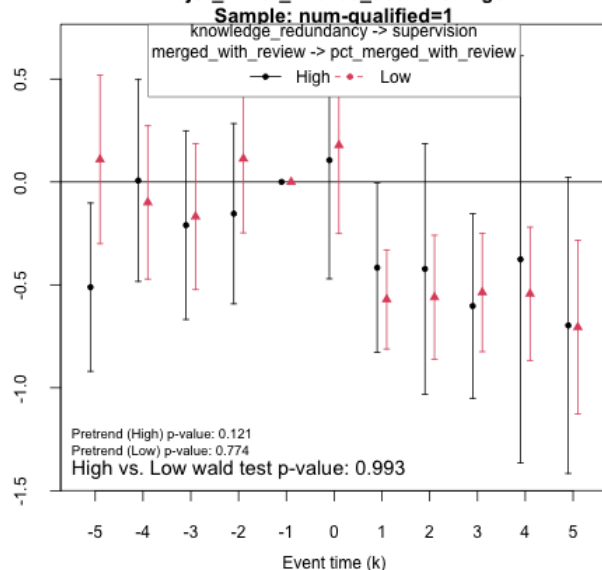
pull\_request\_merged rolling5



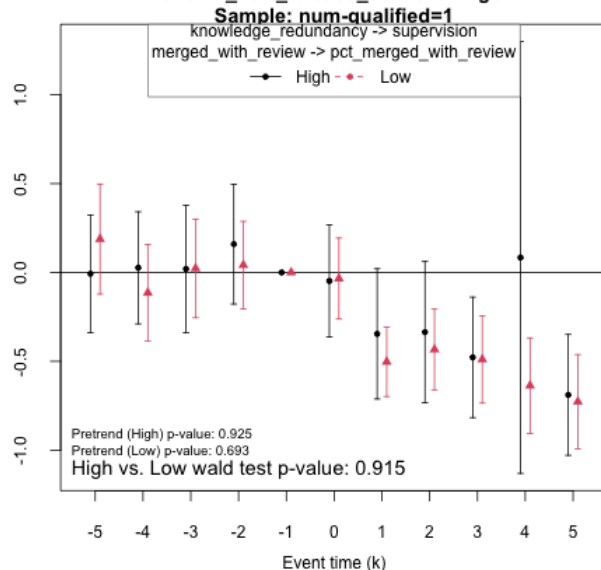
pull\_request\_opened rolling5



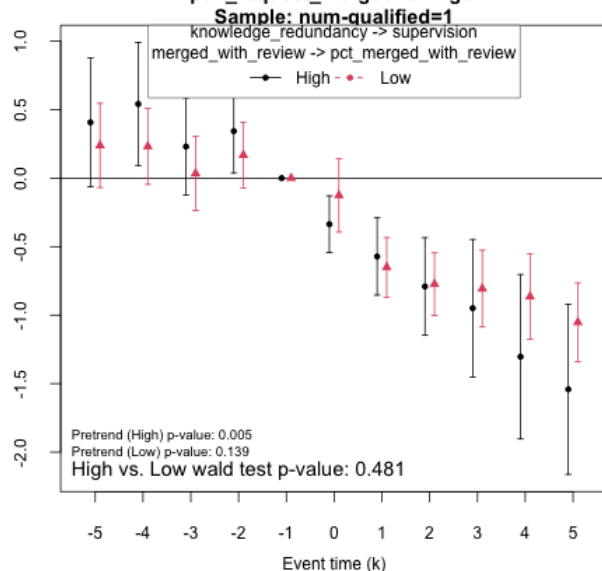
major\_minor\_release\_count rolling5



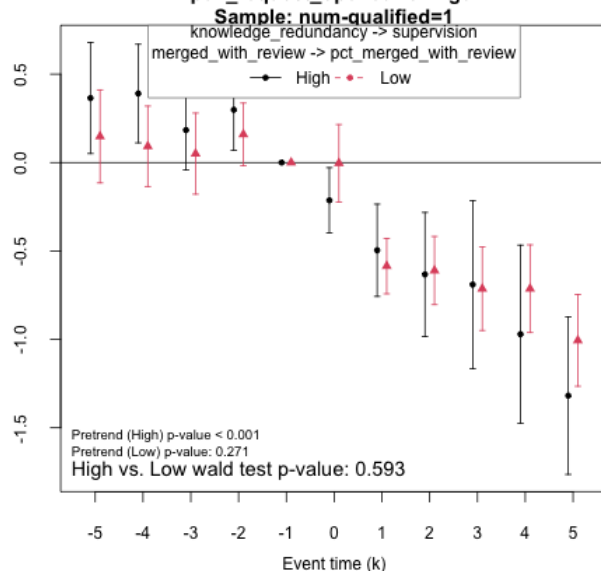
overall\_new\_release\_count rolling5



pull\_request\_merged rolling5



pull\_request\_opened rolling5

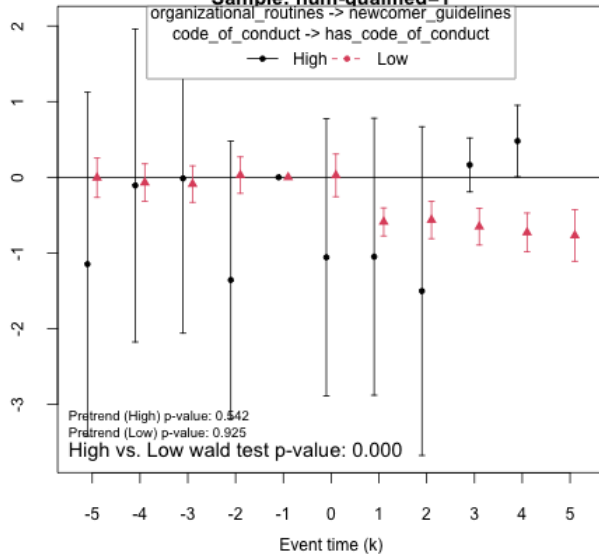


major\_minor\_release\_count rolling5

Sample: num-qualified=1

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

—●— High —●— Low

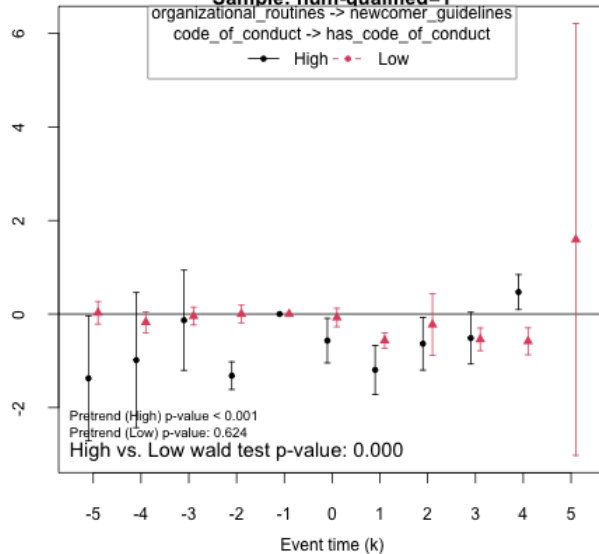


overall\_new\_release\_count rolling5

Sample: num-qualified=1

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

—●— High —●— Low

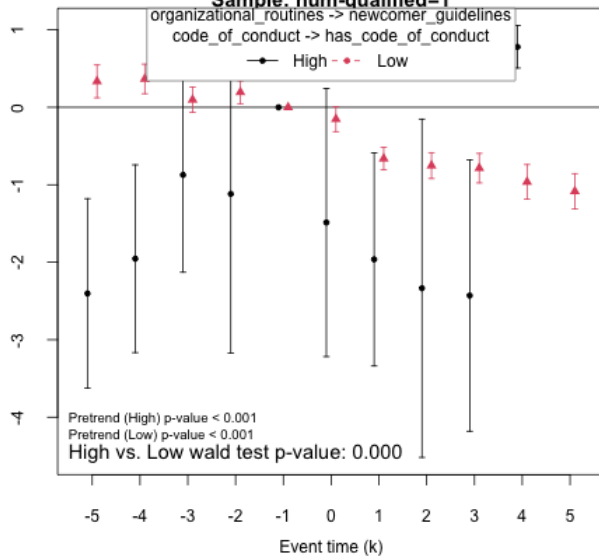


pull\_request\_merged rolling5

Sample: num-qualified=1

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

—●— High —●— Low

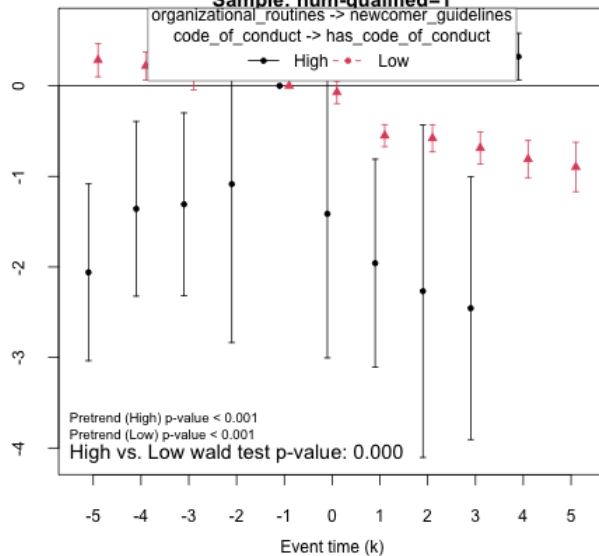


pull\_request\_opened rolling5

Sample: num-qualified=1

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

—●— High —●— Low

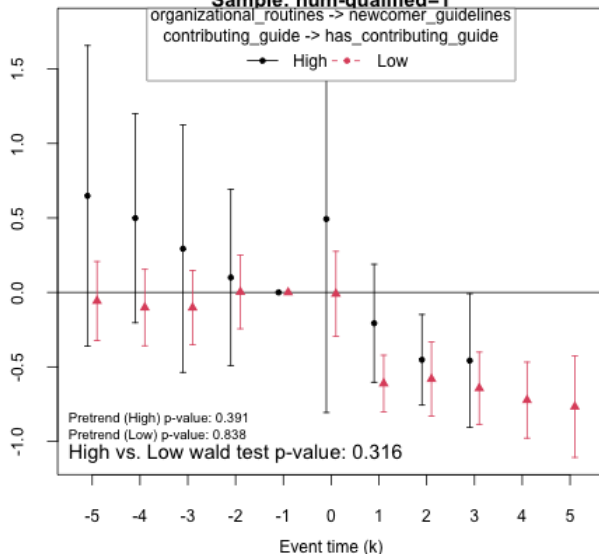


major\_minor\_release\_count rolling5

Sample: num-qualified=1

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

—●— High —●— Low

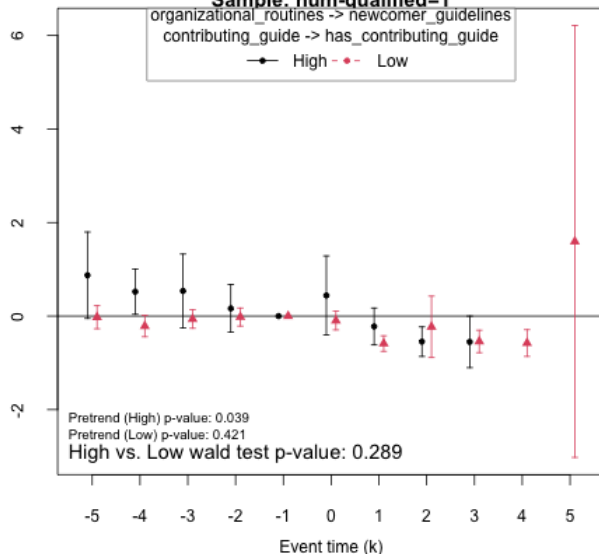


overall\_new\_release\_count rolling5

Sample: num-qualified=1

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

—●— High —●— Low

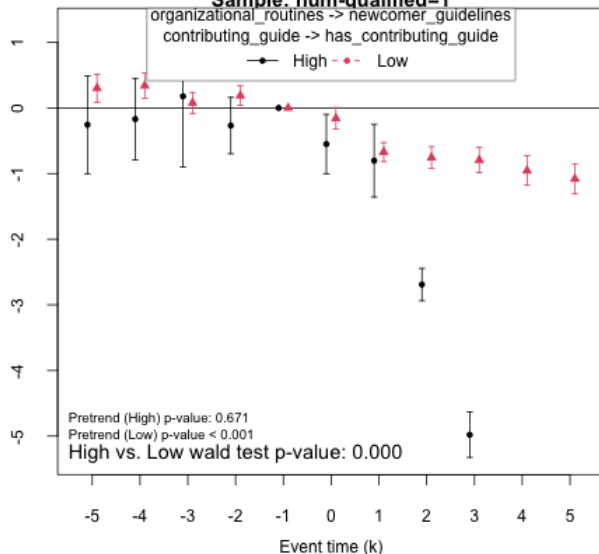


pull\_request\_merged rolling5

Sample: num-qualified=1

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

—●— High —●— Low

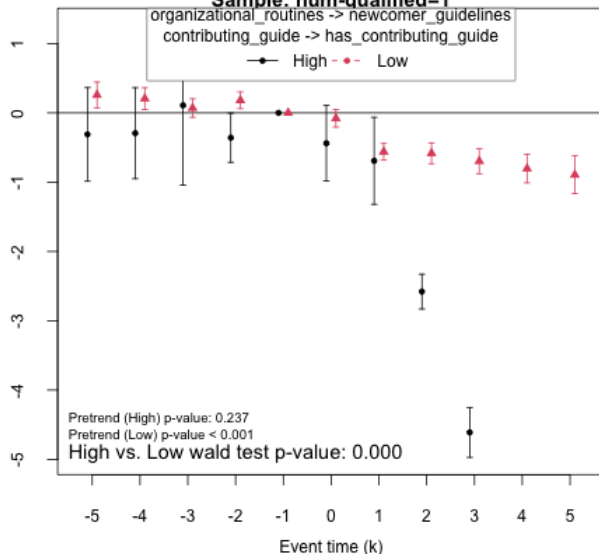


pull\_request\_opened rolling5

Sample: num-qualified=1

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

—●— High —●— Low



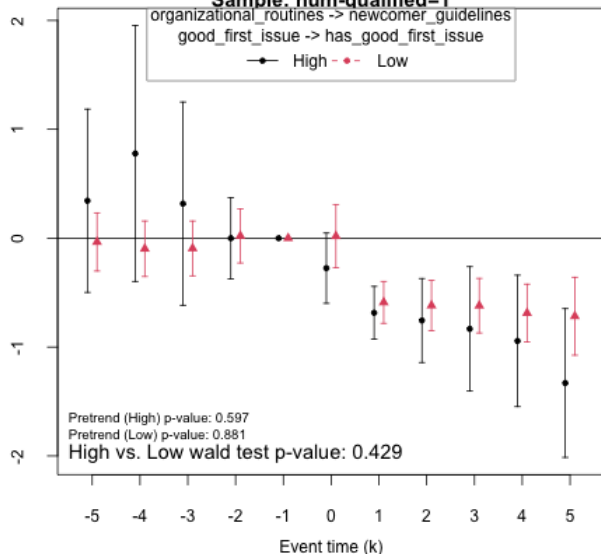
major\_minor\_release\_count rolling5

Sample: num-qualified=1

organizational\_routines -&gt; newcomer\_guidelines

good\_first\_issue -&gt; has\_good\_first\_issue

—●— High —●— Low



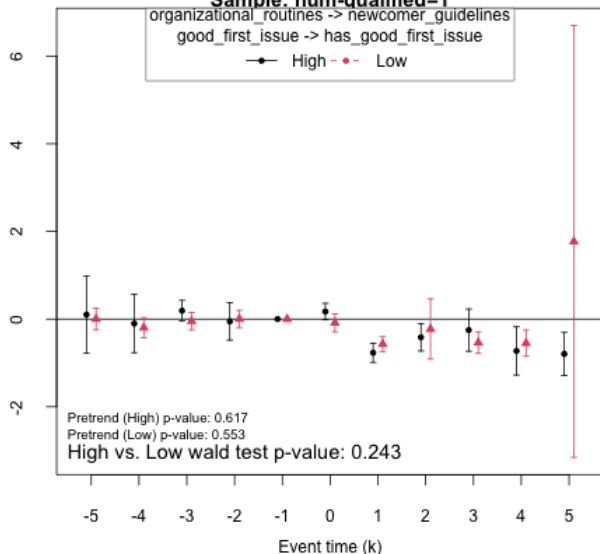
overall\_new\_release\_count rolling5

Sample: num-qualified=1

organizational\_routines -&gt; newcomer\_guidelines

good\_first\_issue -&gt; has\_good\_first\_issue

—●— High —●— Low



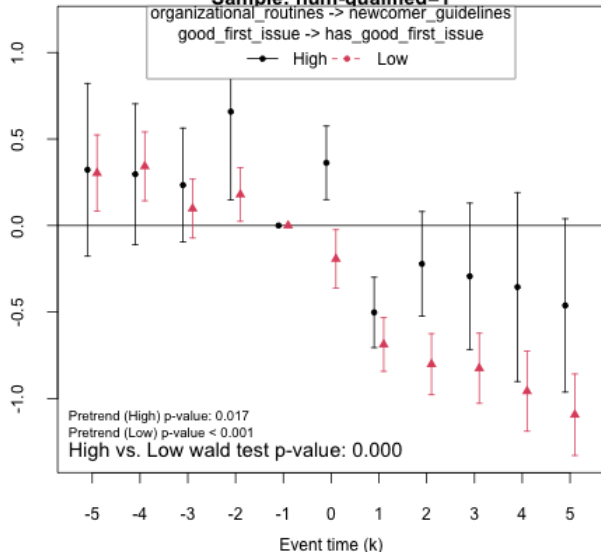
pull\_request\_merged rolling5

Sample: num-qualified=1

organizational\_routines -&gt; newcomer\_guidelines

good\_first\_issue -&gt; has\_good\_first\_issue

—●— High —●— Low



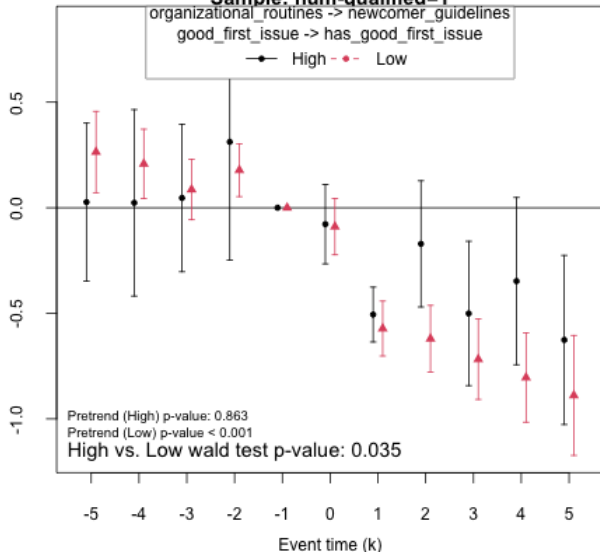
pull\_request\_opened rolling5

Sample: num-qualified=1

organizational\_routines -&gt; newcomer\_guidelines

good\_first\_issue -&gt; has\_good\_first\_issue

—●— High —●— Low

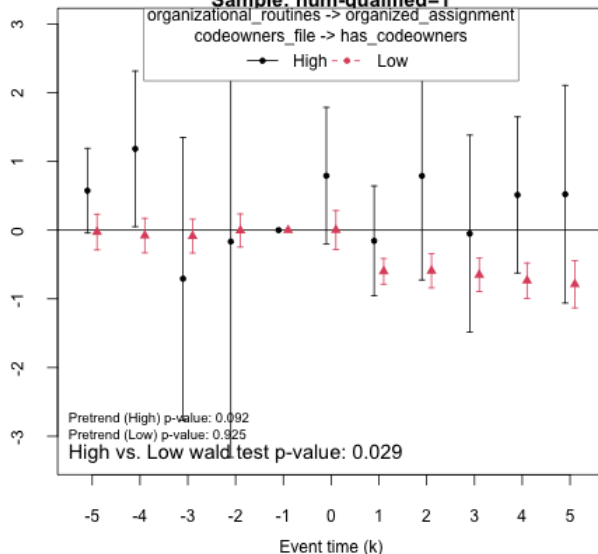


major\_minor\_release\_count rolling5

Sample: num-qualified=1

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

—●— High —●— Low

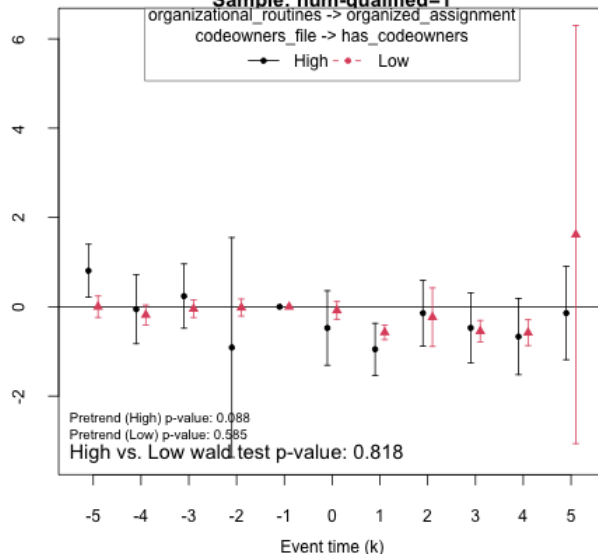


overall\_new\_release\_count rolling5

Sample: num-qualified=1

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

—●— High —●— Low

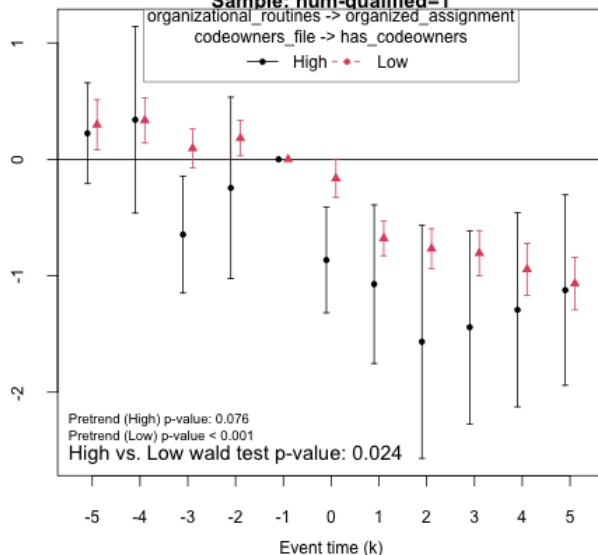


pull\_request\_merged rolling5

Sample: num-qualified=1

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

—●— High —●— Low

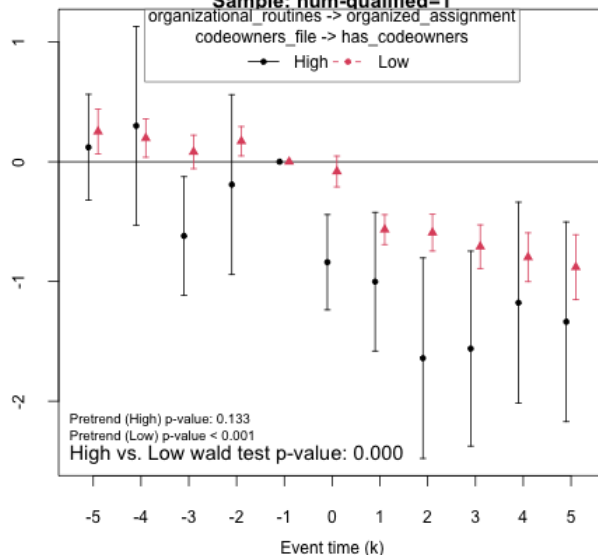


pull\_request\_opened rolling5

Sample: num-qualified=1

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

—●— High —●— Low

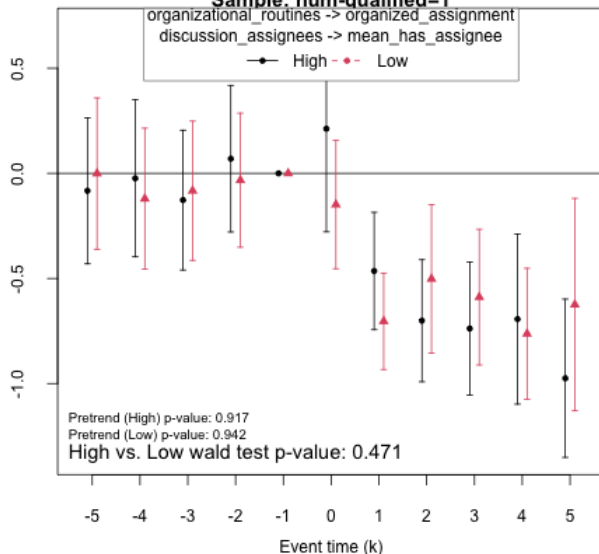


major\_minor\_release\_count rolling5

Sample: num-qualified=1

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

—●— High —●— Low

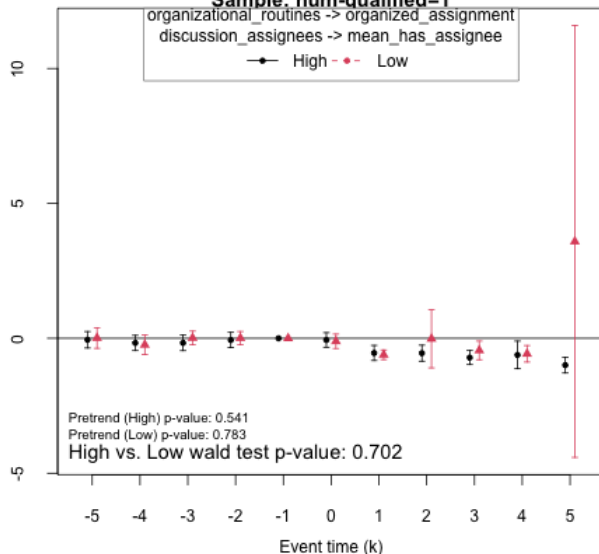


overall\_new\_release\_count rolling5

Sample: num-qualified=1

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

—●— High —●— Low

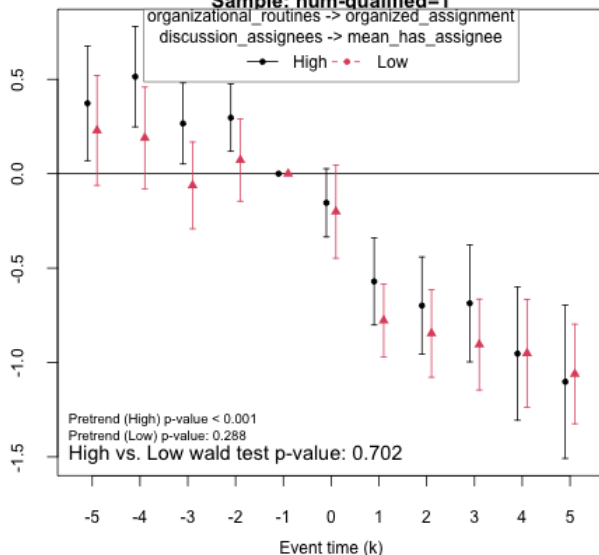


pull\_request\_merged rolling5

Sample: num-qualified=1

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

—●— High —●— Low

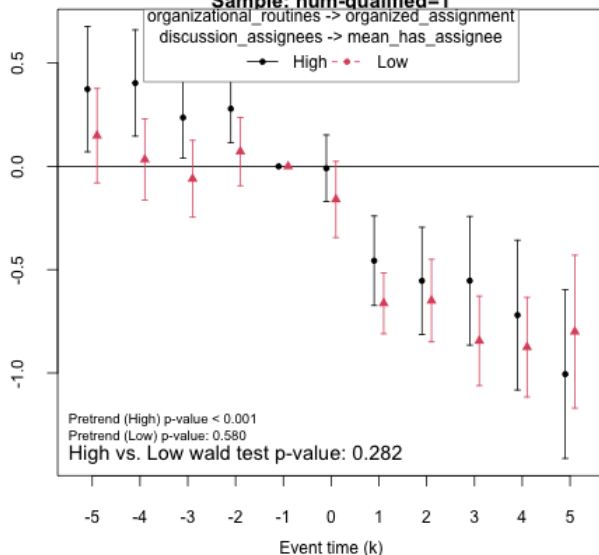


pull\_request\_opened rolling5

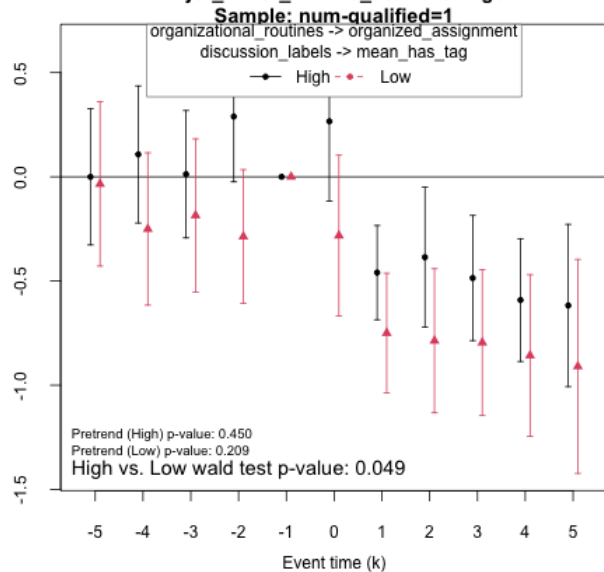
Sample: num-qualified=1

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

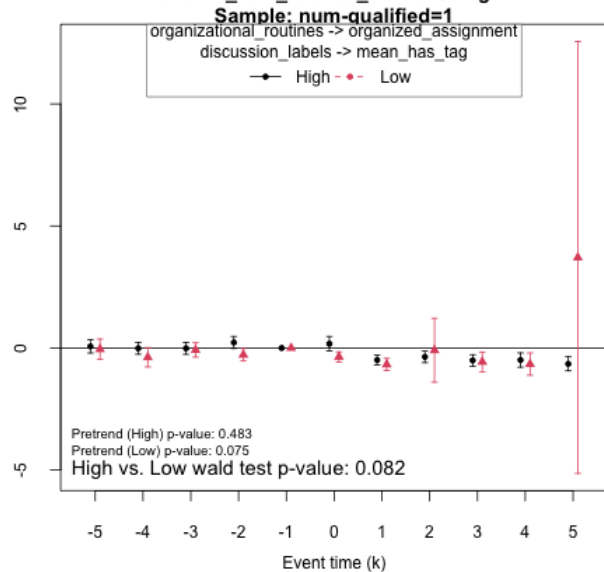
—●— High —●— Low



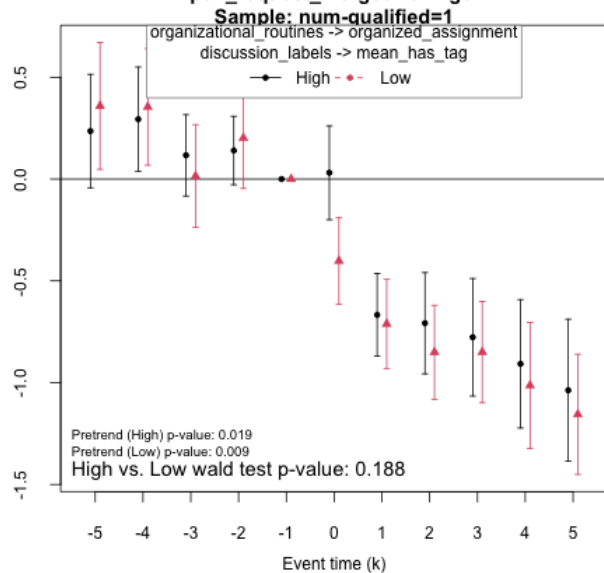
major\_minor\_release\_count rolling5



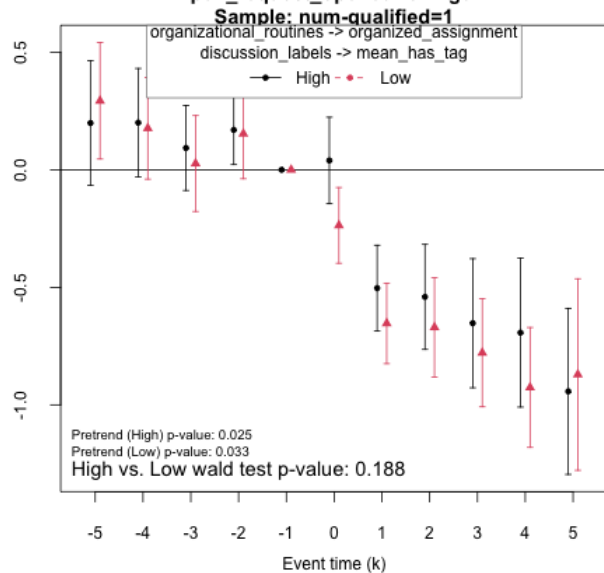
overall\_new\_release\_count rolling5



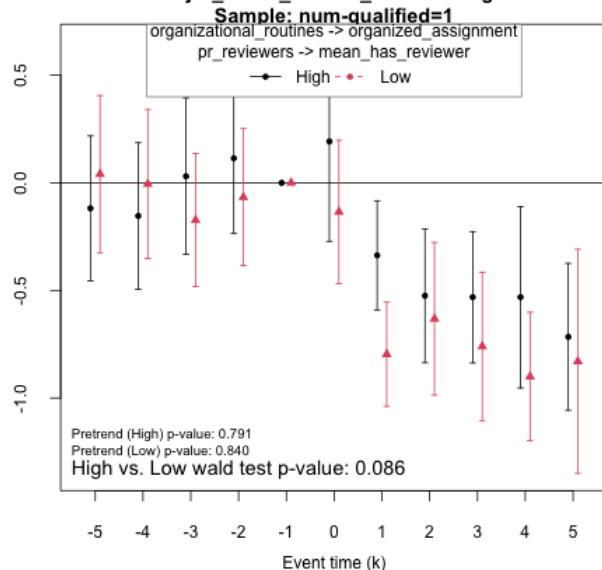
pull\_request\_merged rolling5



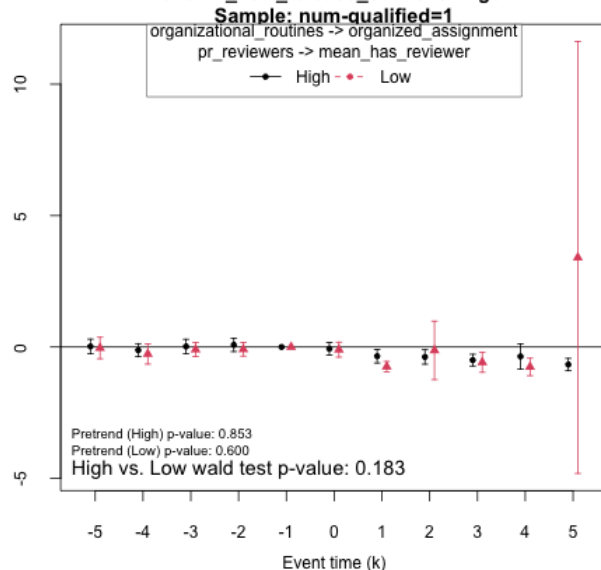
pull\_request\_opened rolling5



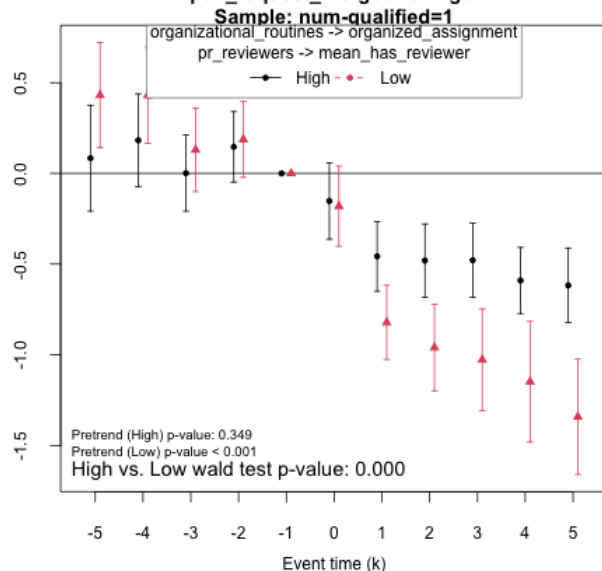
major\_minor\_release\_count rolling5



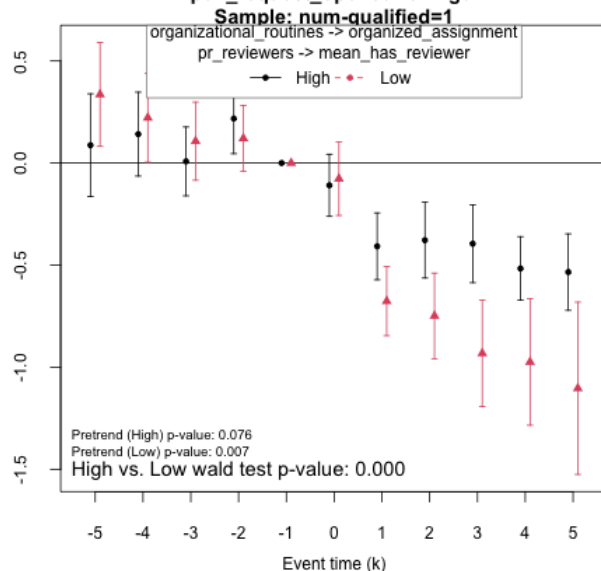
overall\_new\_release\_count rolling5



pull\_request\_merged rolling5



pull\_request\_opened rolling5

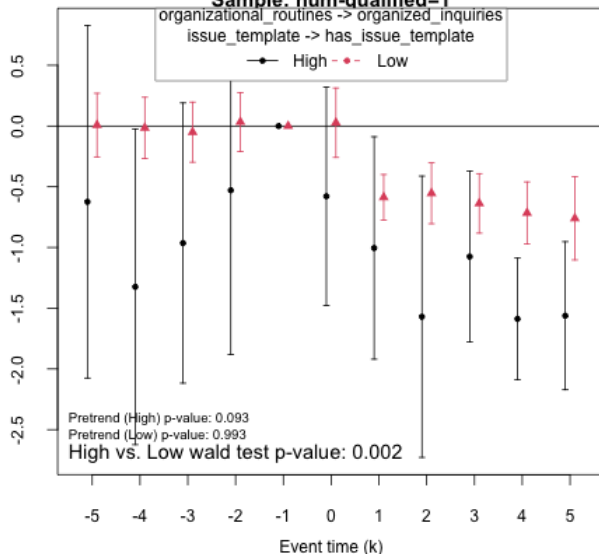


major\_minor\_release\_count rolling5

Sample: num-qualified=1

organizational\_routines -> organized\_inquiries  
issue\_template -> has\_issue\_template

—●— High —●— Low

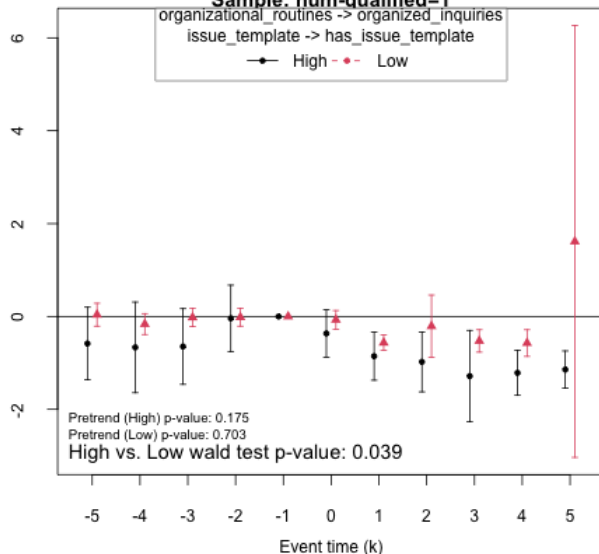


overall\_new\_release\_count rolling5

Sample: num-qualified=1

organizational\_routines -> organized\_inquiries  
issue\_template -> has\_issue\_template

—●— High —●— Low

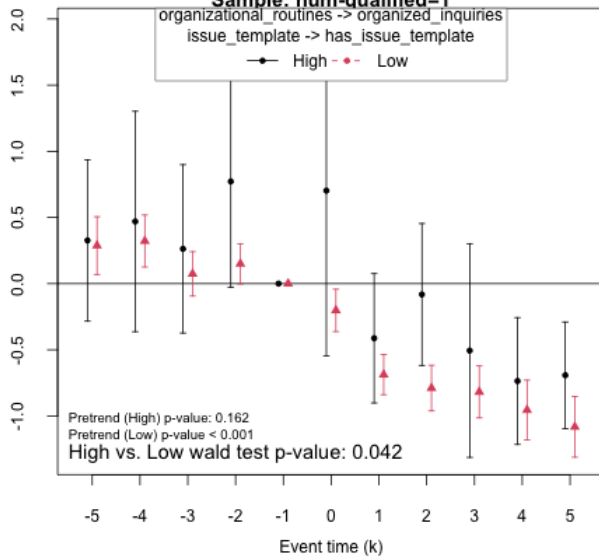


pull\_request\_merged rolling5

Sample: num-qualified=1

organizational\_routines -> organized\_inquiries  
issue\_template -> has\_issue\_template

—●— High —●— Low

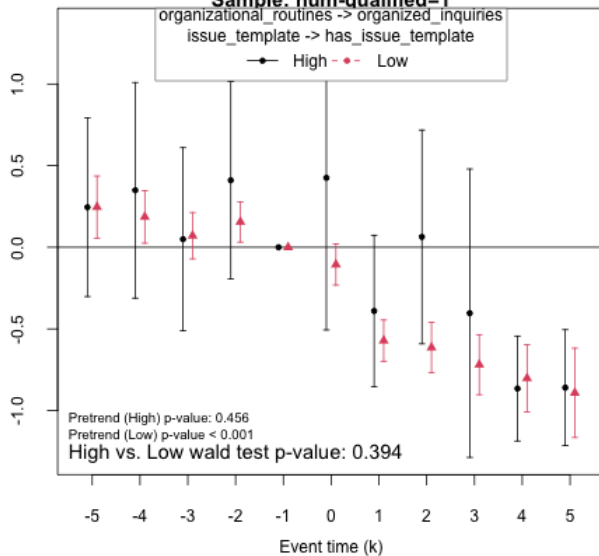


pull\_request\_opened rolling5

Sample: num-qualified=1

organizational\_routines -> organized\_inquiries  
issue\_template -> has\_issue\_template

—●— High —●— Low



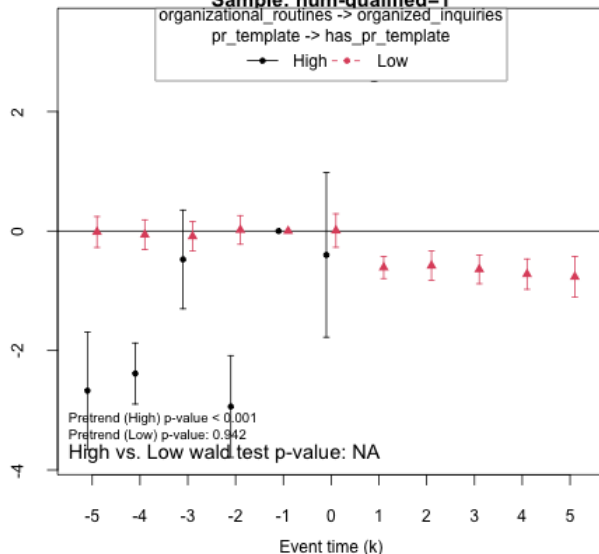
major\_minor\_release\_count rolling5

Sample: num-qualified=1

organizational\_routines -&gt; organized\_inquiries

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

● High - ● Low



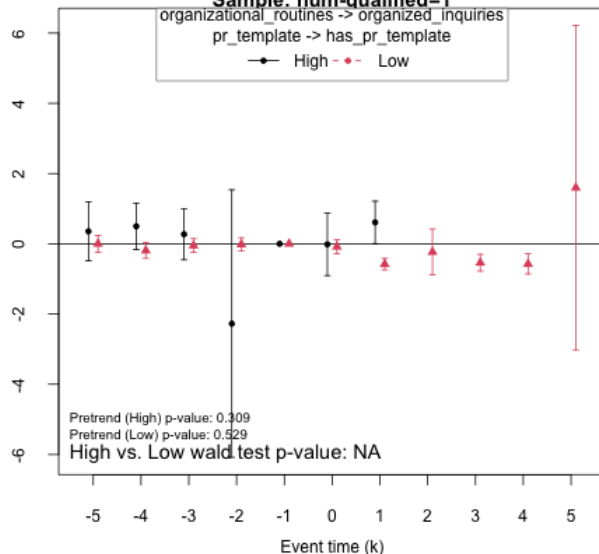
overall\_new\_release\_count rolling5

Sample: num-qualified=1

organizational\_routines -&gt; organized\_inquiries

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

● High - ● Low



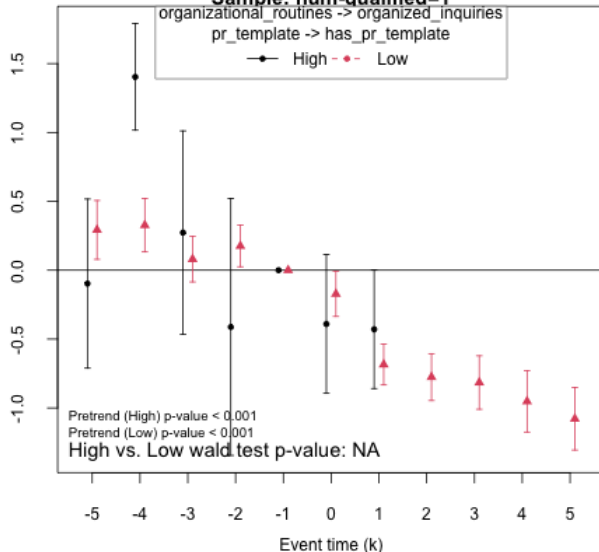
pull\_request\_merged rolling5

Sample: num-qualified=1

organizational\_routines -&gt; organized\_inquiries

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

● High - ● Low



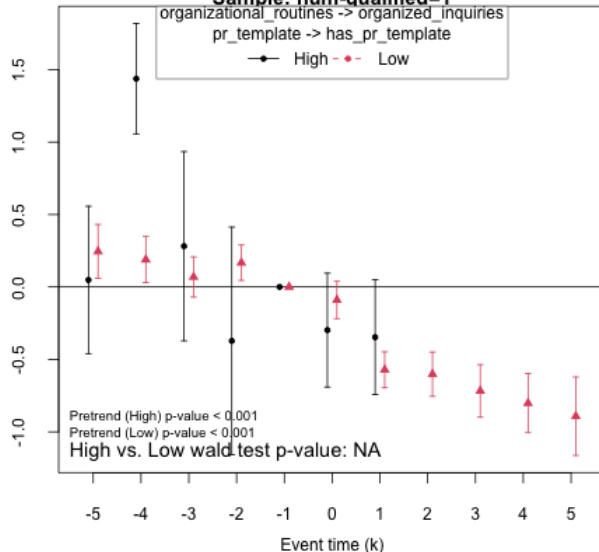
pull\_request\_opened rolling5

Sample: num-qualified=1

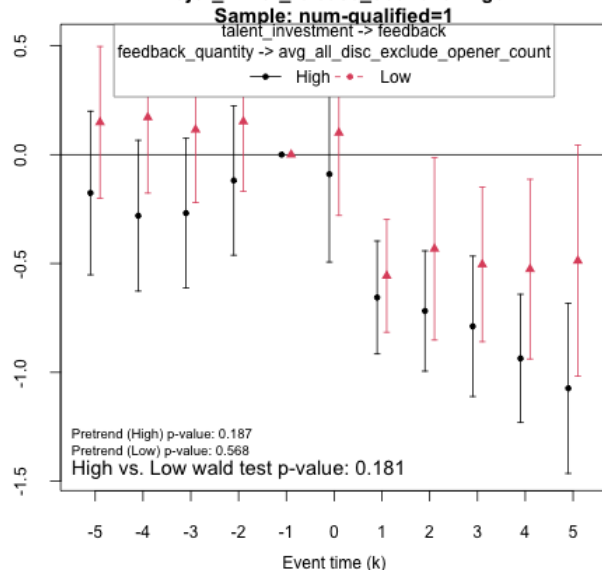
organizational\_routines -&gt; organized\_inquiries

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

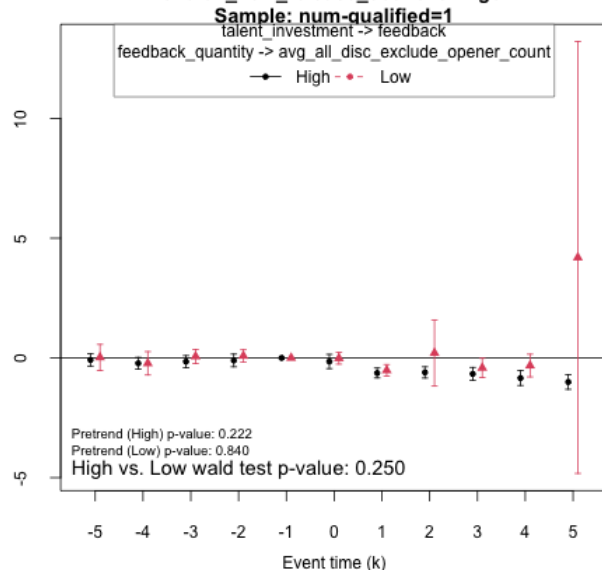
● High - ● Low



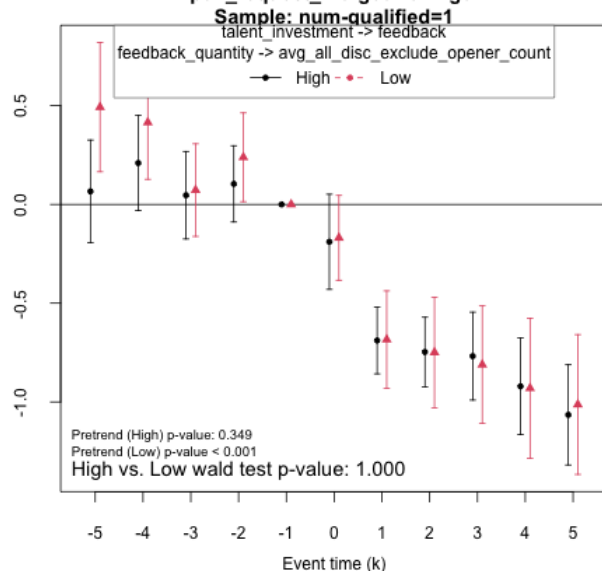
major\_minor\_release\_count rolling5



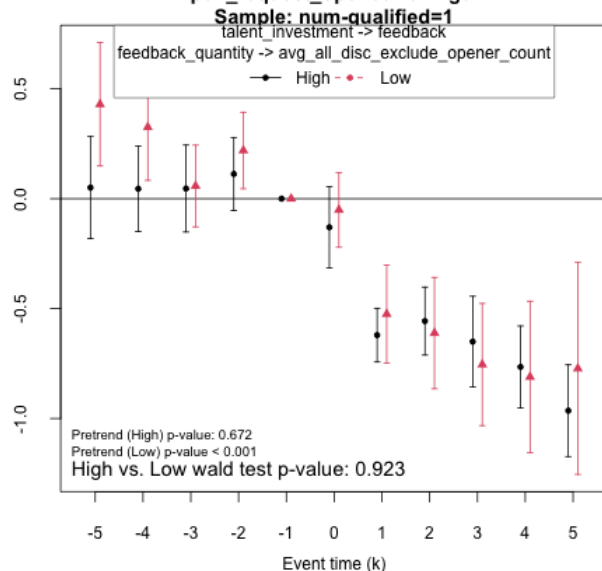
overall\_new\_release\_count rolling5



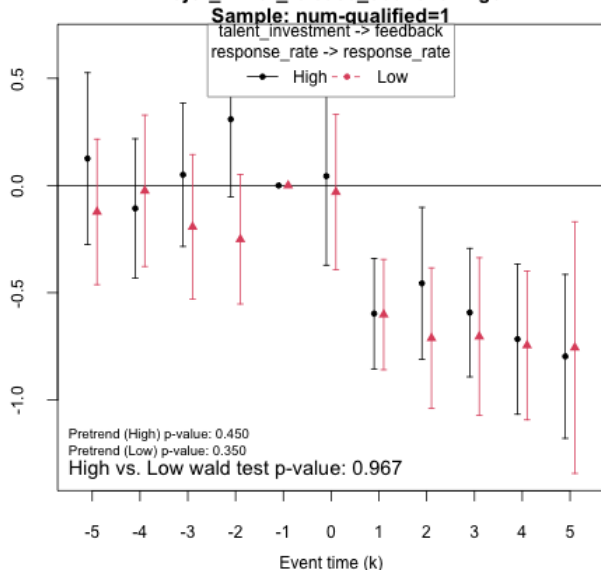
pull\_request\_merged rolling5



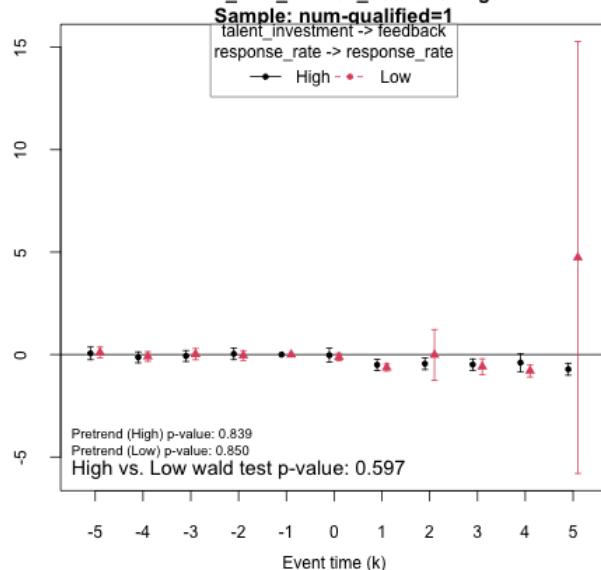
pull\_request\_opened rolling5



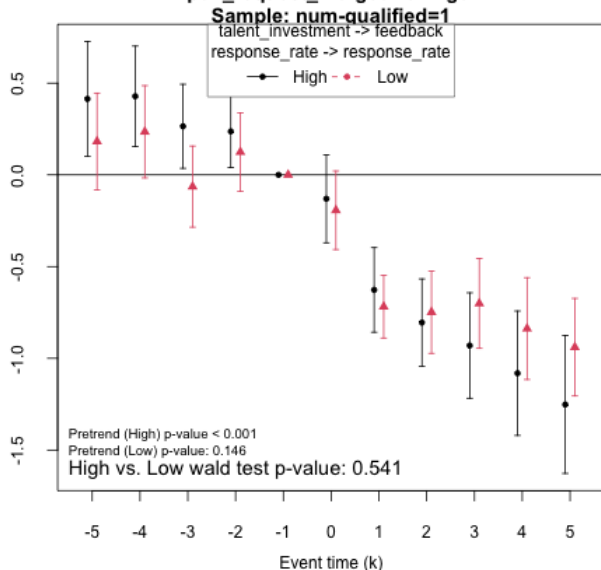
major\_minor\_release\_count rolling5



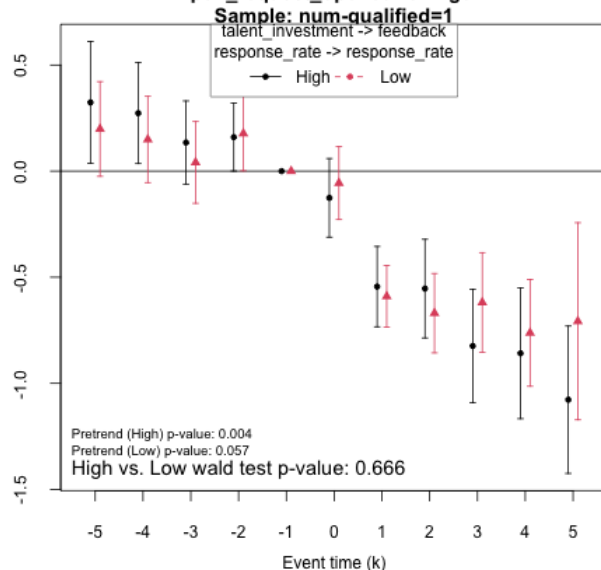
overall\_new\_release\_count rolling5



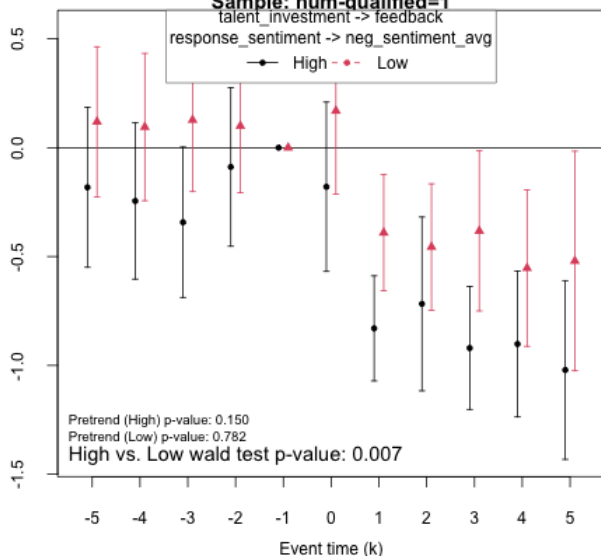
pull\_request\_merged rolling5



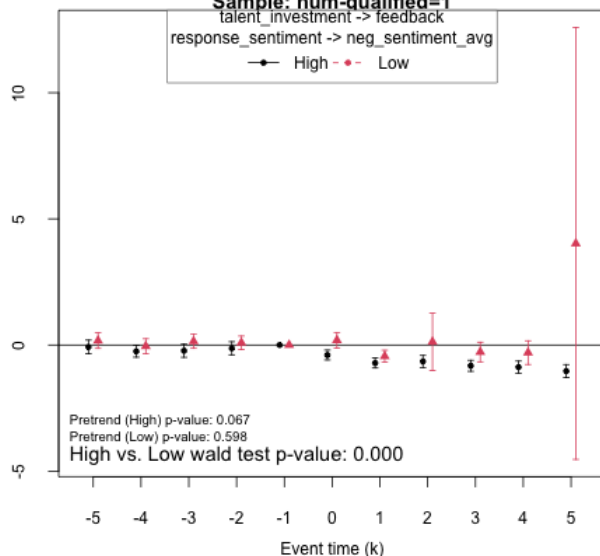
pull\_request\_opened rolling5



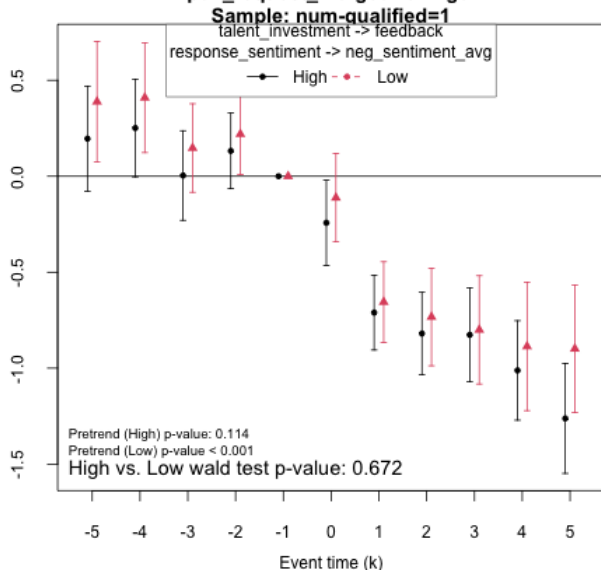
major\_minor\_release\_count rolling5



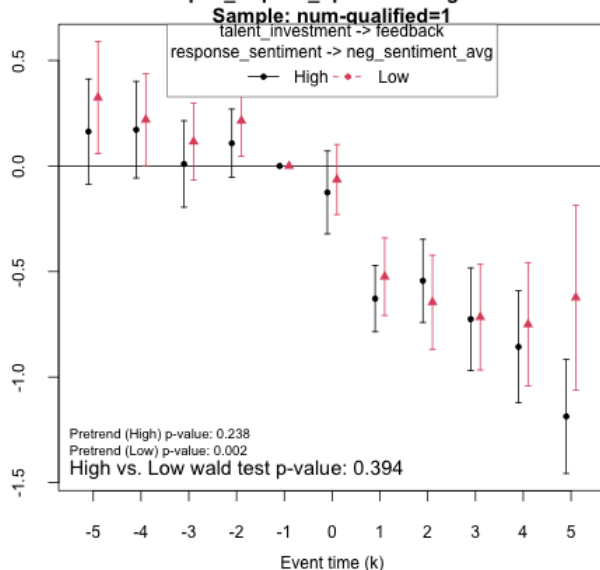
overall\_new\_release\_count rolling5



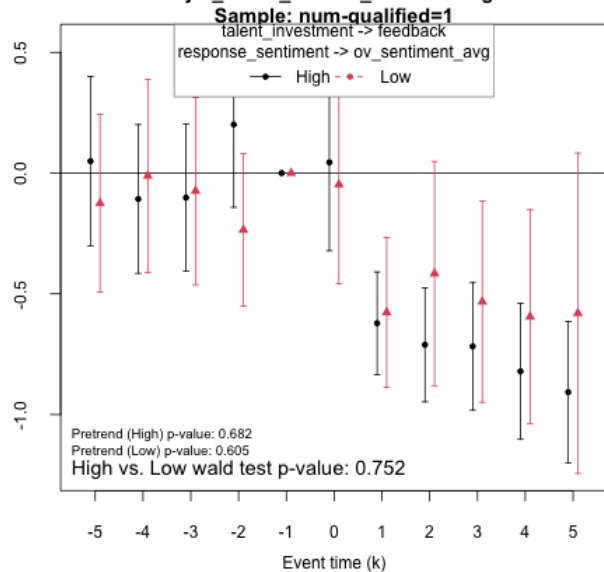
pull\_request\_merged rolling5



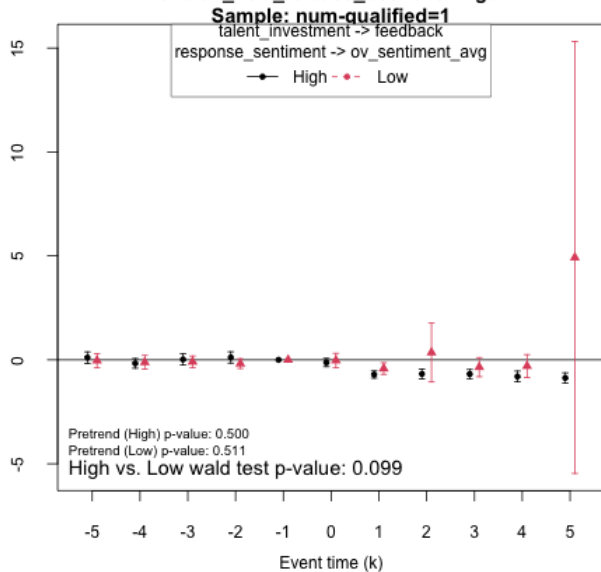
pull\_request\_opened rolling5



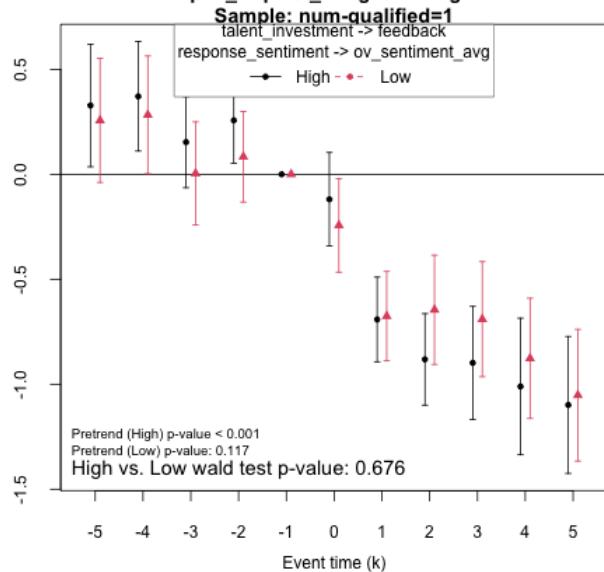
major\_minor\_release\_count rolling5



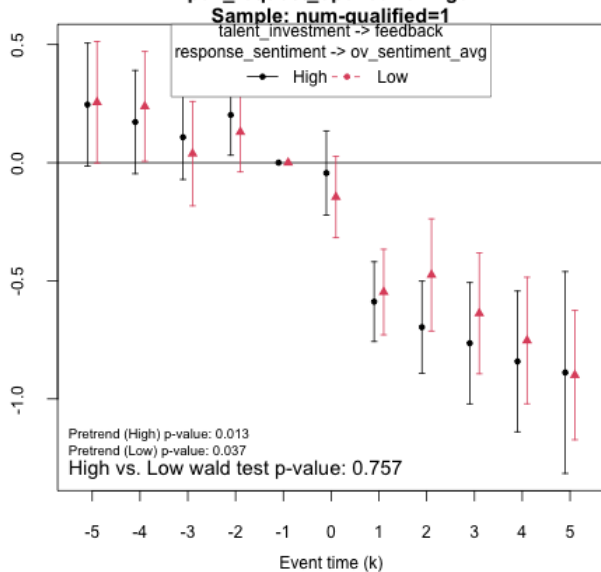
overall\_new\_release\_count rolling5



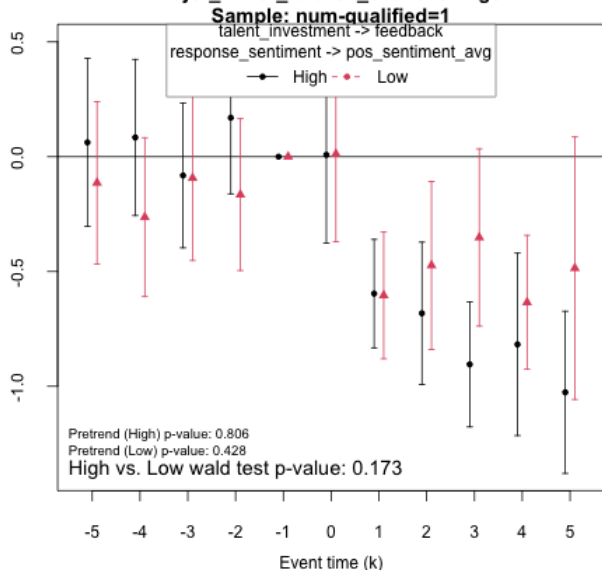
pull\_request\_merged rolling5



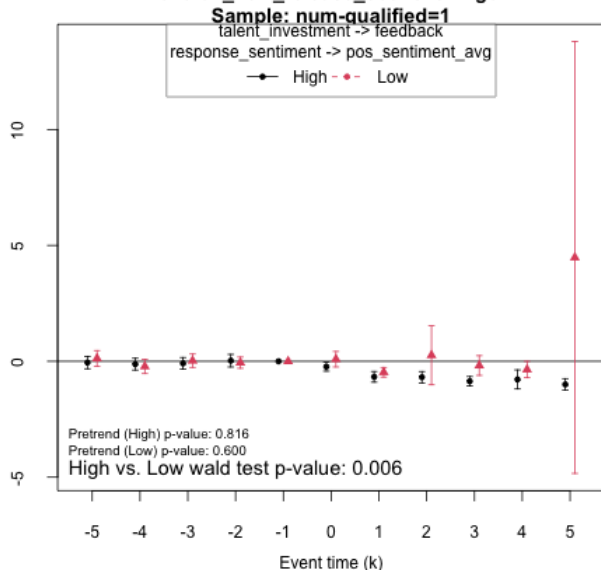
pull\_request\_opened rolling5



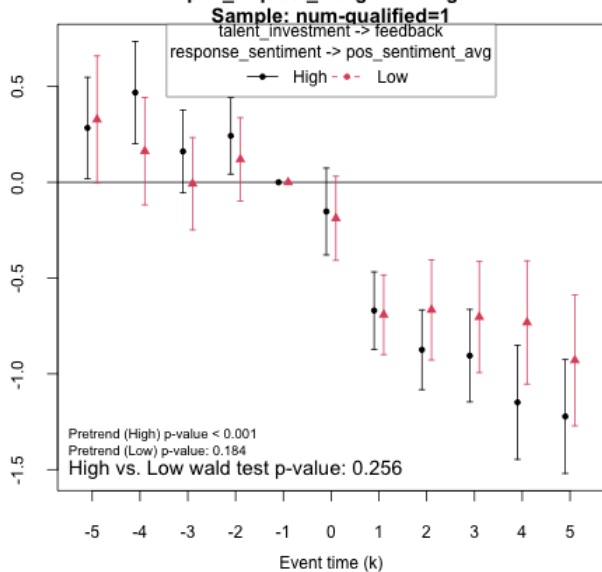
major\_minor\_release\_count rolling5



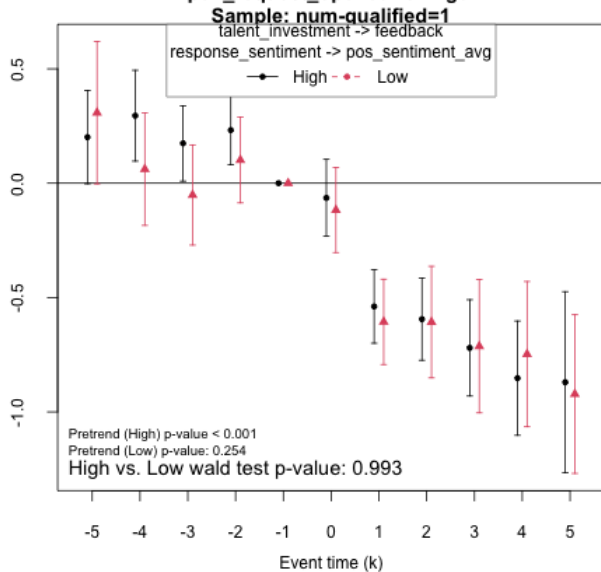
overall\_new\_release\_count rolling5



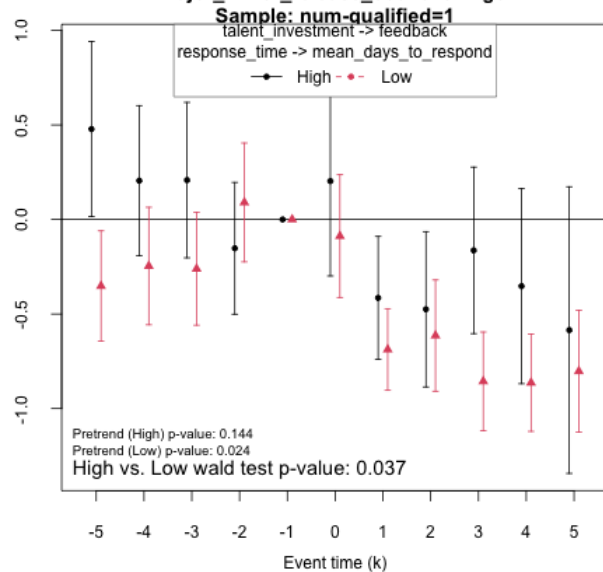
pull\_request\_merged rolling5



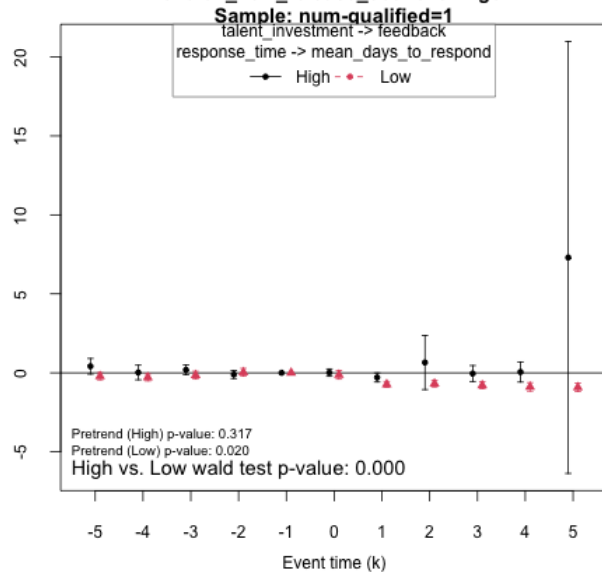
pull\_request\_opened rolling5



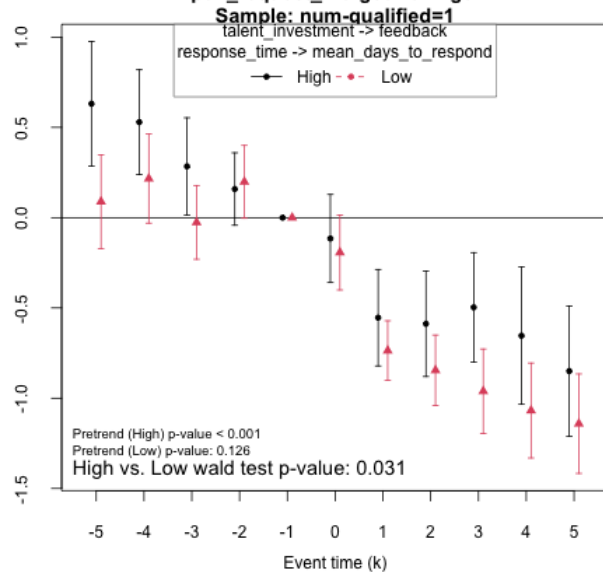
major\_minor\_release\_count rolling5



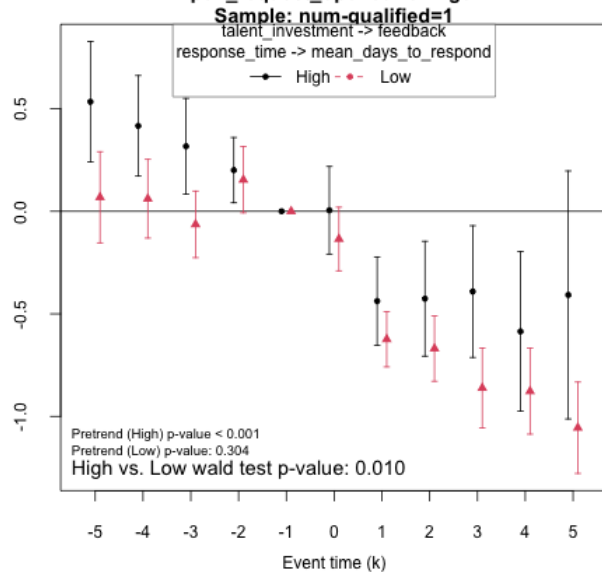
overall\_new\_release\_count rolling5



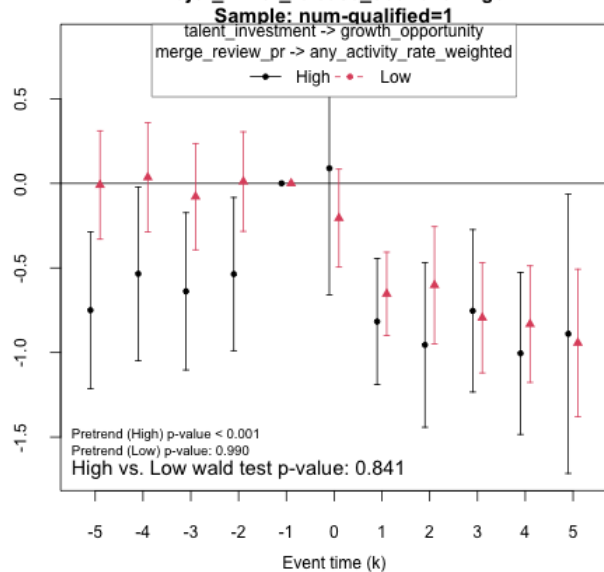
pull\_request\_merged rolling5



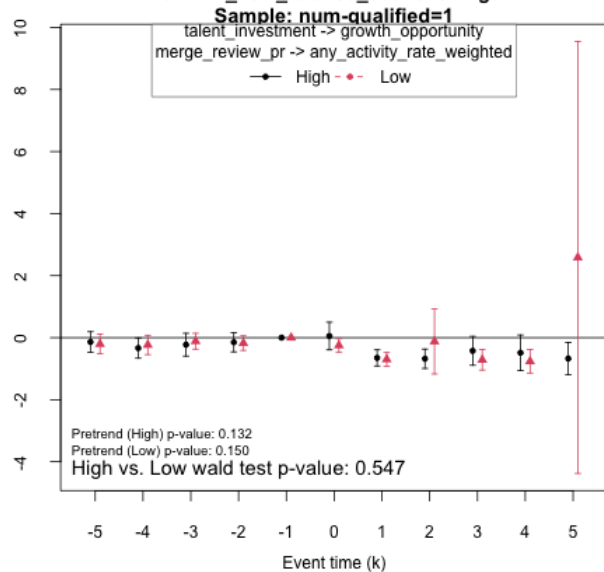
pull\_request\_opened rolling5



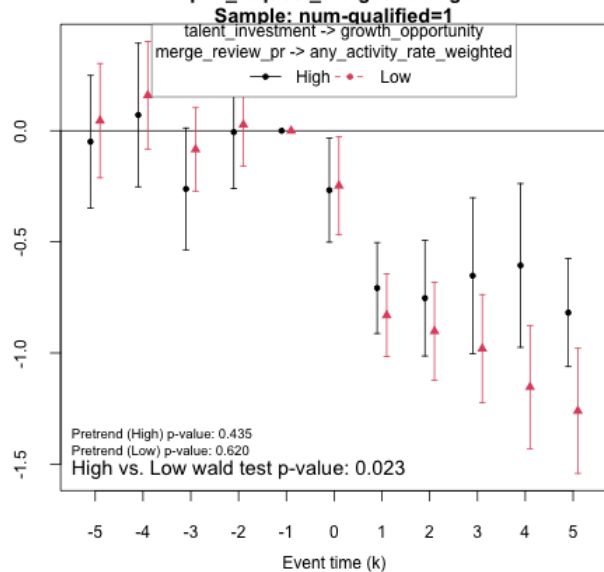
major\_minor\_release\_count rolling5



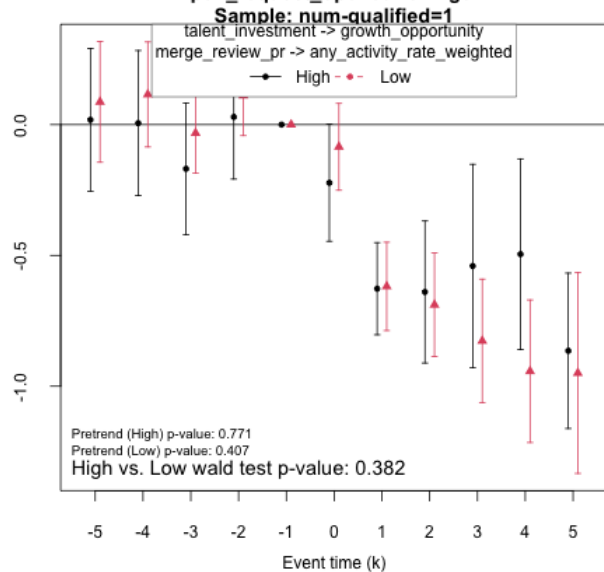
overall\_new\_release\_count rolling5



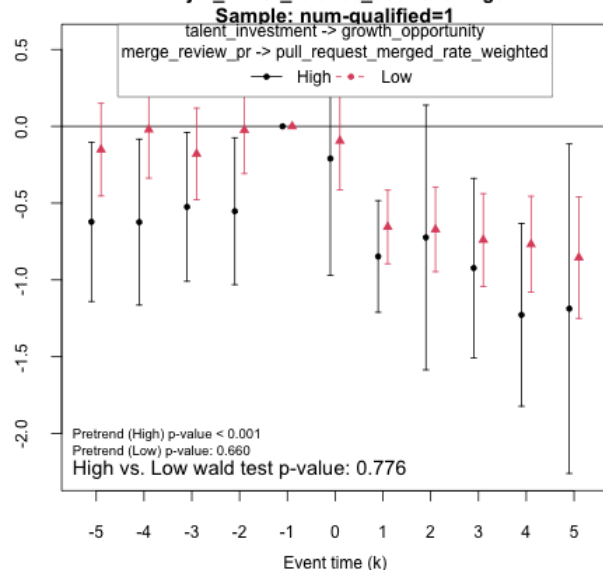
pull\_request\_merged rolling5



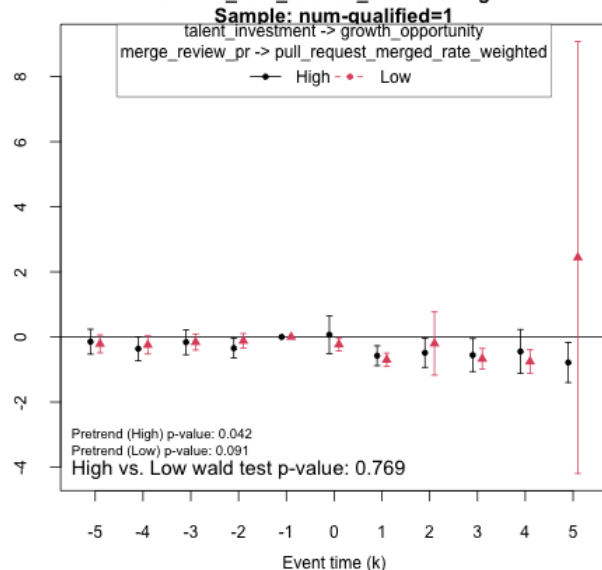
pull\_request\_opened rolling5



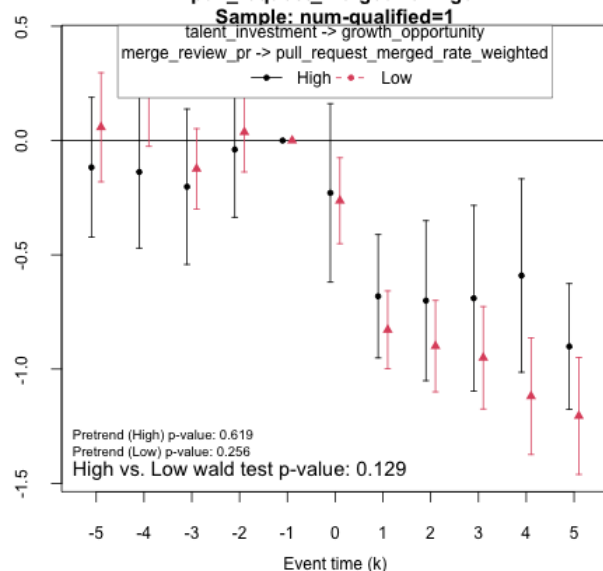
major\_minor\_release\_count rolling5



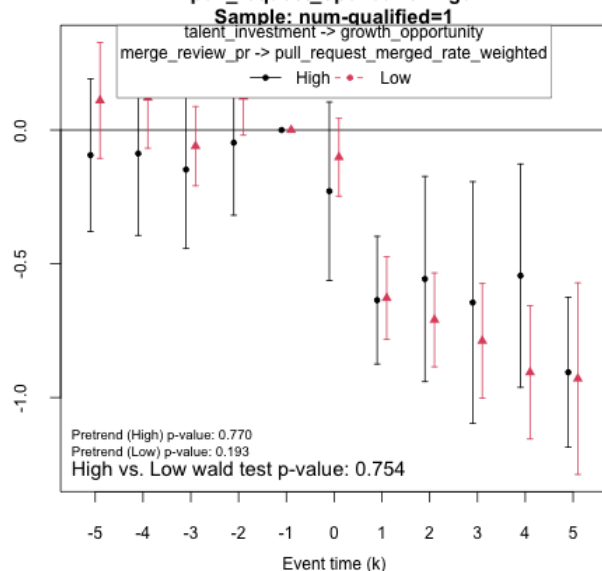
overall\_new\_release\_count rolling5



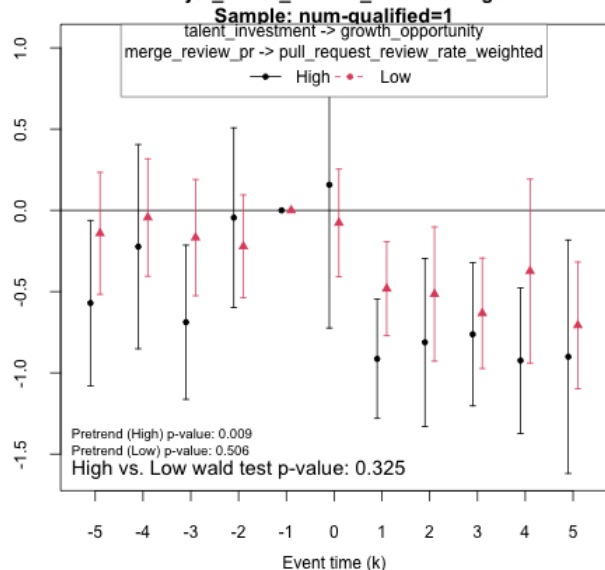
pull\_request\_merged rolling5



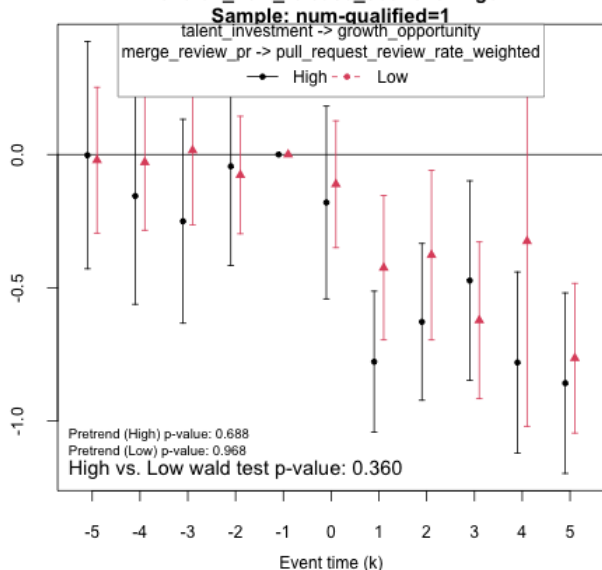
pull\_request\_opened rolling5



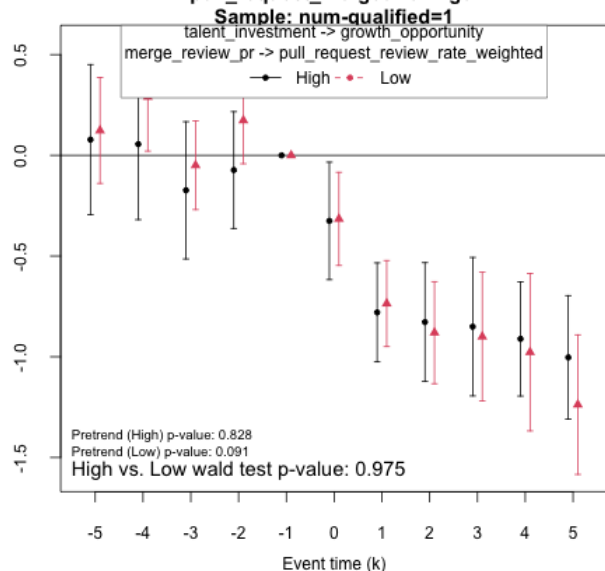
major\_minor\_release\_count rolling5



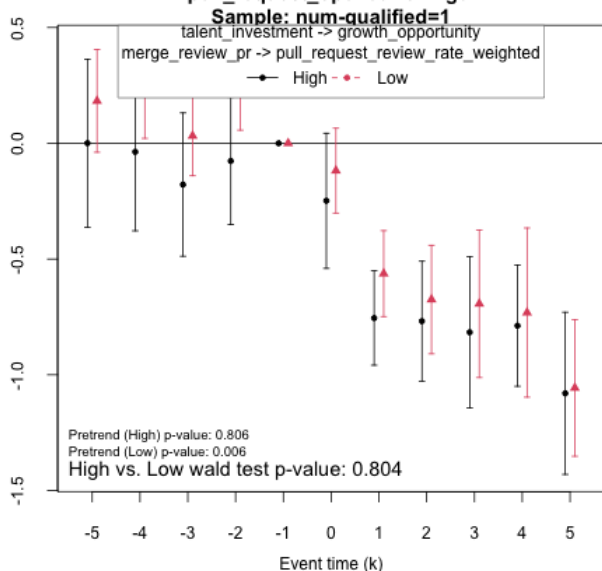
overall\_new\_release\_count rolling5



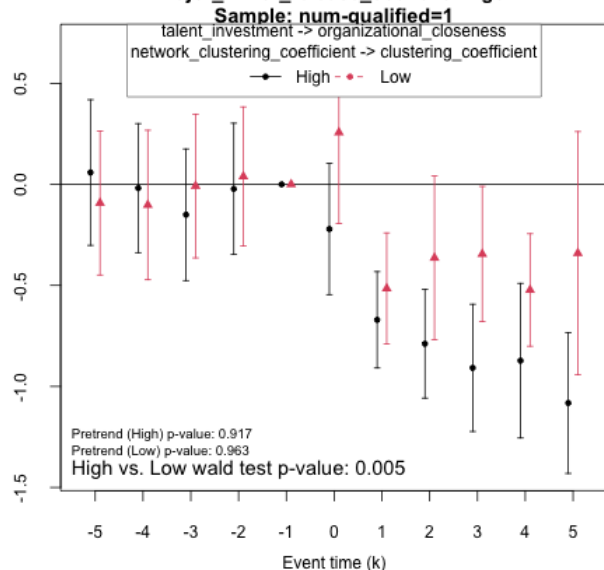
pull\_request\_merged rolling5



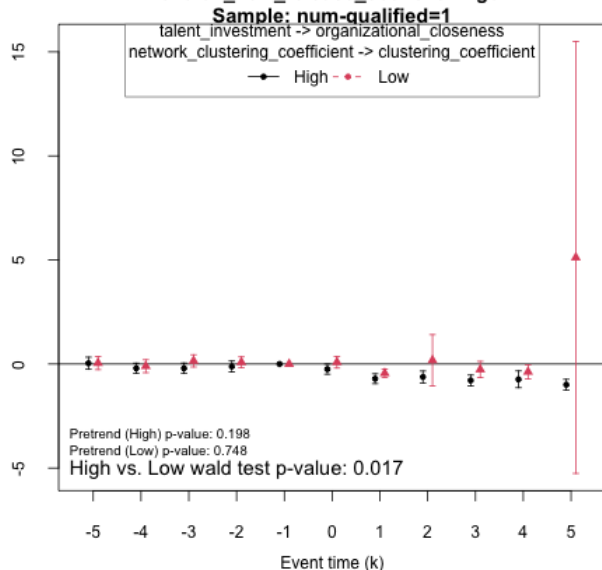
pull\_request\_opened rolling5



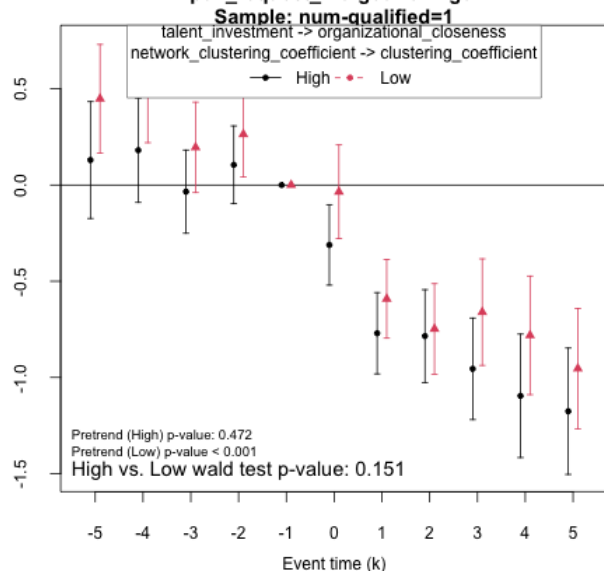
major\_minor\_release\_count rolling5



overall\_new\_release\_count rolling5



pull\_request\_merged rolling5



pull\_request\_opened rolling5

