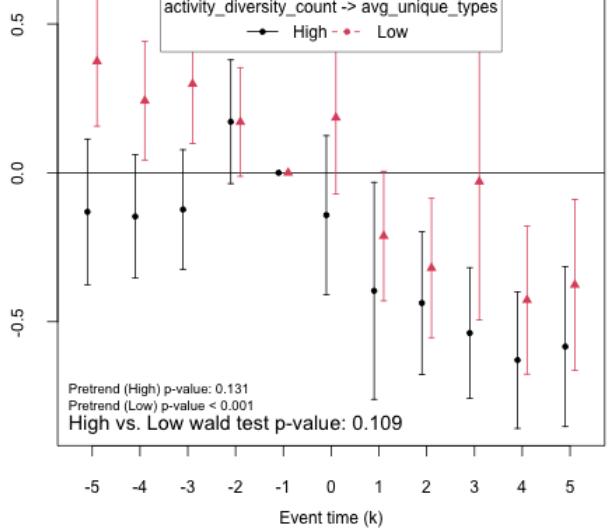


major_minor_release_count rolling5

Sample: num-qualified=1

knowledge_redundancy -> broad_expertise
activity_diversity_count -> avg_unique_types

● High ▲ Low

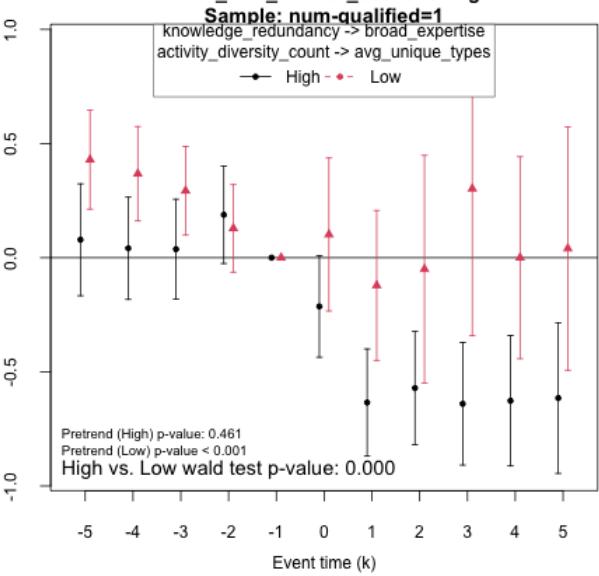


overall_new_release_count rolling5

Sample: num-qualified=1

knowledge_redundancy -> broad_expertise
activity_diversity_count -> avg_unique_types

● High ▲ Low

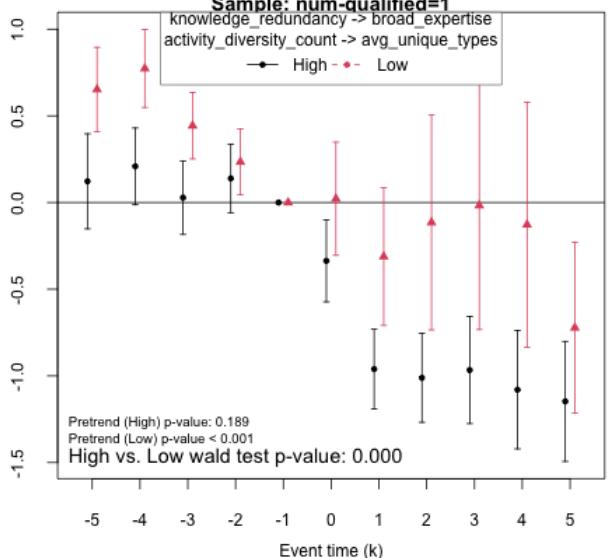


pull_request_merged rolling5

Sample: num-qualified=1

knowledge_redundancy -> broad_expertise
activity_diversity_count -> avg_unique_types

● High ▲ Low

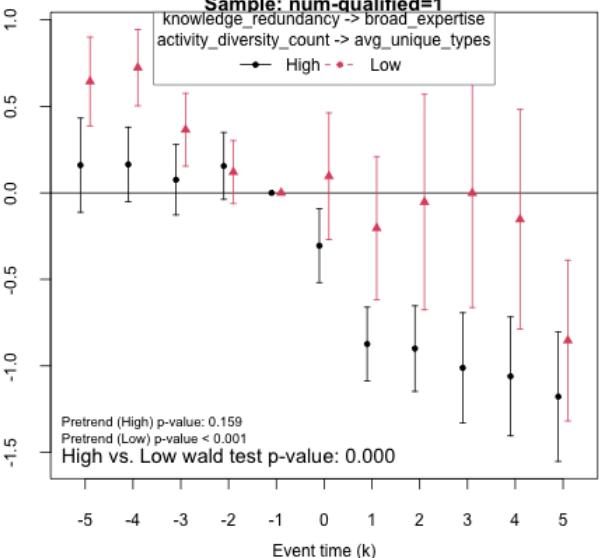


pull_request_opened rolling5

Sample: num-qualified=1

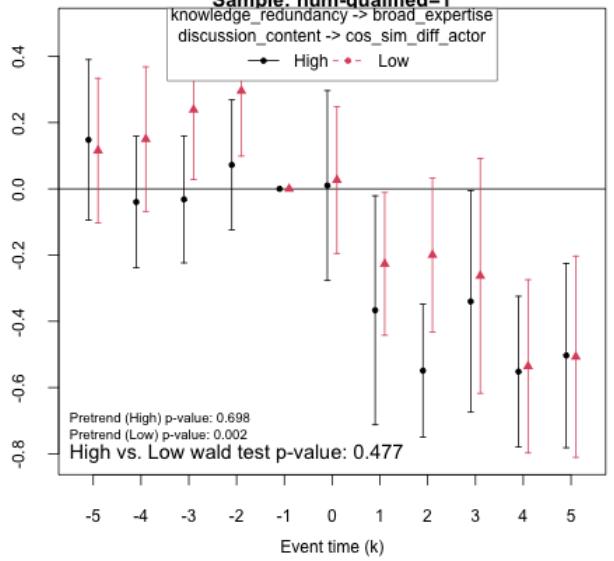
knowledge_redundancy -> broad_expertise
activity_diversity_count -> avg_unique_types

● High ▲ Low



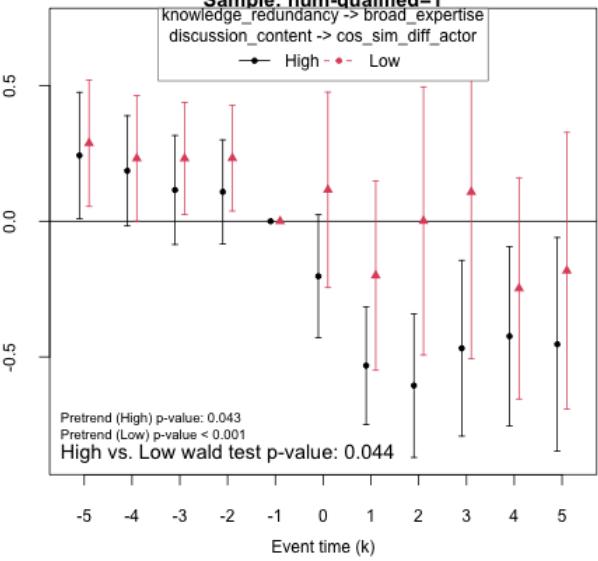
major_minor_release_count rolling5

Sample: num-qualified=1



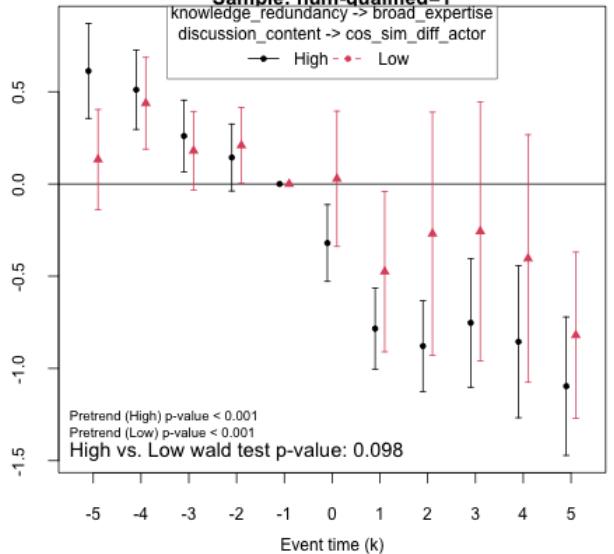
overall_new_release_count rolling5

Sample: num-qualified=1



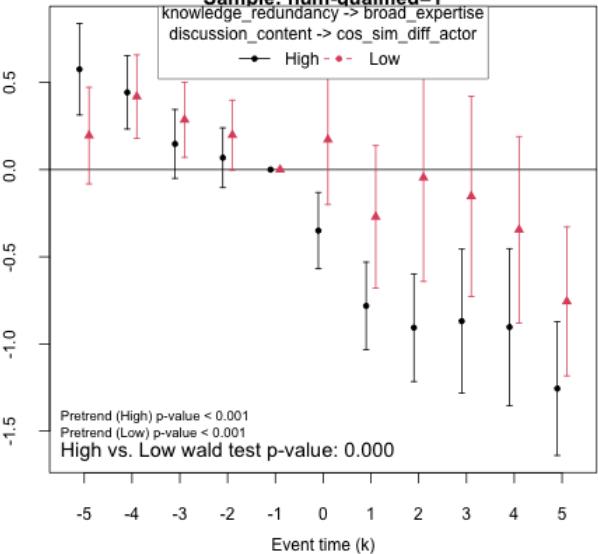
pull_request_merged rolling5

Sample: num-qualified=1



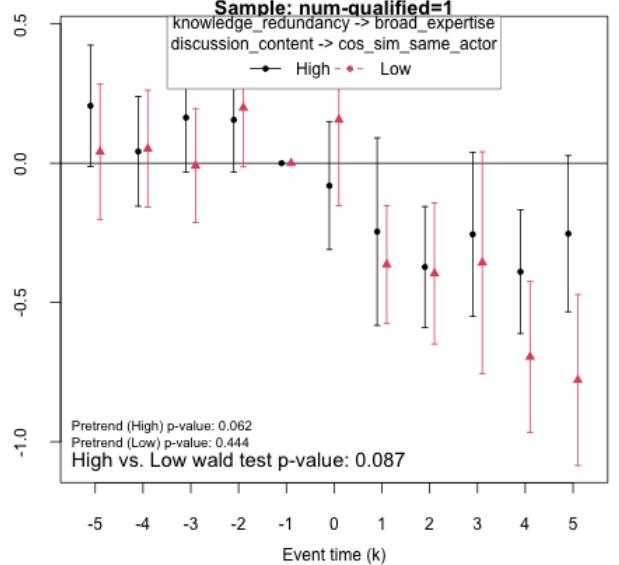
pull_request_opened rolling5

Sample: num-qualified=1



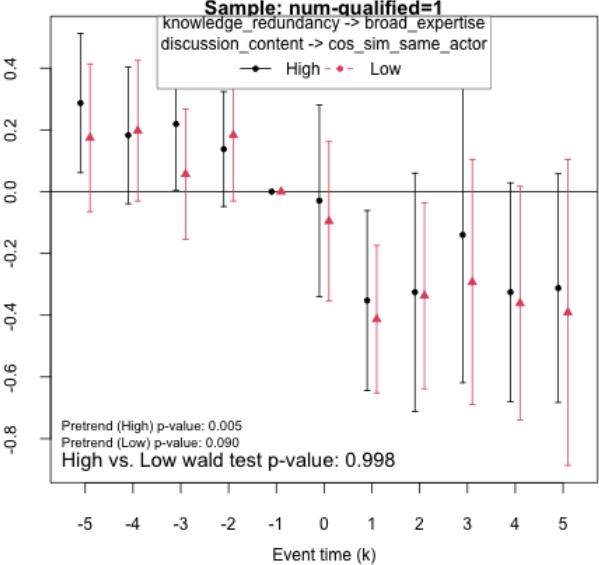
major_minor_release_count rolling5

Sample: num-qualified=1



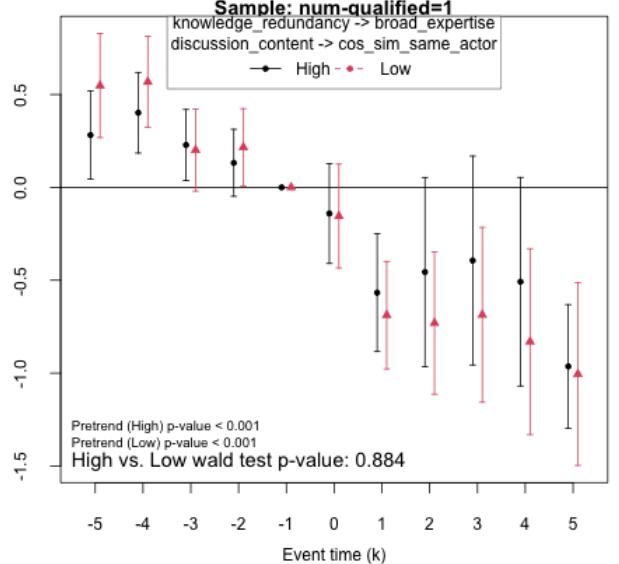
overall_new_release_count rolling5

Sample: num-qualified=1



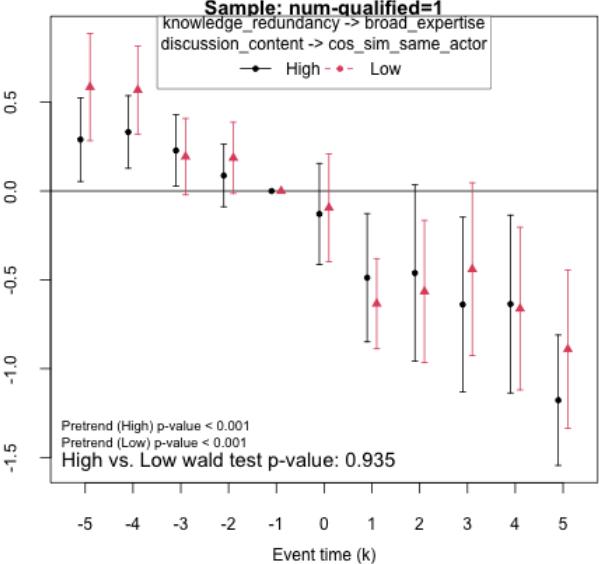
pull_request_merged rolling5

Sample: num-qualified=1



pull_request_opened rolling5

Sample: num-qualified=1

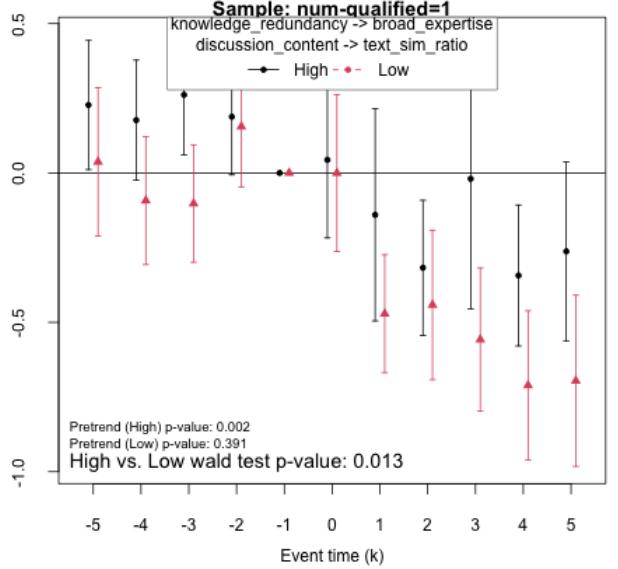


major_minor_release_count rolling5

Sample: num-qualified=1

knowledge_redundancy -> broad_expertise
discussion_content -> text_sim_ratio

● High ▲ Low

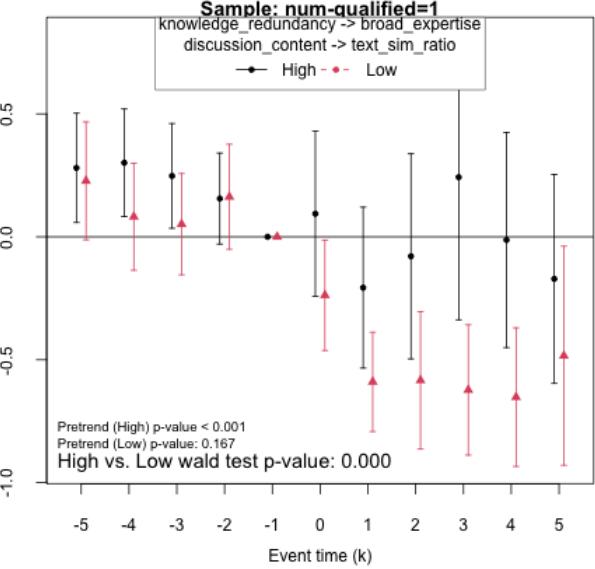


overall_new_release_count rolling5

Sample: num-qualified=1

knowledge_redundancy -> broad_expertise
discussion_content -> text_sim_ratio

● High ▲ Low

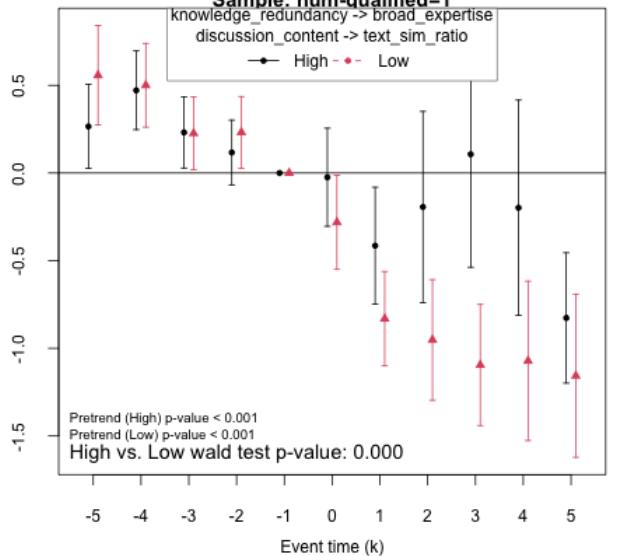


pull_request_merged rolling5

Sample: num-qualified=1

knowledge_redundancy -> broad_expertise
discussion_content -> text_sim_ratio

● High ▲ Low

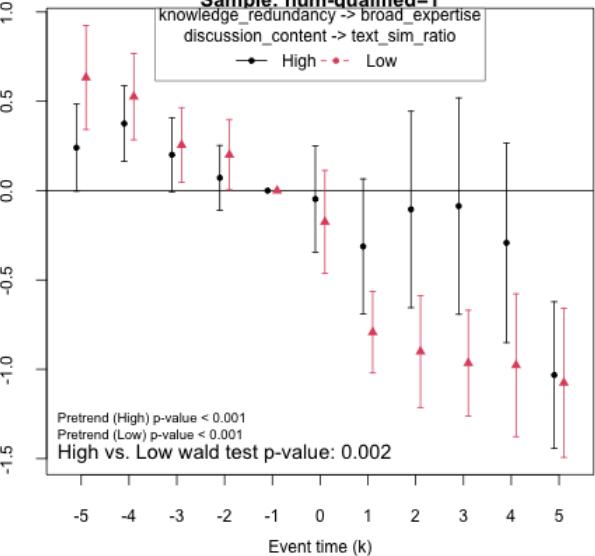


pull_request_opened rolling5

Sample: num-qualified=1

knowledge_redundancy -> broad_expertise
discussion_content -> text_sim_ratio

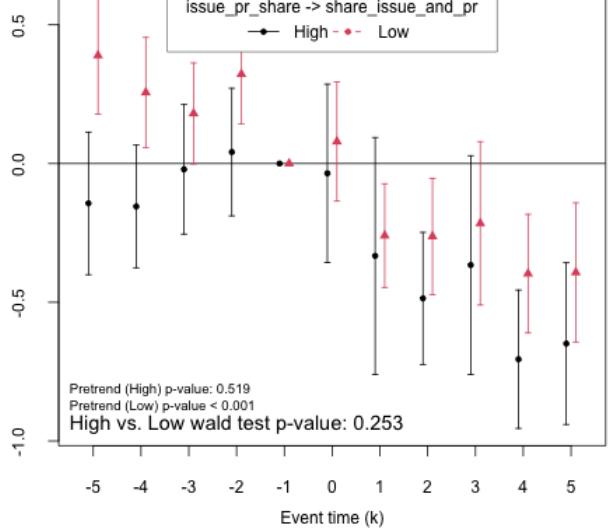
● High ▲ Low



major_minor_release_count rolling5

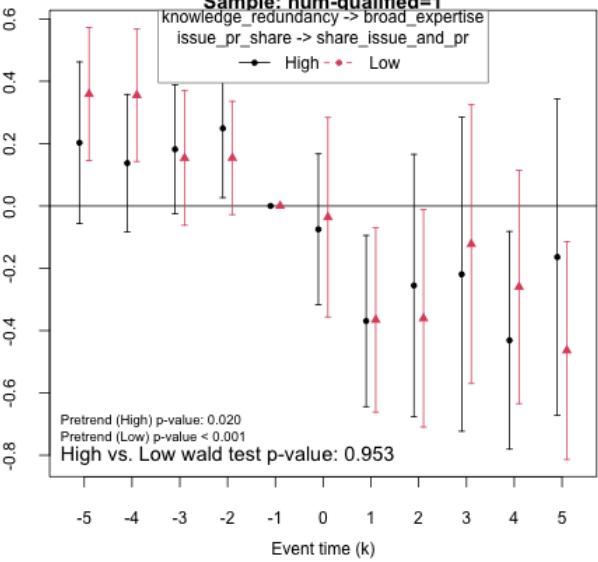
Sample: num-qualified=1

knowledge_redundancy -> broad_expertise
 issue_pr_share -> share_issue_and_pr
 ● High ▲ Low

**overall_new_release_count rolling5**

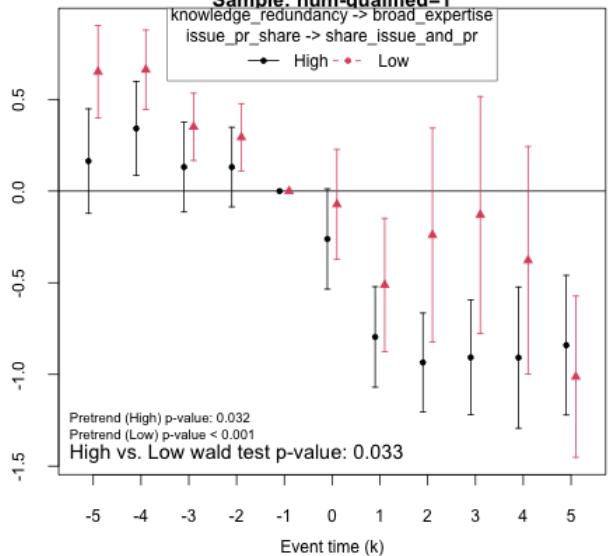
Sample: num-qualified=1

knowledge_redundancy -> broad_expertise
 issue_pr_share -> share_issue_and_pr
 ● High ▲ Low

**pull_request_merged rolling5**

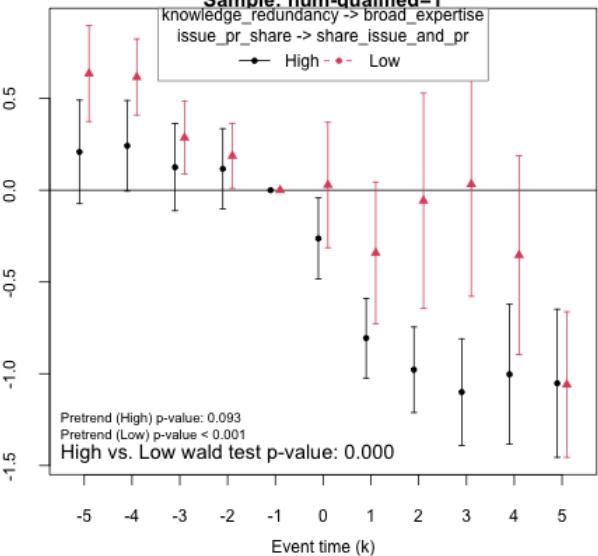
Sample: num-qualified=1

knowledge_redundancy -> broad_expertise
 issue_pr_share -> share_issue_and_pr
 ● High ▲ Low

**pull_request_opened rolling5**

Sample: num-qualified=1

knowledge_redundancy -> broad_expertise
 issue_pr_share -> share_issue_and_pr
 ● High ▲ Low

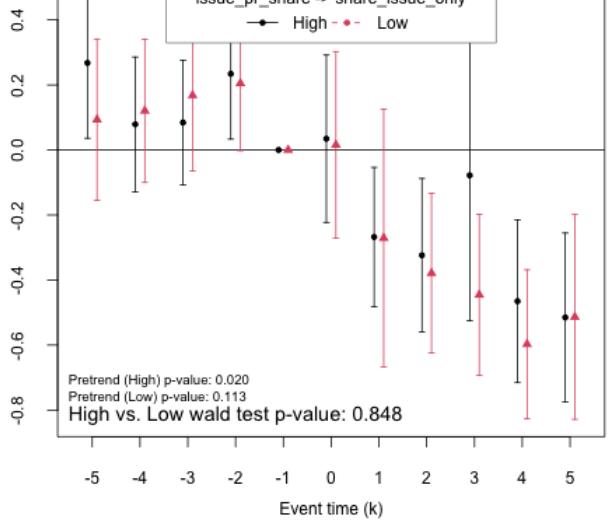


major_minor_release_count rolling5

Sample: num-qualified=1

knowledge_redundancy -> broad_expertise
 issue_pr_share -> share_issue_only

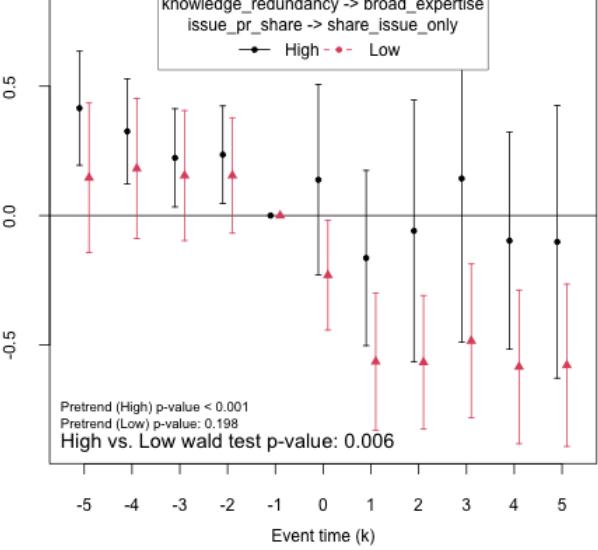
- High
- Low

**overall_new_release_count rolling5**

Sample: num-qualified=1

knowledge_redundancy -> broad_expertise
 issue_pr_share -> share_issue_only

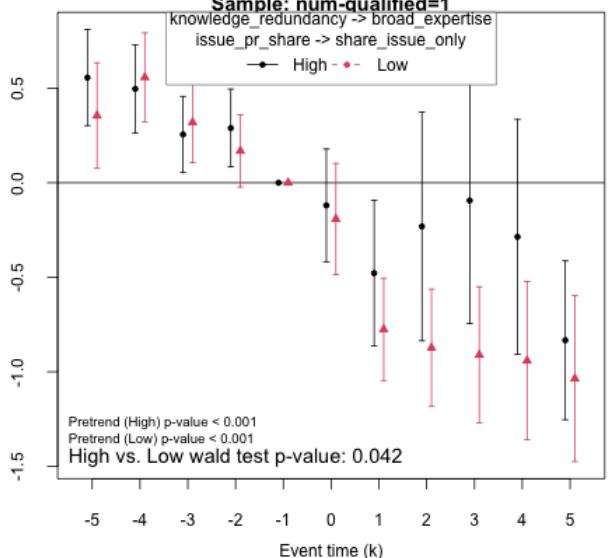
- High
- Low

**pull_request_merged rolling5**

Sample: num-qualified=1

knowledge_redundancy -> broad_expertise
 issue_pr_share -> share_issue_only

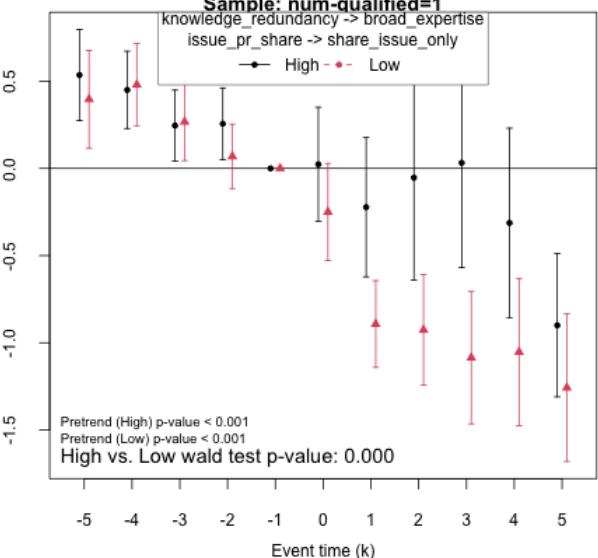
- High
- Low

**pull_request_opened rolling5**

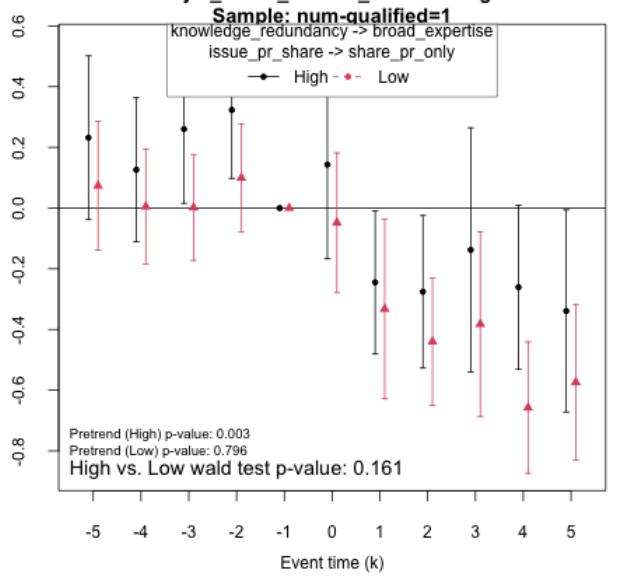
Sample: num-qualified=1

knowledge_redundancy -> broad_expertise
 issue_pr_share -> share_issue_only

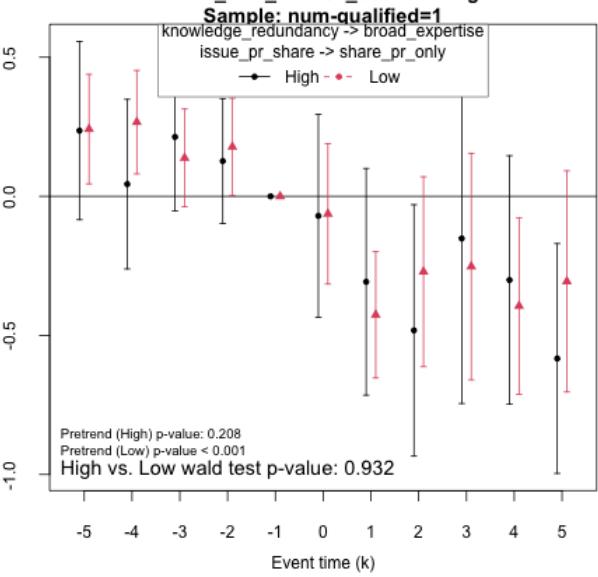
- High
- Low



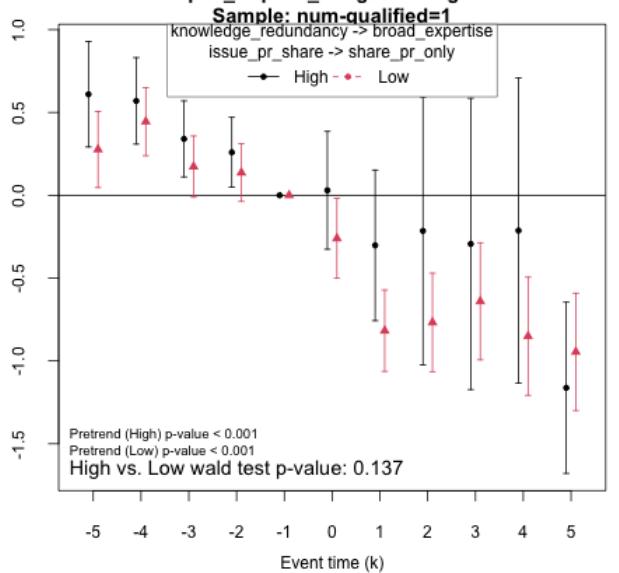
major_minor_release_count rolling5



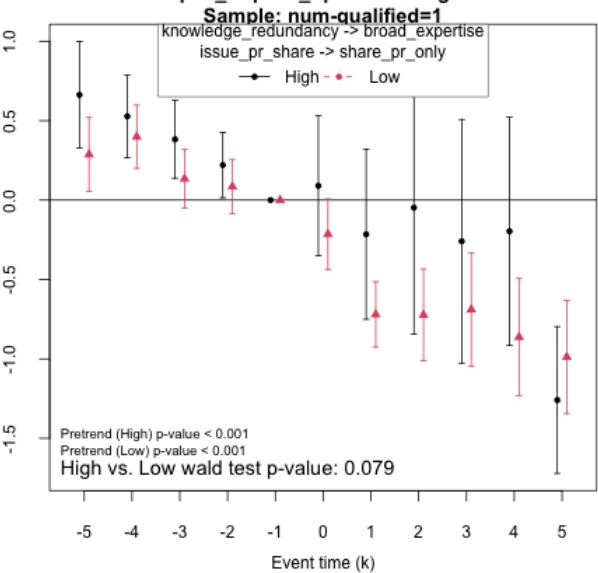
overall_new_release_count rolling5



pull_request_merged rolling5

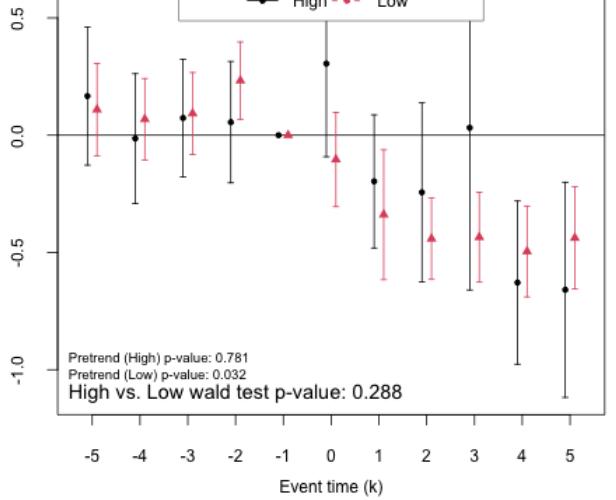


pull_request_opened rolling5



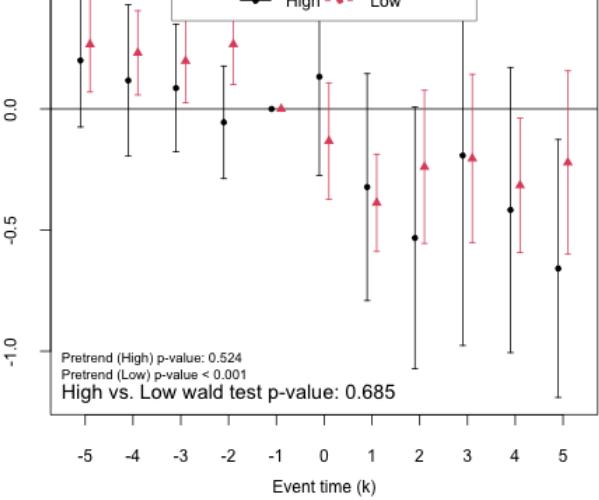
major_minor_release_count rolling5

Sample: num-qualified=1
knowledge_redundancy -> collaboration
 $hh_i \rightarrow proj_hh_i_discussion_comment$
● High ▲ Low



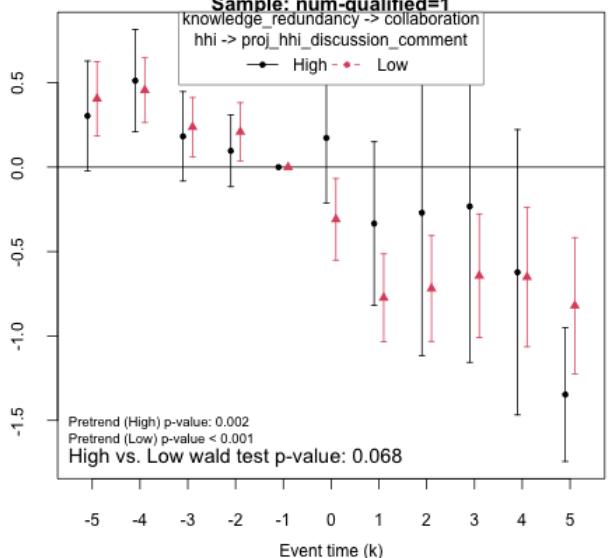
overall_new_release_count rolling5

Sample: num-qualified=1
knowledge_redundancy -> collaboration
 $hh_i \rightarrow proj_hh_i_discussion_comment$
● High ▲ Low



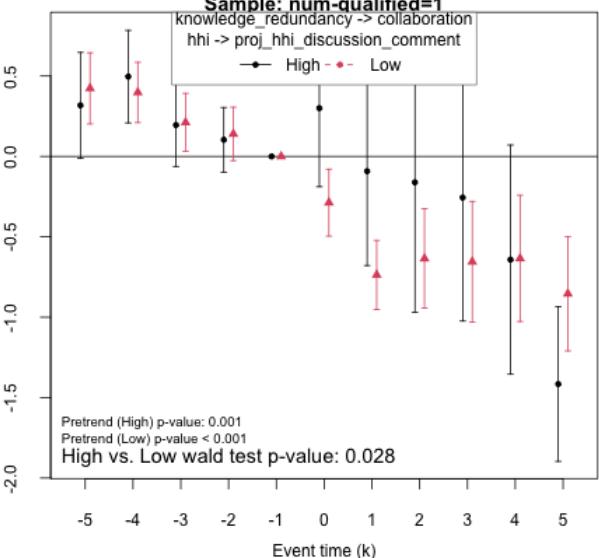
pull_request_merged rolling5

Sample: num-qualified=1
knowledge_redundancy -> collaboration
 $hh_i \rightarrow proj_hh_i_discussion_comment$
● High ▲ Low



pull_request_opened rolling5

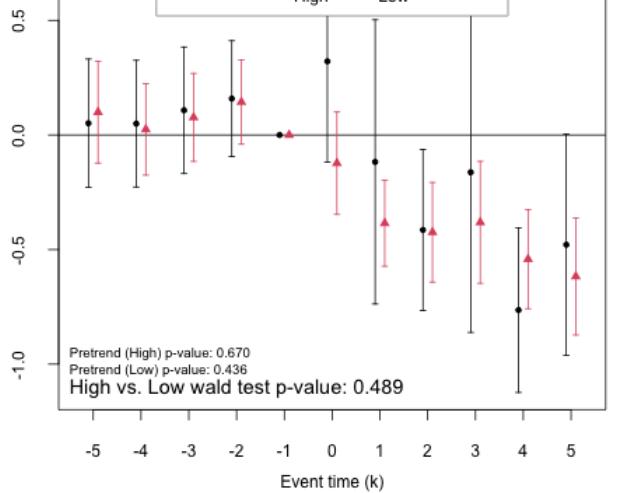
Sample: num-qualified=1
knowledge_redundancy -> collaboration
 $hh_i \rightarrow proj_hh_i_discussion_comment$
● High ▲ Low



major_minor_release_count rolling5

Sample: num-qualified=1

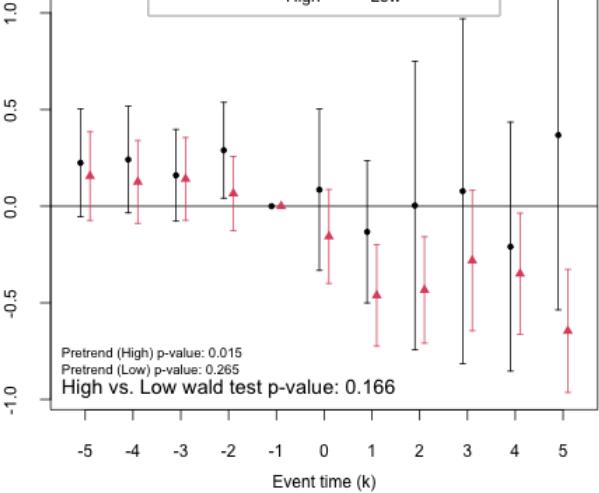
knowledge_redundancy->collaboration
hh1 -> proj_hhi_pull_request_review_comment
● High ▲ Low



overall_new_release_count rolling5

Sample: num-qualified=1

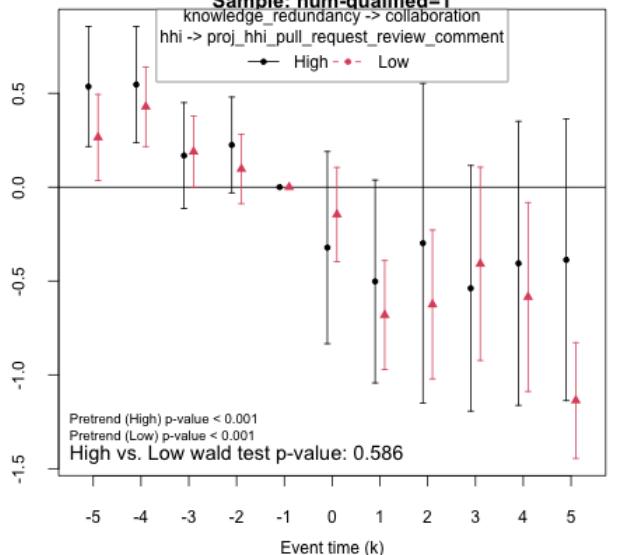
knowledge_redundancy->collaboration
hh1 -> proj_hhi_pull_request_review_comment
● High ▲ Low



pull_request_merged rolling5

Sample: num-qualified=1

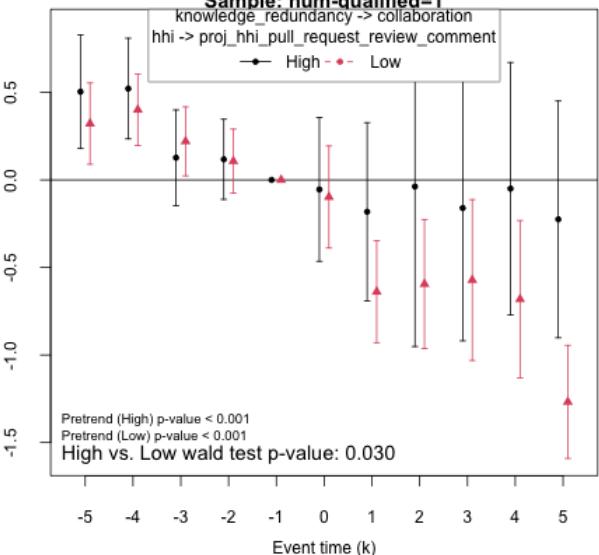
knowledge_redundancy->collaboration
hh1 -> proj_hhi_pull_request_review_comment
● High ▲ Low



pull_request_opened rolling5

Sample: num-qualified=1

knowledge_redundancy->collaboration
hh1 -> proj_hhi_pull_request_review_comment
● High ▲ Low

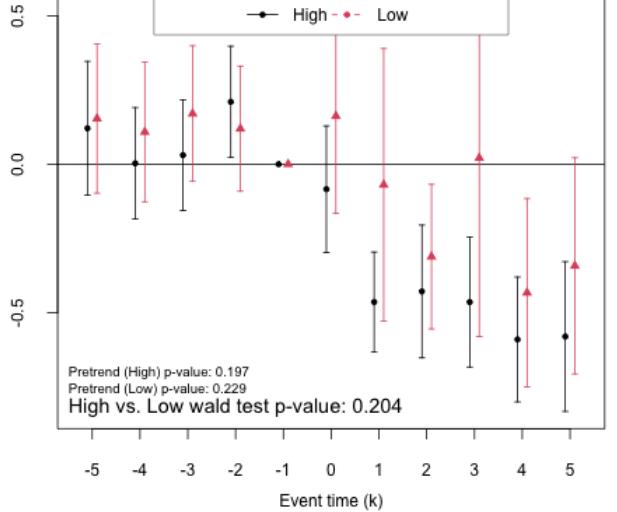


major_minor_release_count rolling5

Sample: num-qualified=1

knowledge_redundancy -> collaboration
 member_count -> avg_members_per_problem

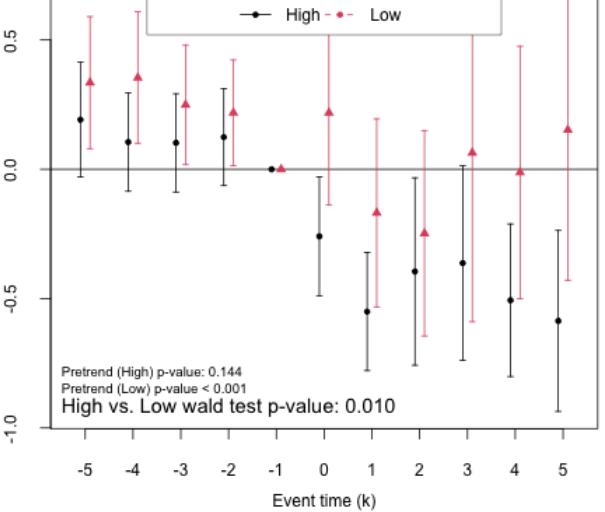
- High
- Low

**overall_new_release_count rolling5**

Sample: num-qualified=1

knowledge_redundancy -> collaboration
 member_count -> avg_members_per_problem

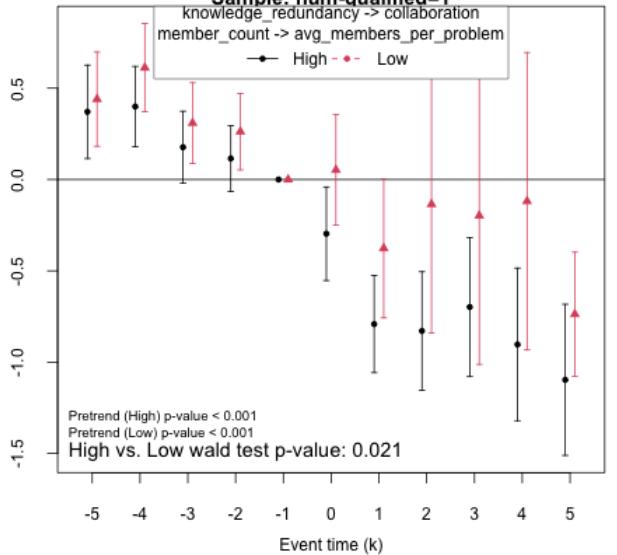
- High
- Low

**pull_request_merged rolling5**

Sample: num-qualified=1

knowledge_redundancy -> collaboration
 member_count -> avg_members_per_problem

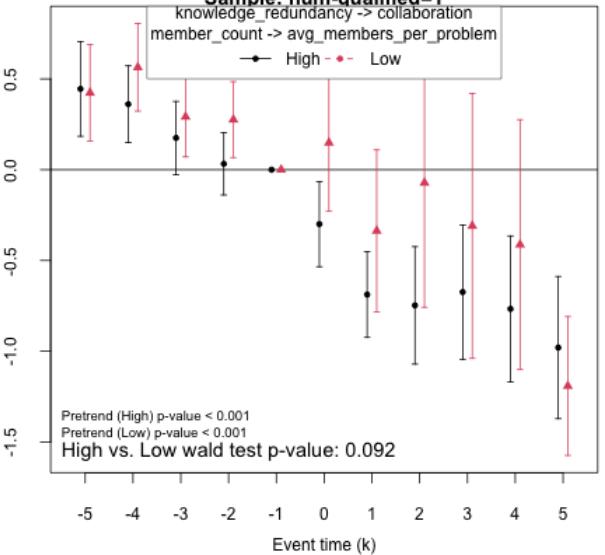
- High
- Low

**pull_request_opened rolling5**

Sample: num-qualified=1

knowledge_redundancy -> collaboration
 member_count -> avg_members_per_problem

- High
- Low

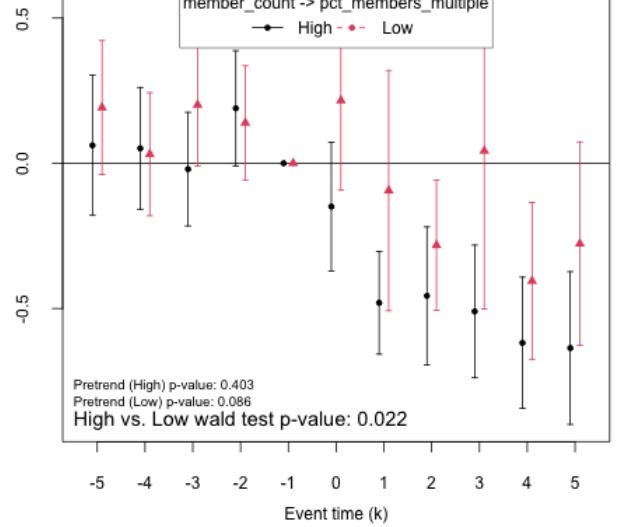


major_minor_release_count rolling5

Sample: num-qualified=1

knowledge_redundancy -> collaboration
member_count -> pct_members_multiple

● High ▲ Low

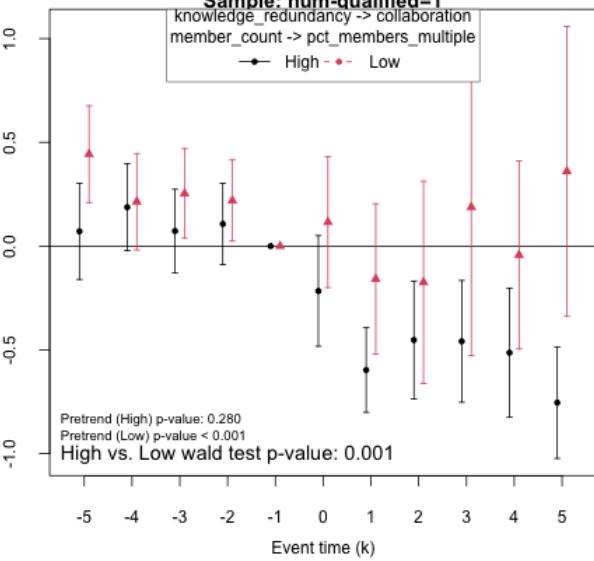


overall_new_release_count rolling5

Sample: num-qualified=1

knowledge_redundancy -> collaboration
member_count -> pct_members_multiple

● High ▲ Low

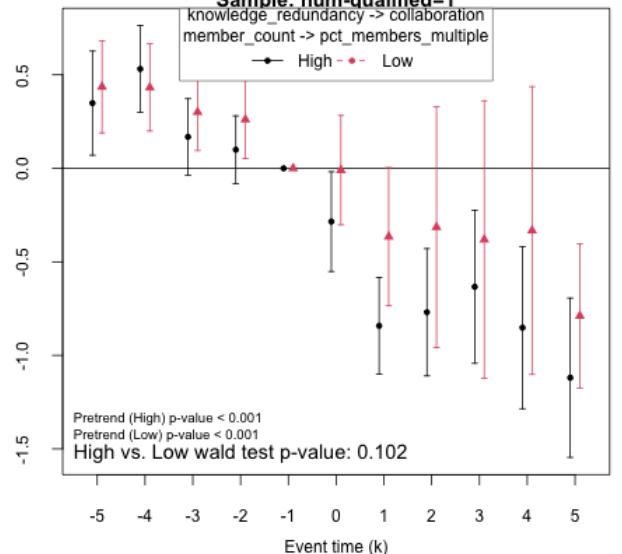


pull_request_merged rolling5

Sample: num-qualified=1

knowledge_redundancy -> collaboration
member_count -> pct_members_multiple

● High ▲ Low

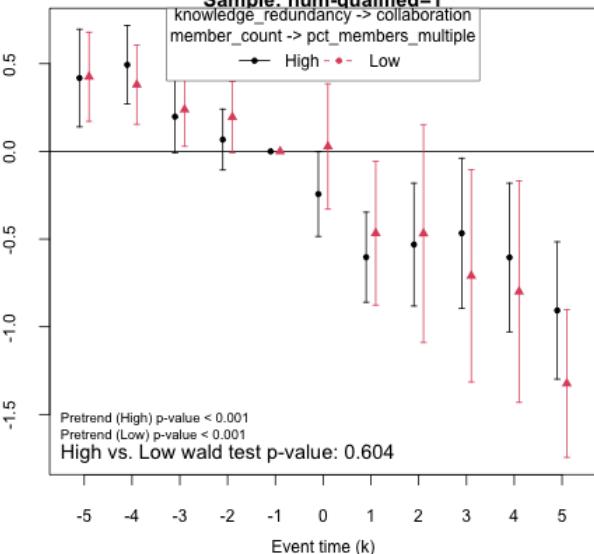


pull_request_opened rolling5

Sample: num-qualified=1

knowledge_redundancy -> collaboration
member_count -> pct_members_multiple

● High ▲ Low

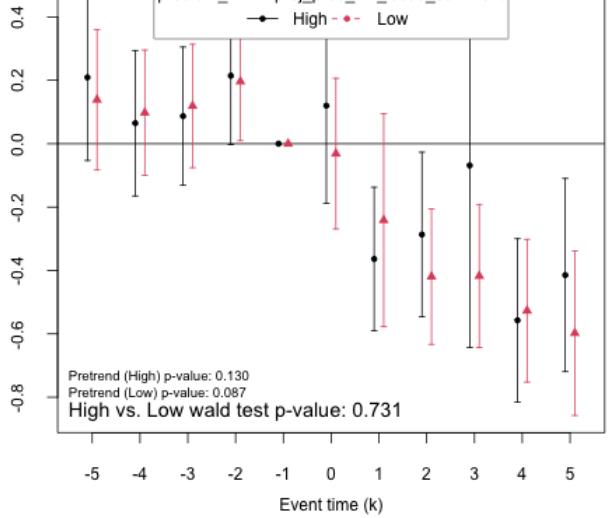


major_minor_release_count rolling5

Sample: num-qualified=1

knowledge_redundancy -> collaboration
problem_hhi -> proj_prob_hhi_issue_comment

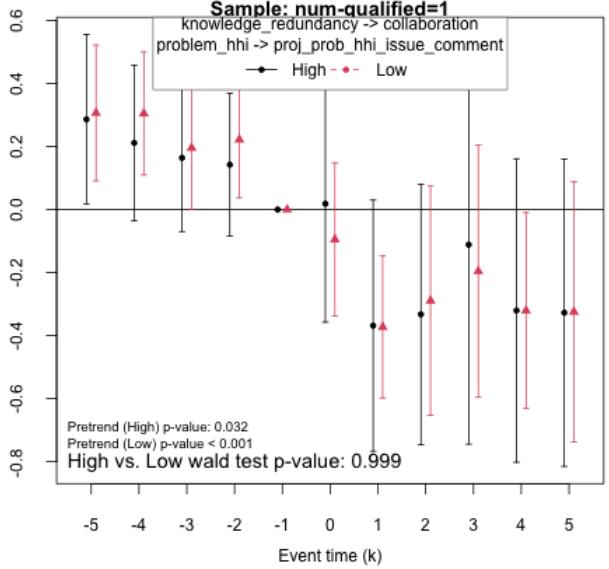
● High ▲ Low

**overall_new_release_count rolling5**

Sample: num-qualified=1

knowledge_redundancy -> collaboration
problem_hhi -> proj_prob_hhi_issue_comment

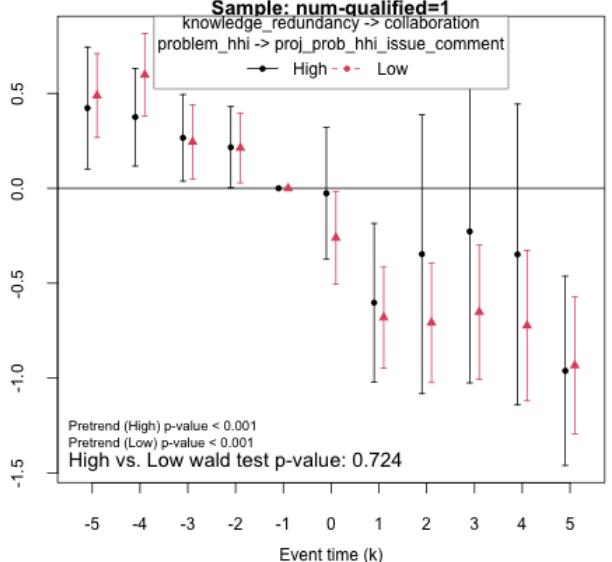
● High ▲ Low

**pull_request_merged rolling5**

Sample: num-qualified=1

knowledge_redundancy -> collaboration
problem_hhi -> proj_prob_hhi_issue_comment

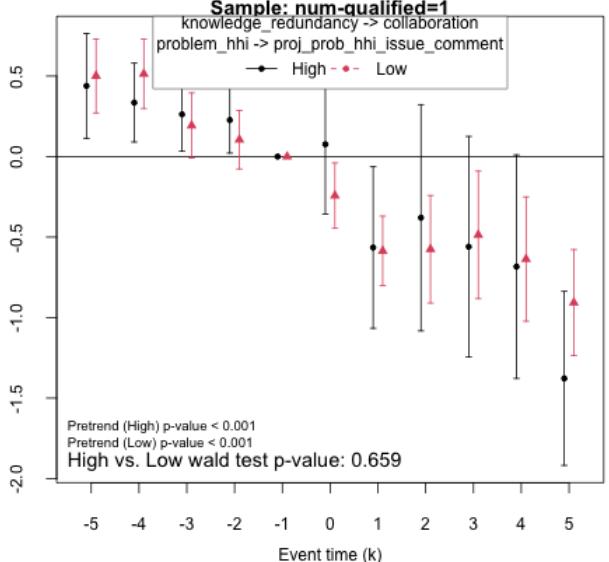
● High ▲ Low

**pull_request_opened rolling5**

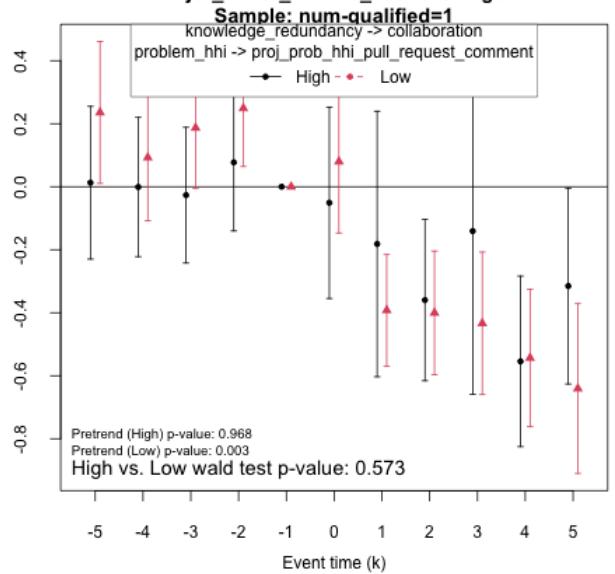
Sample: num-qualified=1

knowledge_redundancy -> collaboration
problem_hhi -> proj_prob_hhi_issue_comment

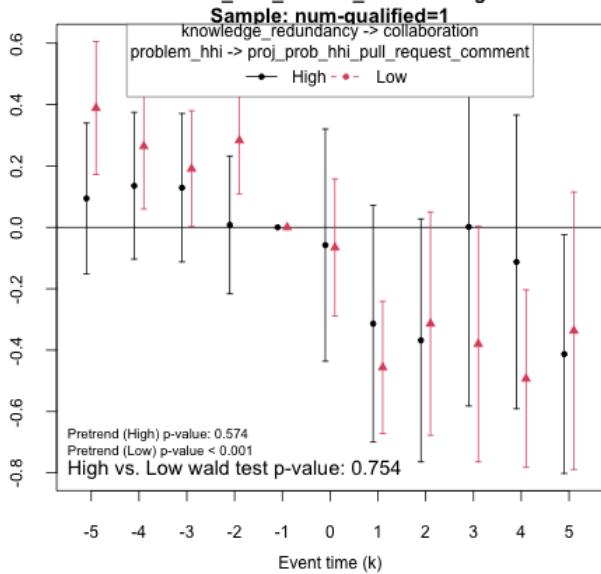
● High ▲ Low



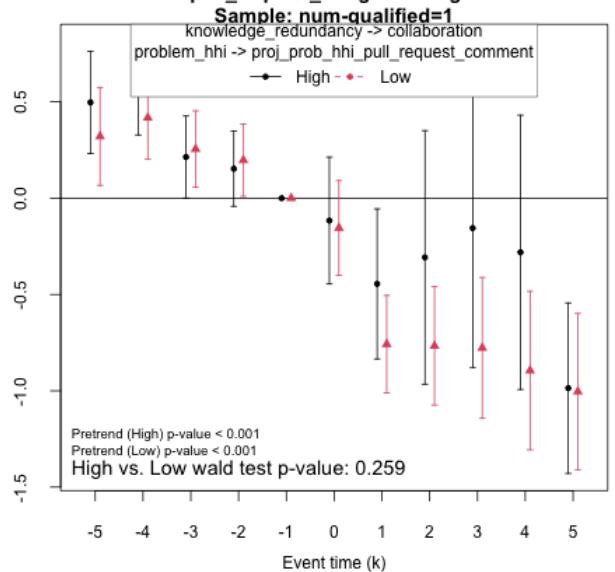
major_minor_release_count rolling5



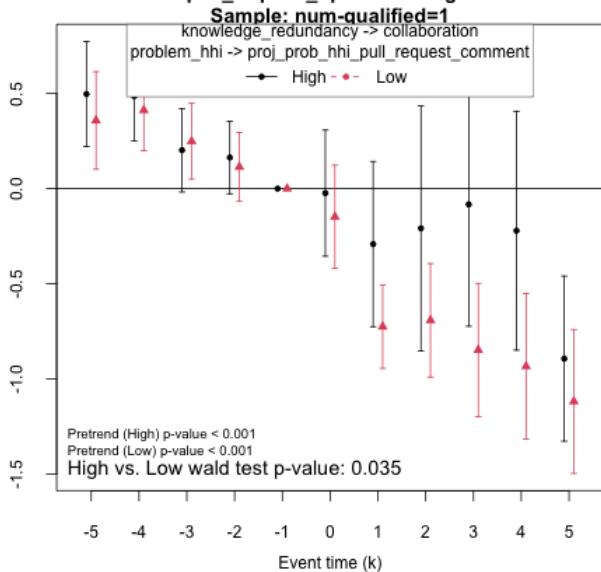
overall_new_release_count rolling5



pull_request_merged rolling5



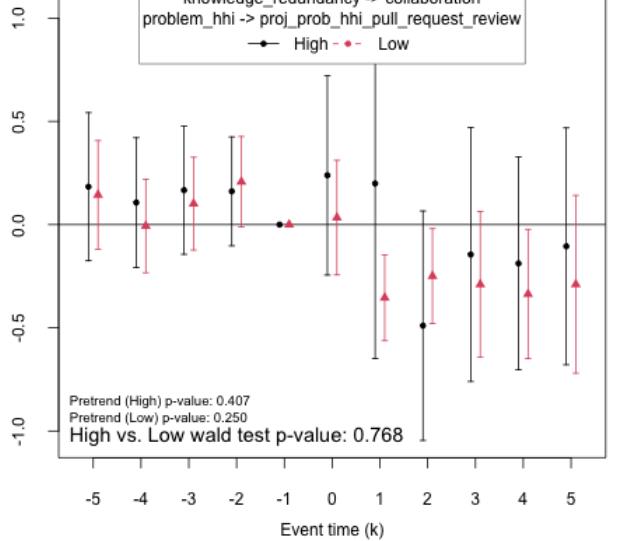
pull_request_opened rolling5



major_minor_release_count rolling5

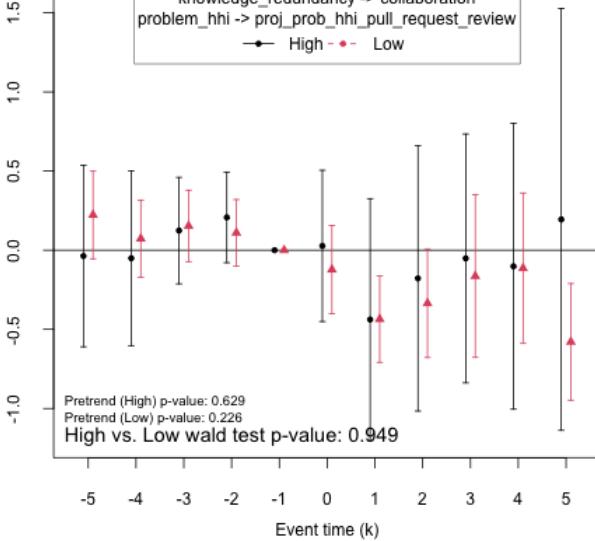
knowledge_redundancy->collaboration

problem_hhi -> proj_prob_hhi_pull_request_review
● High ● Low

**overall_new_release_count rolling5**

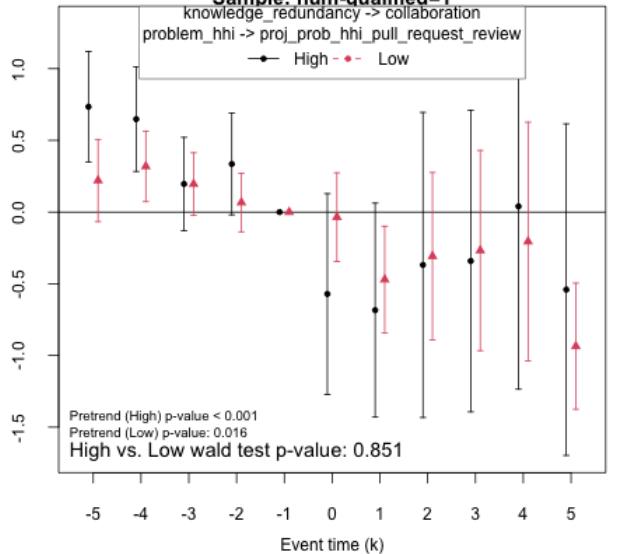
knowledge_redundancy->collaboration

problem_hhi -> proj_prob_hhi_pull_request_review
● High ● Low

**pull_request_merged rolling5**

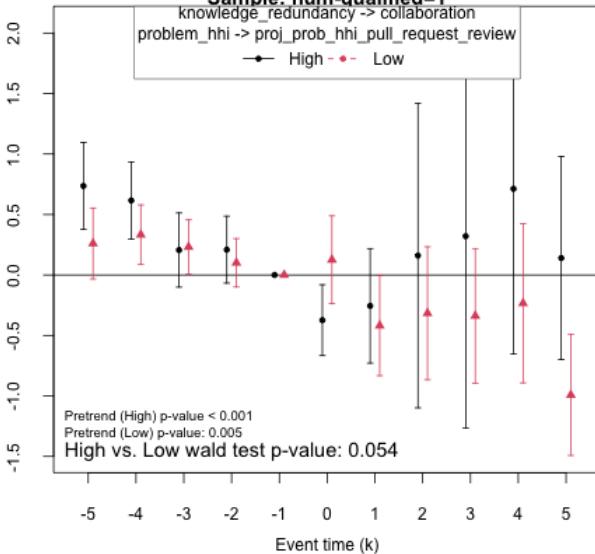
knowledge_redundancy->collaboration

problem_hhi -> proj_prob_hhi_pull_request_review
● High ● Low

**pull_request_opened rolling5**

knowledge_redundancy->collaboration

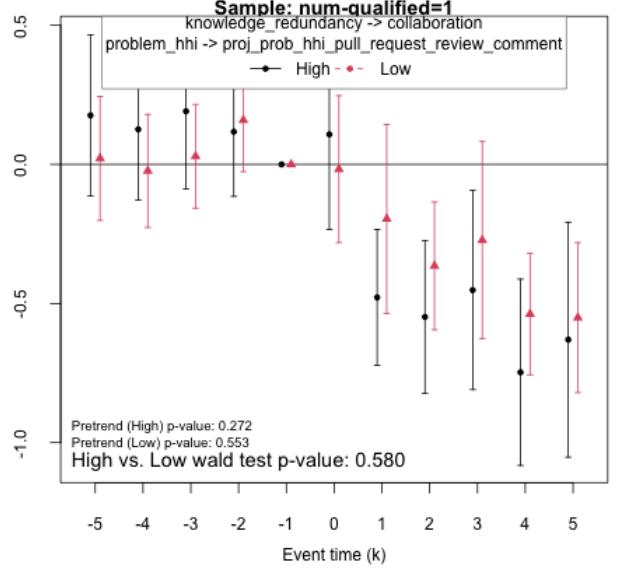
problem_hhi -> proj_prob_hhi_pull_request_review
● High ● Low



major_minor_release_count rolling5

knowledge_redundancy->collaboration

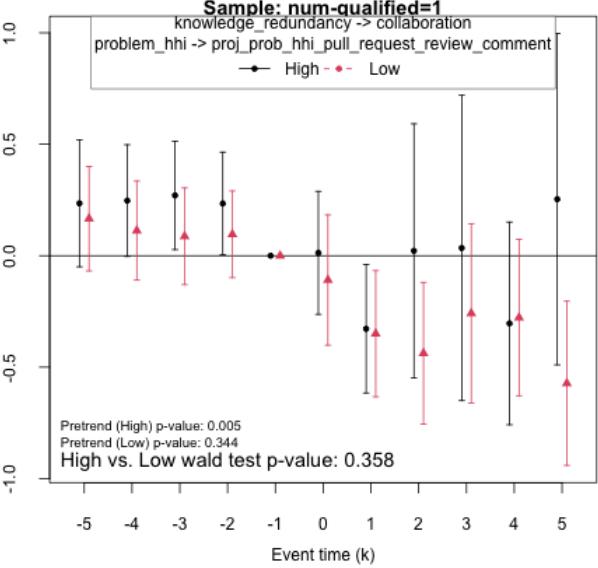
Sample: num-qualified=1
problem_hhi -> proj_prob_hhi_pull_request_review_comment
● High ▲ Low



overall_new_release_count rolling5

knowledge_redundancy->collaboration

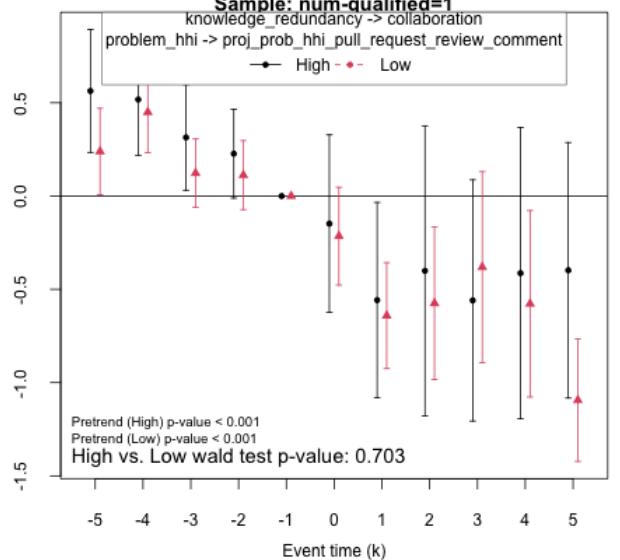
Sample: num-qualified=1
problem_hhi -> proj_prob_hhi_pull_request_review_comment
● High ▲ Low



pull_request_merged rolling5

knowledge_redundancy->collaboration

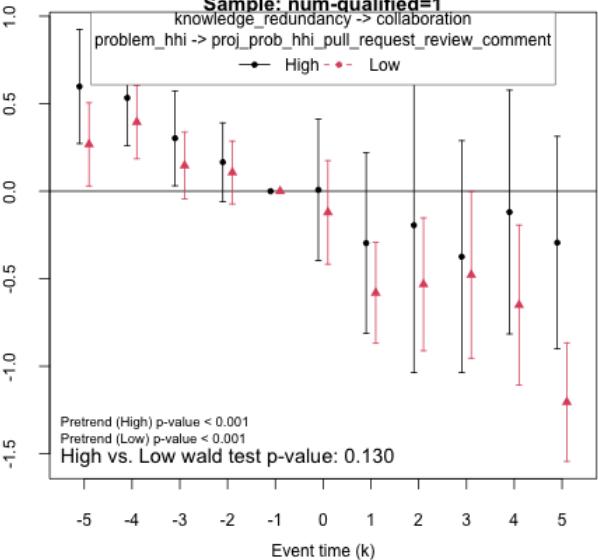
Sample: num-qualified=1
problem_hhi -> proj_prob_hhi_pull_request_review_comment
● High ▲ Low



pull_request_opened rolling5

knowledge_redundancy->collaboration

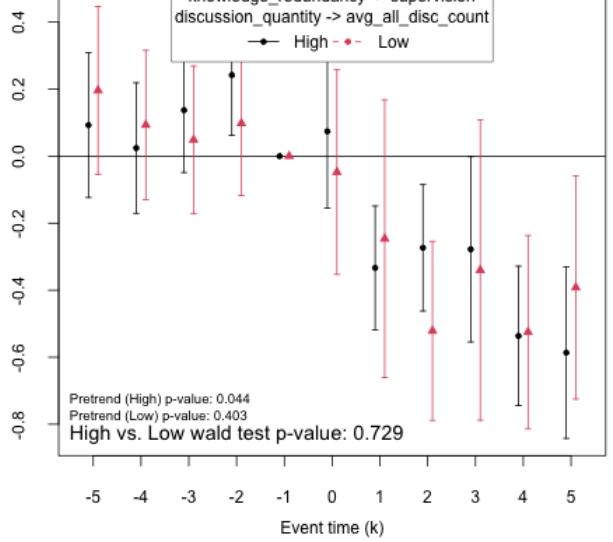
Sample: num-qualified=1
problem_hhi -> proj_prob_hhi_pull_request_review_comment
● High ▲ Low



major_minor_release_count rolling5

Sample: num-qualified=1

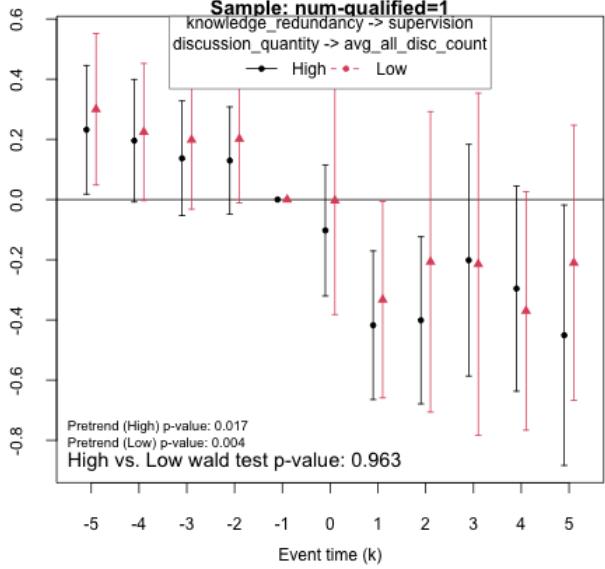
knowledge_redundancy -> supervision
discussion_quantity -> avg_all_disc_count
● High ▲ Low



overall_new_release_count rolling5

Sample: num-qualified=1

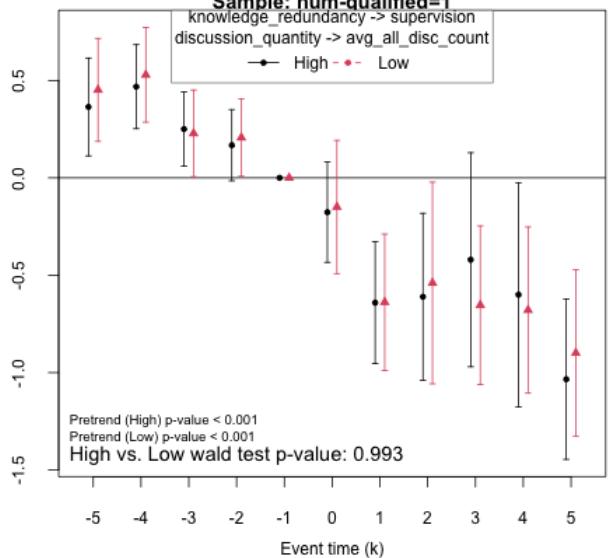
knowledge_redundancy -> supervision
discussion_quantity -> avg_all_disc_count
● High ▲ Low



pull_request_merged rolling5

Sample: num-qualified=1

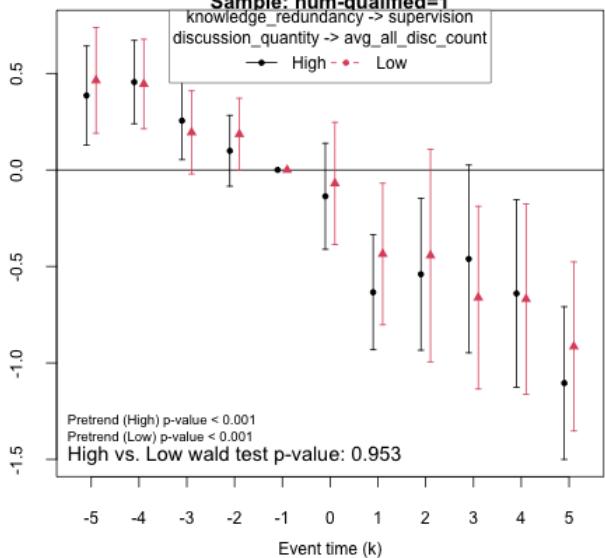
knowledge_redundancy -> supervision
discussion_quantity -> avg_all_disc_count
● High ▲ Low



pull_request_opened rolling5

Sample: num-qualified=1

knowledge_redundancy -> supervision
discussion_quantity -> avg_all_disc_count
● High ▲ Low

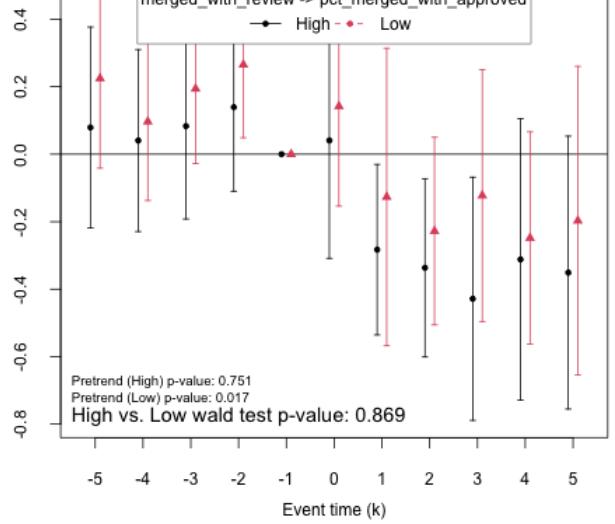


major_minor_release_count rolling5

knowledge_redundancy-> supervision

merged_with_review -> pct_merged_with_approved

● High ● Low

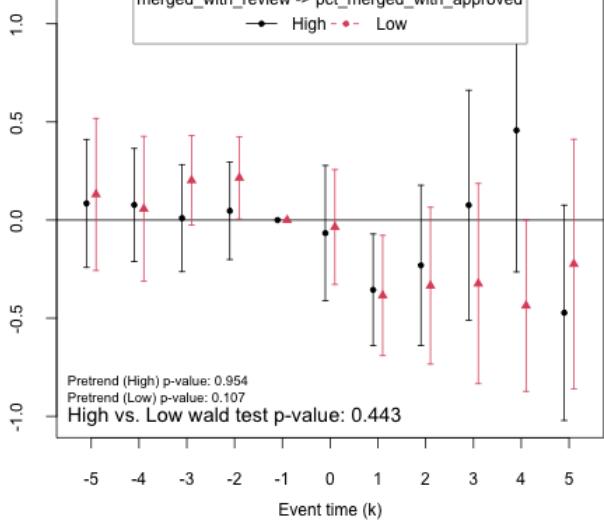


overall_new_release_count rolling5

knowledge_redundancy-> supervision

merged_with_review -> pct_merged_with_approved

● High ● Low

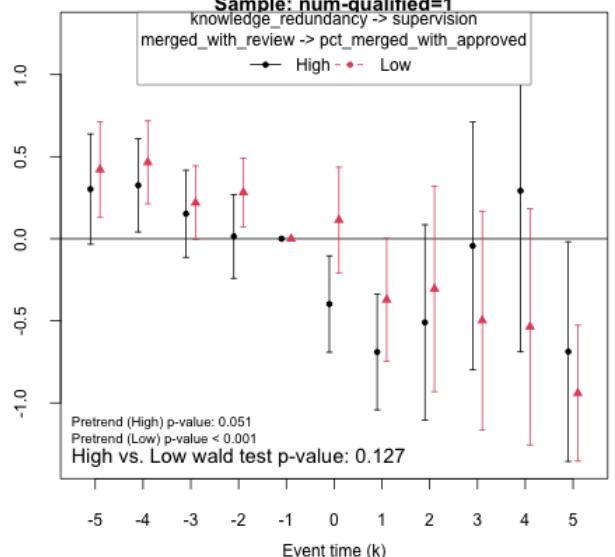


pull_request_merged rolling5

knowledge_redundancy-> supervision

merged_with_review -> pct_merged_with_approved

● High ● Low

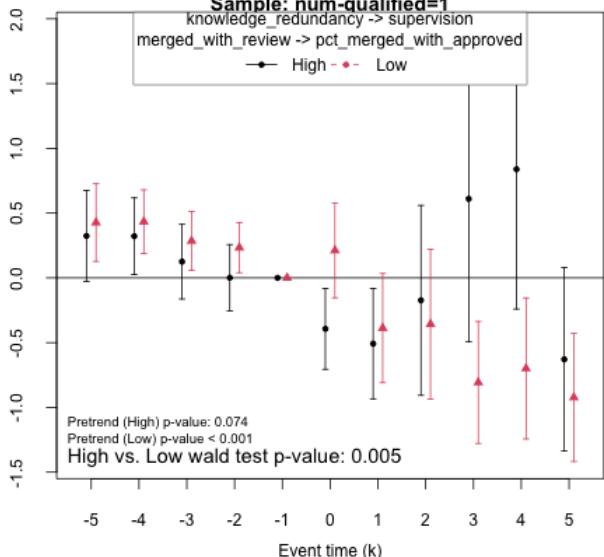


pull_request_opened rolling5

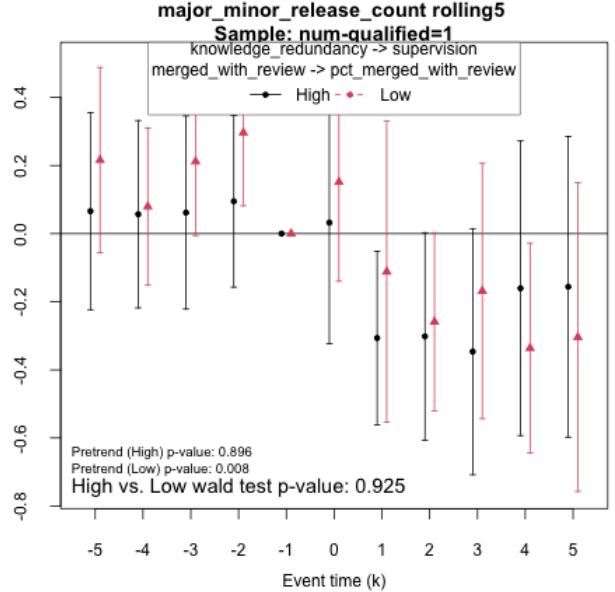
knowledge_redundancy-> supervision

merged_with_review -> pct_merged_with_approved

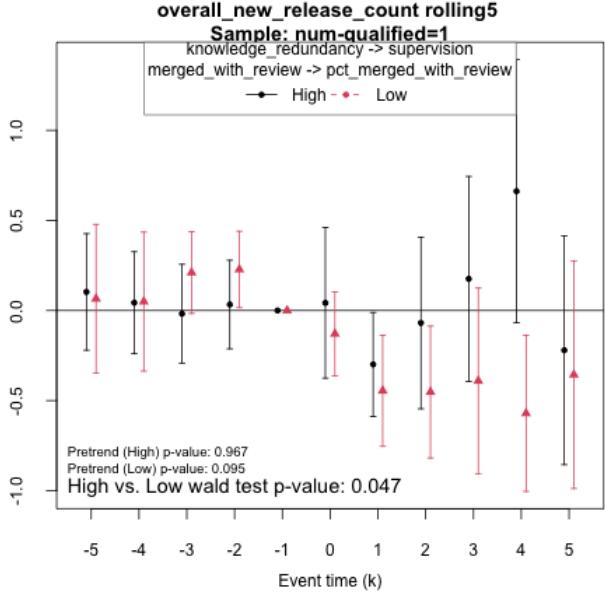
● High ● Low



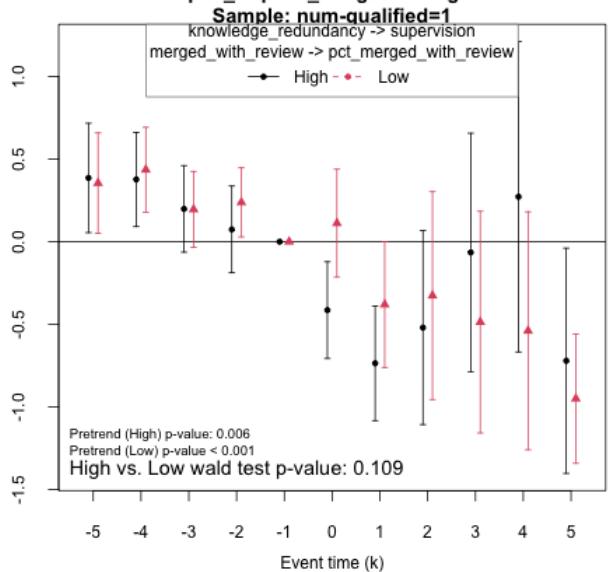
major_minor_release_count rolling5



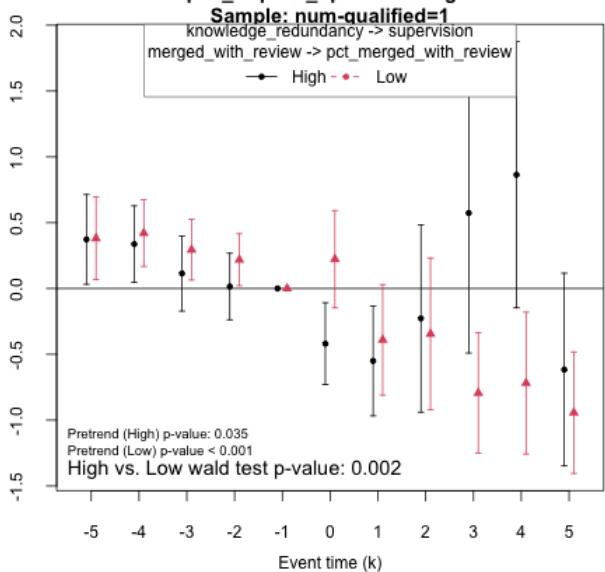
overall_new_release_count rolling5



pull_request_merged rolling5



pull_request_opened rolling5

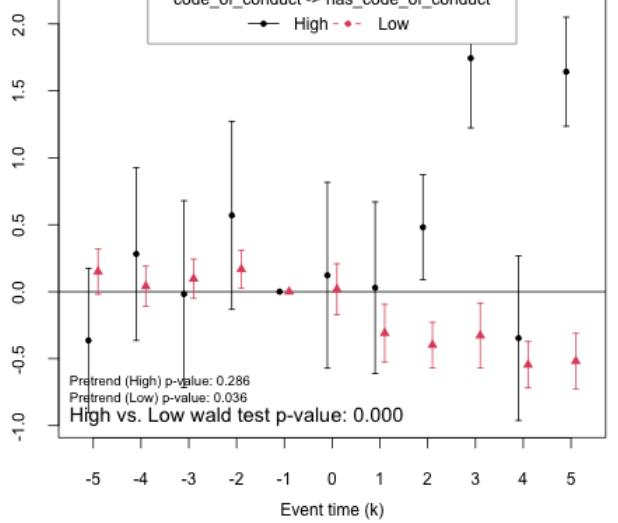


major_minor_release_count rolling5

Sample: num-qualified=1

organizational_routines -> newcomer_guidelines
 code_of_conduct -> has_code_of_conduct

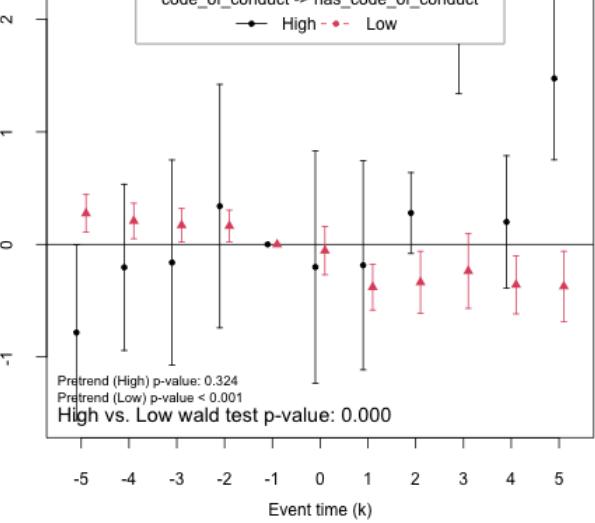
- High
- Low

**overall_new_release_count rolling5**

Sample: num-qualified=1

organizational_routines -> newcomer_guidelines
 code_of_conduct -> has_code_of_conduct

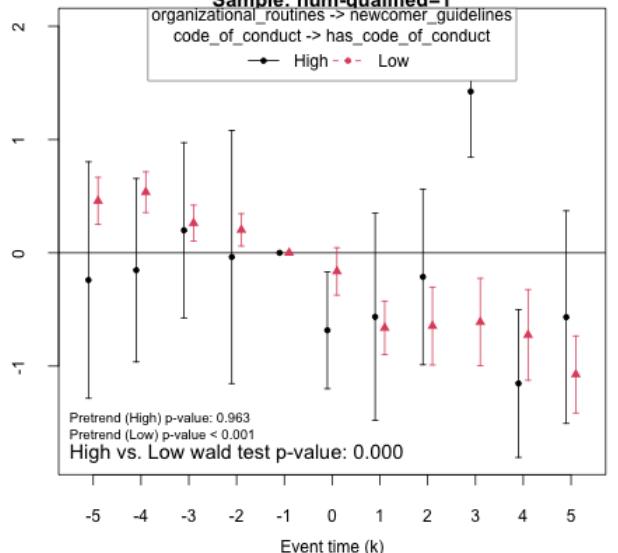
- High
- Low

**pull_request_merged rolling5**

Sample: num-qualified=1

organizational_routines -> newcomer_guidelines
 code_of_conduct -> has_code_of_conduct

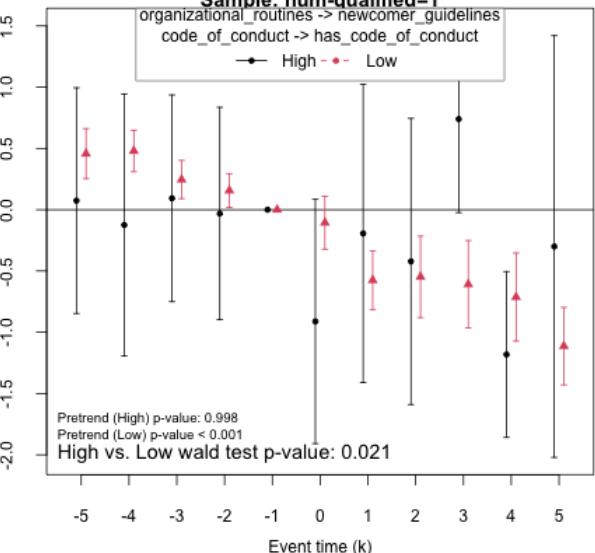
- High
- Low

**pull_request_opened rolling5**

Sample: num-qualified=1

organizational_routines -> newcomer_guidelines
 code_of_conduct -> has_code_of_conduct

- High
- Low

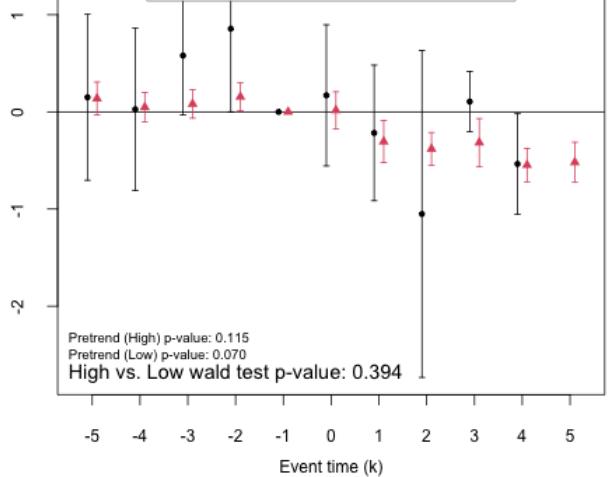


major_minor_release_count rolling5

Sample: num-qualified=1

organizational_routines -> newcomer_guidelines
 contributing_guide -> has_contributing_guide

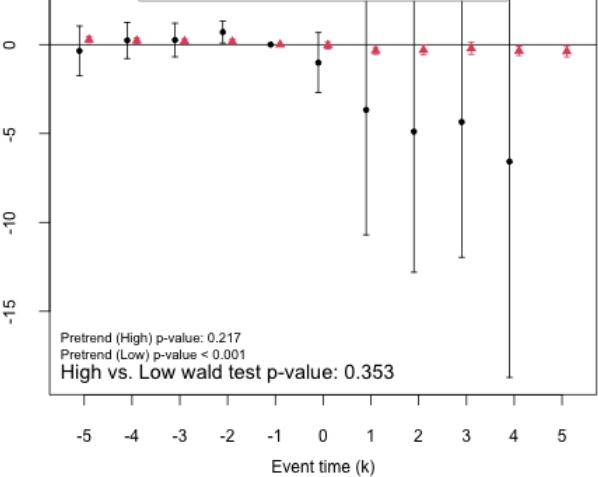
- High
- Low

**overall_new_release_count rolling5**

Sample: num-qualified=1

organizational_routines -> newcomer_guidelines
 contributing_guide -> has_contributing_guide

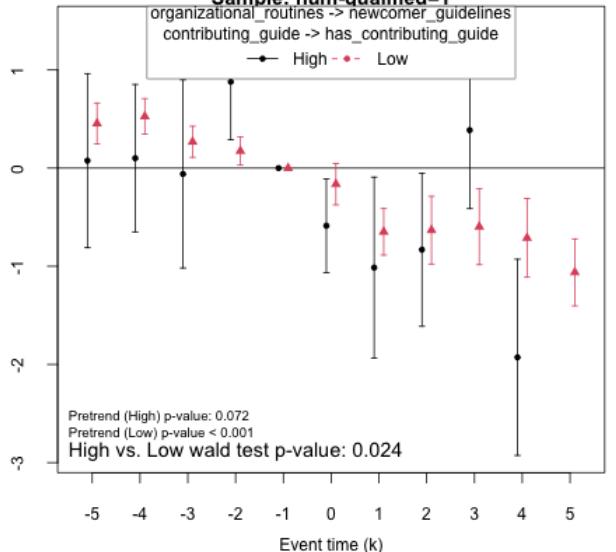
- High
- Low

**pull_request_merged rolling5**

Sample: num-qualified=1

organizational_routines -> newcomer_guidelines
 contributing_guide -> has_contributing_guide

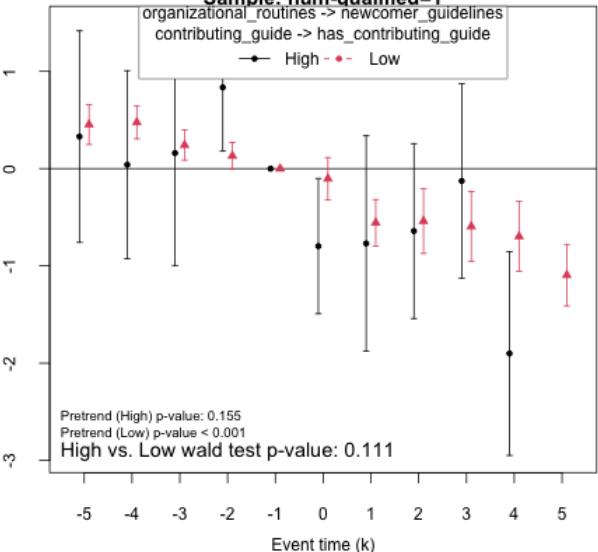
- High
- Low

**pull_request_opened rolling5**

Sample: num-qualified=1

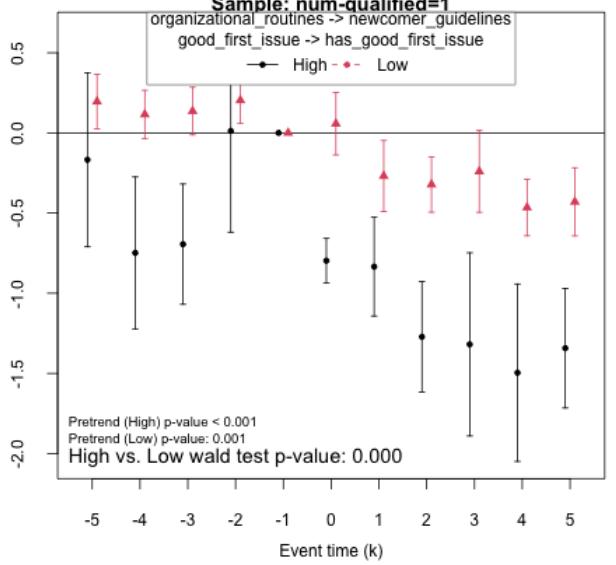
organizational_routines -> newcomer_guidelines
 contributing_guide -> has_contributing_guide

- High
- Low

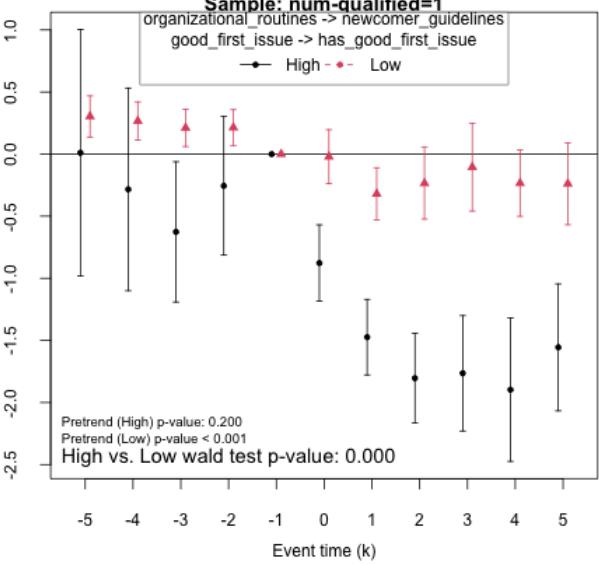


major_minor_release_count rolling5

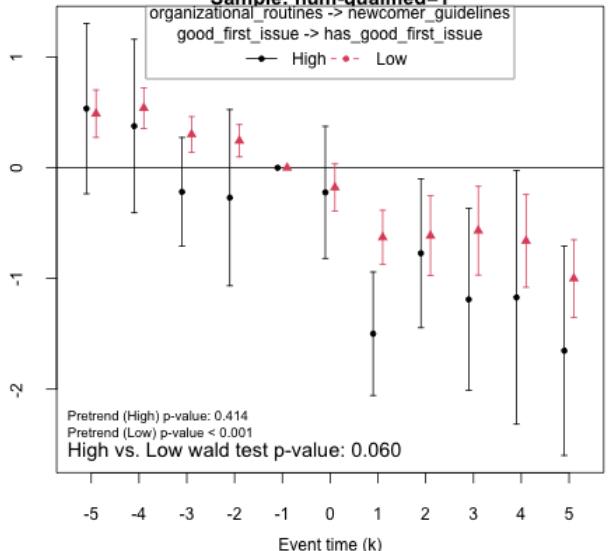
Sample: num-qualified=1

**overall_new_release_count rolling5**

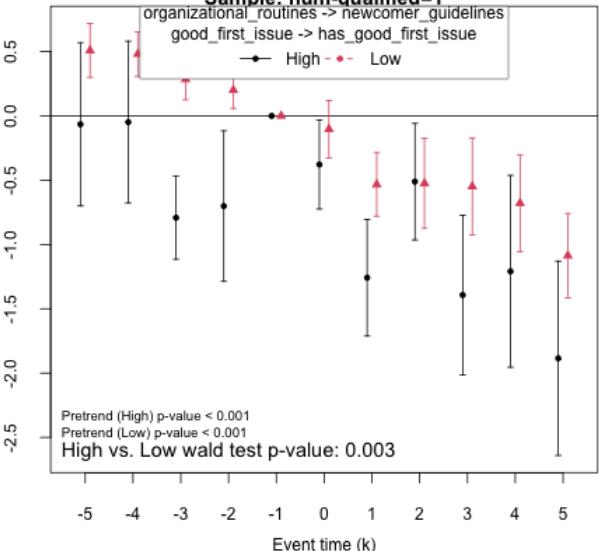
Sample: num-qualified=1

**pull_request_merged rolling5**

Sample: num-qualified=1

**pull_request_opened rolling5**

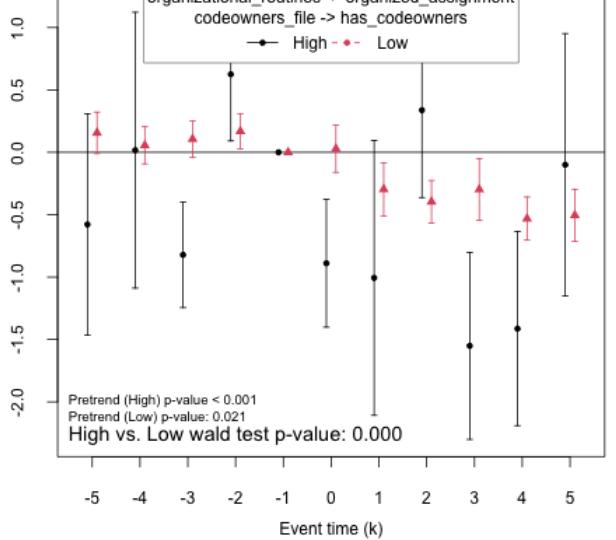
Sample: num-qualified=1



major_minor_release_count rolling5

Sample: num-qualified=1

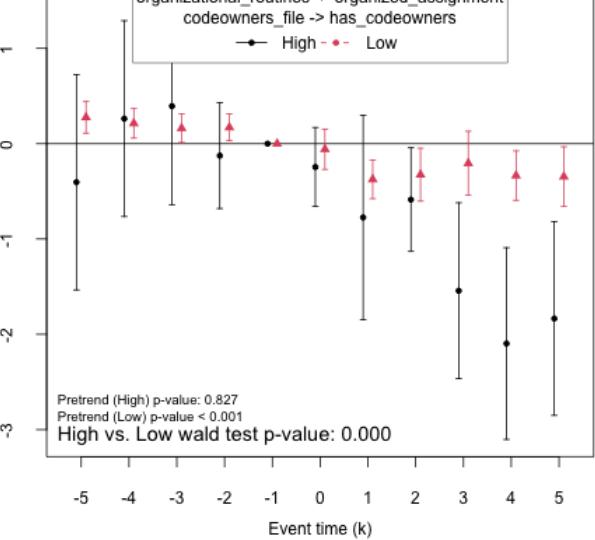
organizational_routines -> organized_assignment
codeowners_file -> has_codeowners



overall_new_release_count rolling5

Sample: num-qualified=1

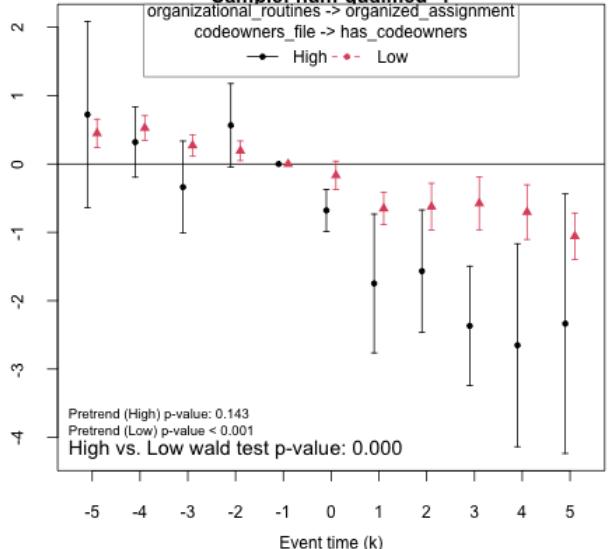
organizational_routines -> organized_assignment
codeowners_file -> has_codeowners



pull_request_merged rolling5

Sample: num-qualified=1

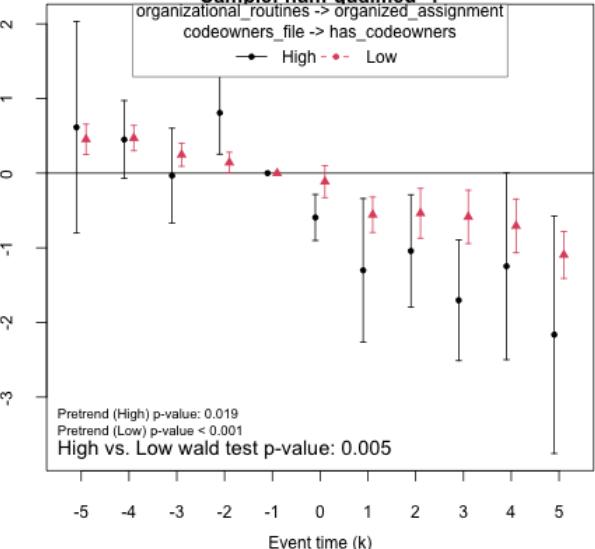
organizational_routines -> organized_assignment
codeowners_file -> has_codeowners



pull_request_opened rolling5

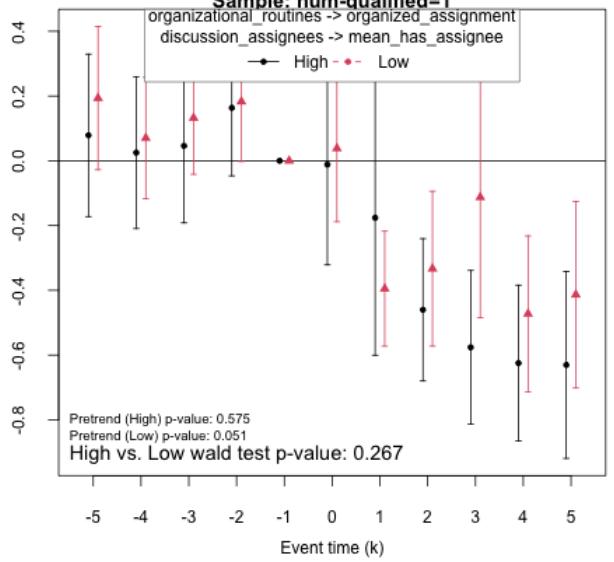
Sample: num-qualified=1

organizational_routines -> organized_assignment
codeowners_file -> has_codeowners



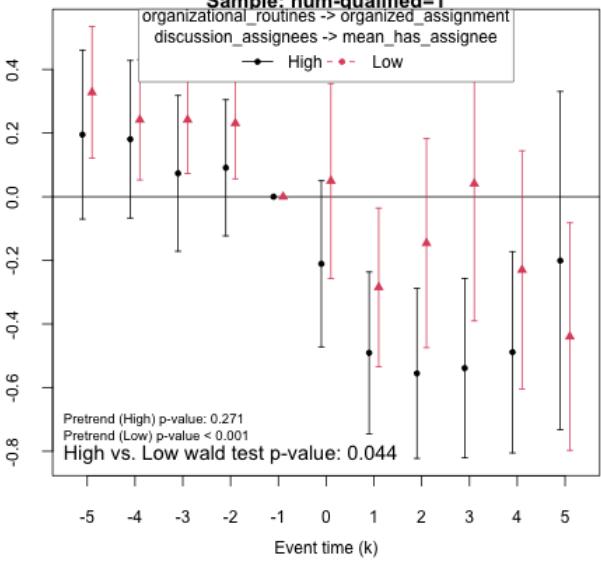
major_minor_release_count rolling5

Sample: num-qualified=1



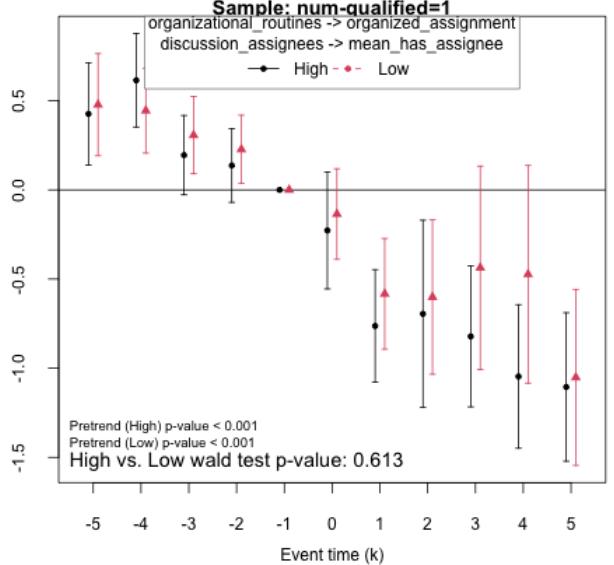
overall_new_release_count rolling5

Sample: num-qualified=1



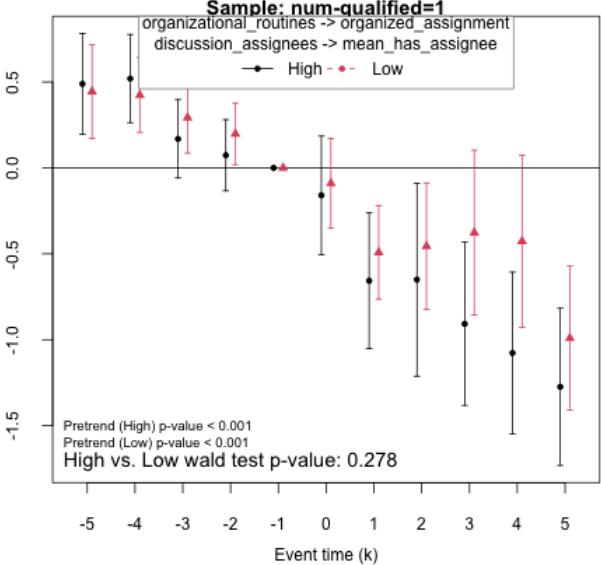
pull_request_merged rolling5

Sample: num-qualified=1



pull_request_opened rolling5

Sample: num-qualified=1

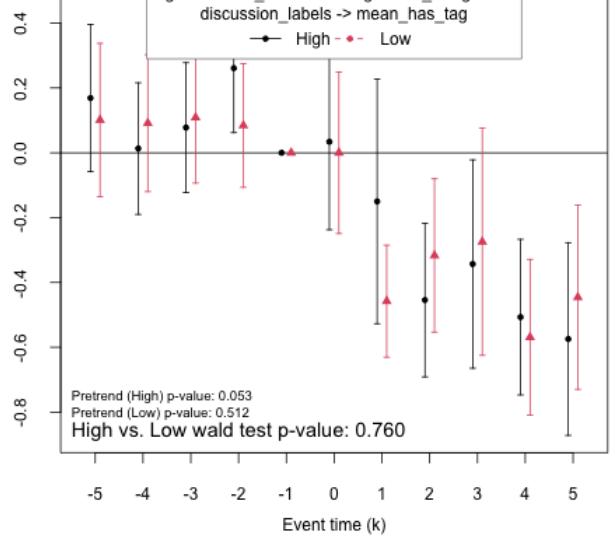


major_minor_release_count rolling5

Sample: num-qualified=1

organizational_routines -> organized_assignment
discussion_labels -> mean_has_tag

● High ▲ Low

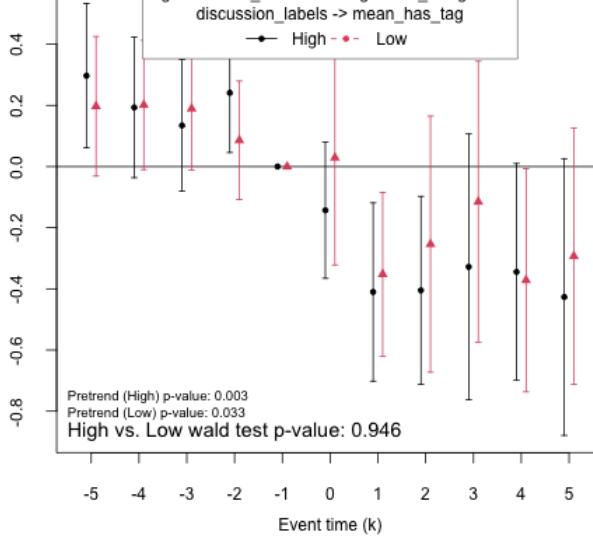


overall_new_release_count rolling5

Sample: num-qualified=1

organizational_routines -> organized_assignment
discussion_labels -> mean_has_tag

● High ▲ Low

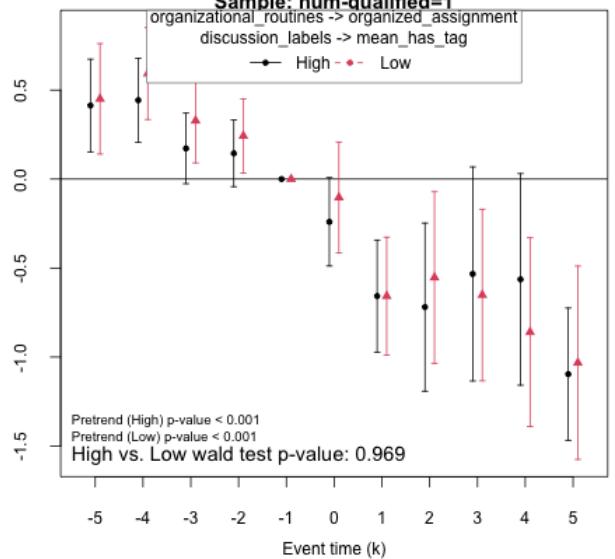


pull_request_merged rolling5

Sample: num-qualified=1

organizational_routines -> organized_assignment
discussion_labels -> mean_has_tag

● High ▲ Low

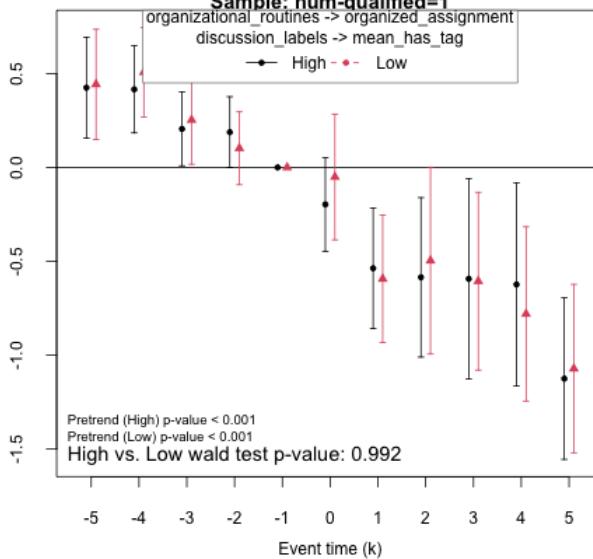


pull_request_opened rolling5

Sample: num-qualified=1

organizational_routines -> organized_assignment
discussion_labels -> mean_has_tag

● High ▲ Low

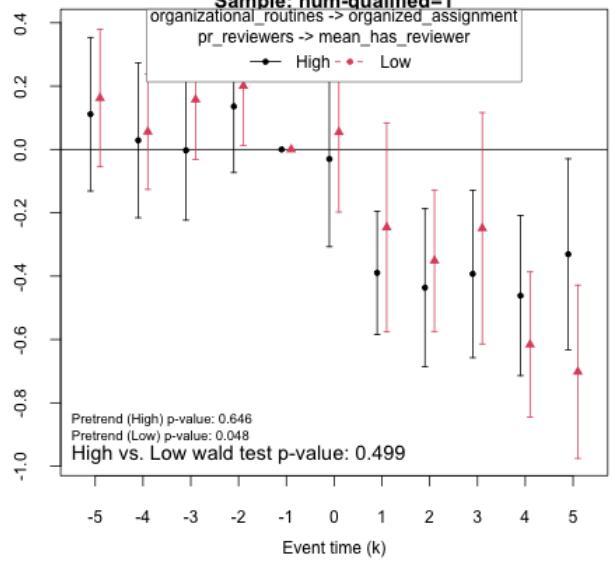


major_minor_release_count rolling5

Sample: num-qualified=1

organizational_routines -> organized_assignment
pr_reviewers -> mean_has_reviewer

● High ▲ Low

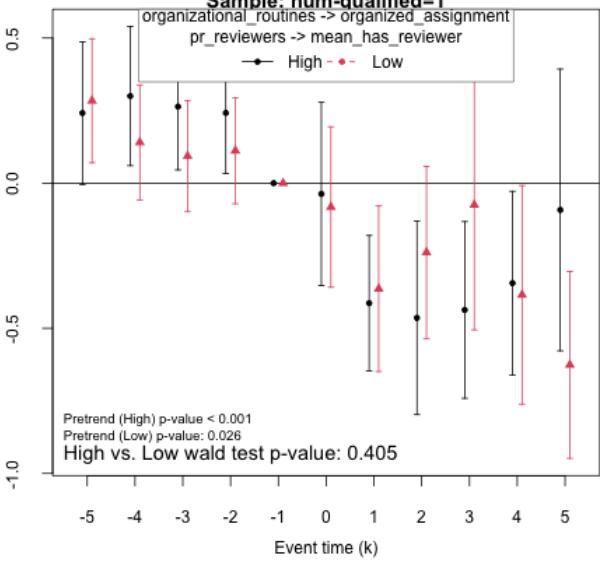


overall_new_release_count rolling5

Sample: num-qualified=1

organizational_routines -> organized_assignment
pr_reviewers -> mean_has_reviewer

● High ▲ Low

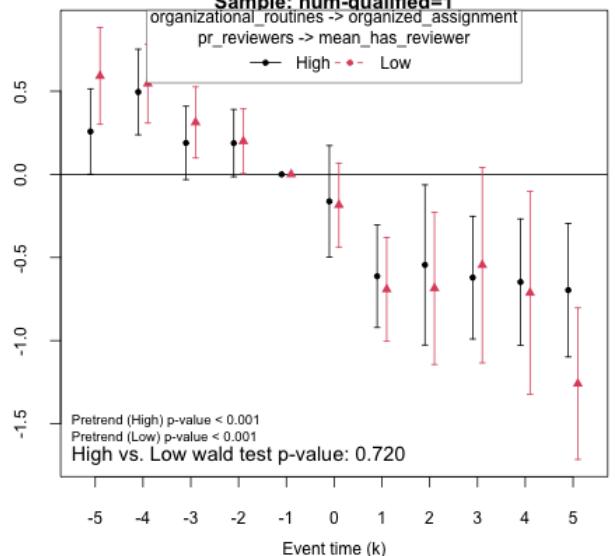


pull_request_merged rolling5

Sample: num-qualified=1

organizational_routines -> organized_assignment
pr_reviewers -> mean_has_reviewer

● High ▲ Low

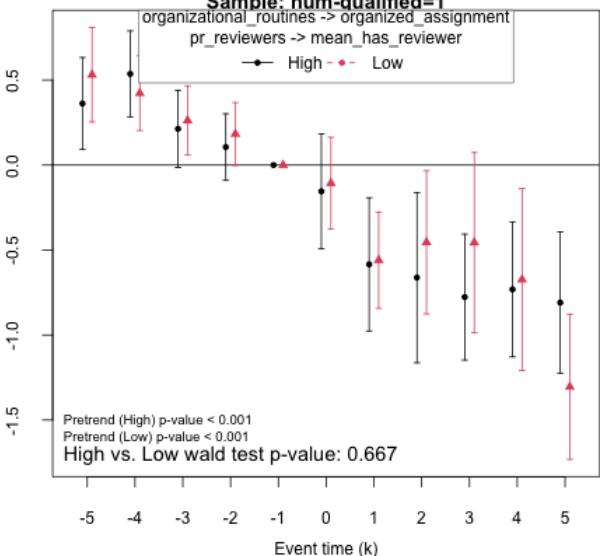


pull_request_opened rolling5

Sample: num-qualified=1

organizational_routines -> organized_assignment
pr_reviewers -> mean_has_reviewer

● High ▲ Low

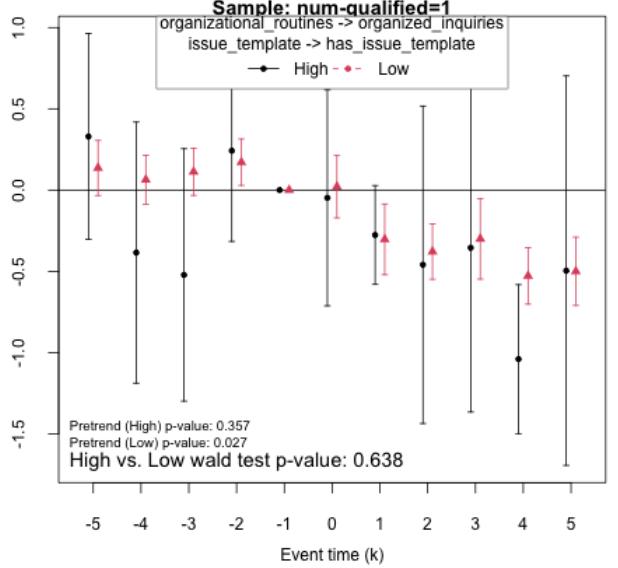


major_minor_release_count rolling5**Sample: num-qualified=1**

organizational_routines -> organized_inquiries

issue_template -> has_issue_template

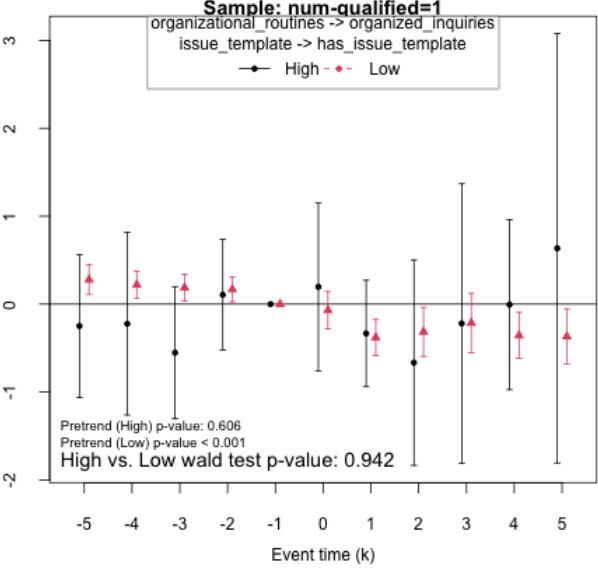
● High - ● Low

**overall_new_release_count rolling5****Sample: num-qualified=1**

organizational_routines -> organized_inquiries

issue_template -> has_issue_template

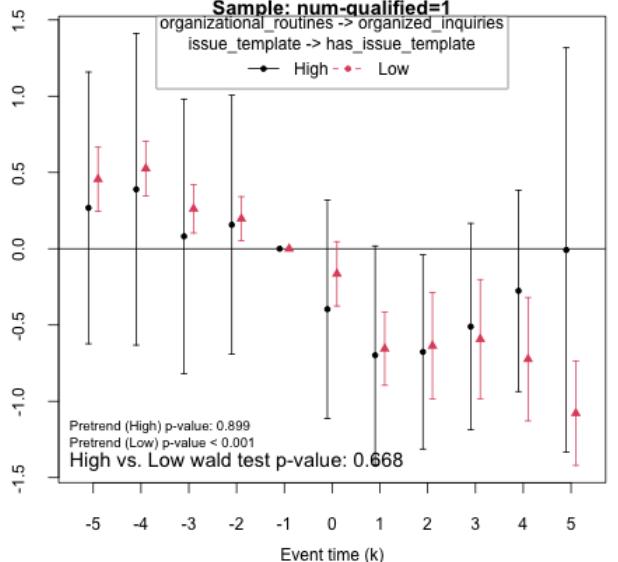
● High - ● Low

**pull_request_merged rolling5****Sample: num-qualified=1**

organizational_routines -> organized_inquiries

issue_template -> has_issue_template

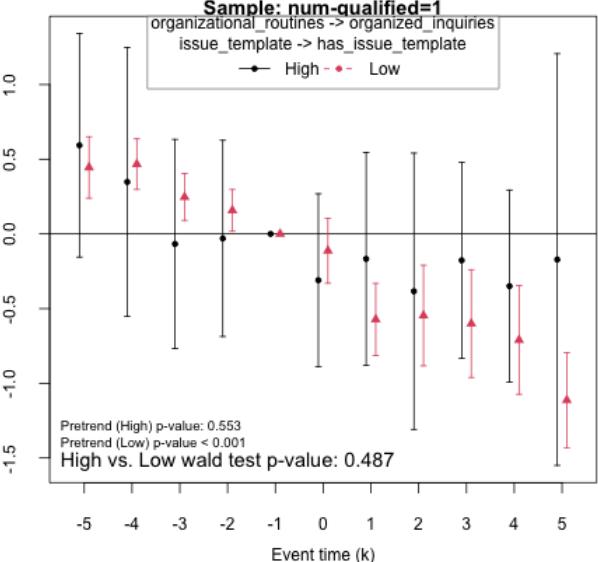
● High - ● Low

**pull_request_opened rolling5****Sample: num-qualified=1**

organizational_routines -> organized_inquiries

issue_template -> has_issue_template

● High - ● Low



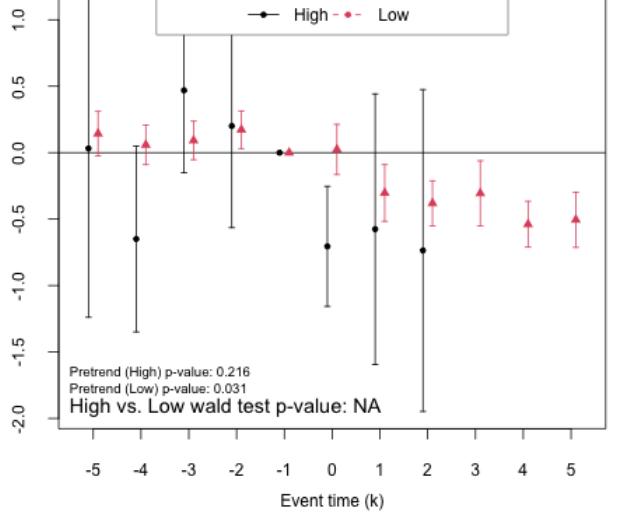
major_minor_release_count rolling5

Sample: num-qualified=1

organizational_routines -> organized_inquiries

pr_template -> has_pr_template

● High - ● Low

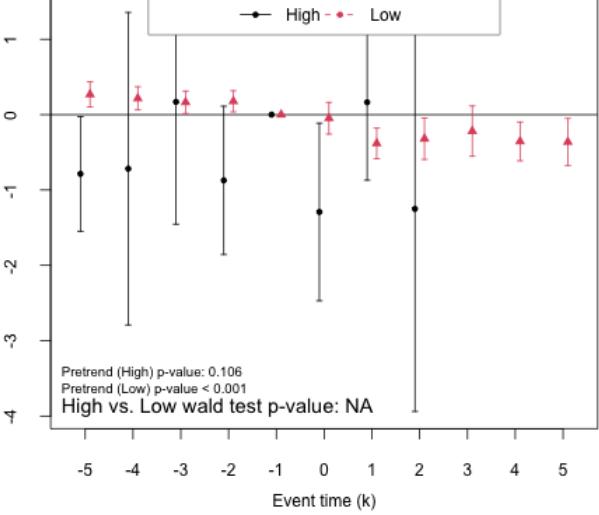
**overall_new_release_count rolling5**

Sample: num-qualified=1

organizational_routines -> organized_inquiries

pr_template -> has_pr_template

● High - ● Low

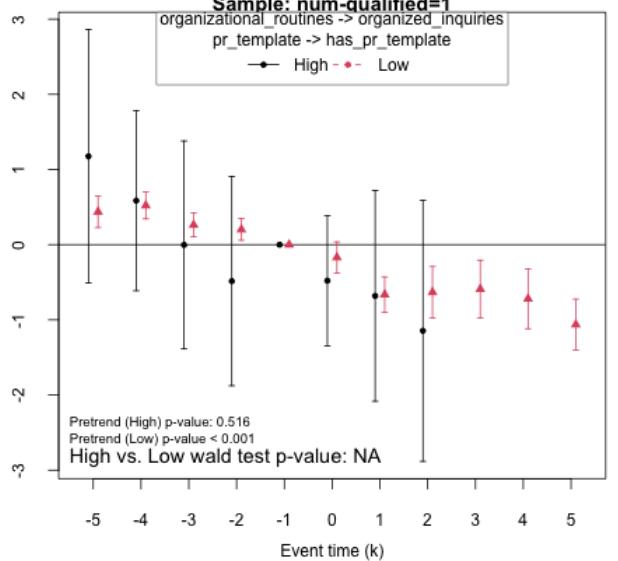
**pull_request_merged rolling5**

Sample: num-qualified=1

organizational_routines -> organized_inquiries

pr_template -> has_pr_template

● High - ● Low

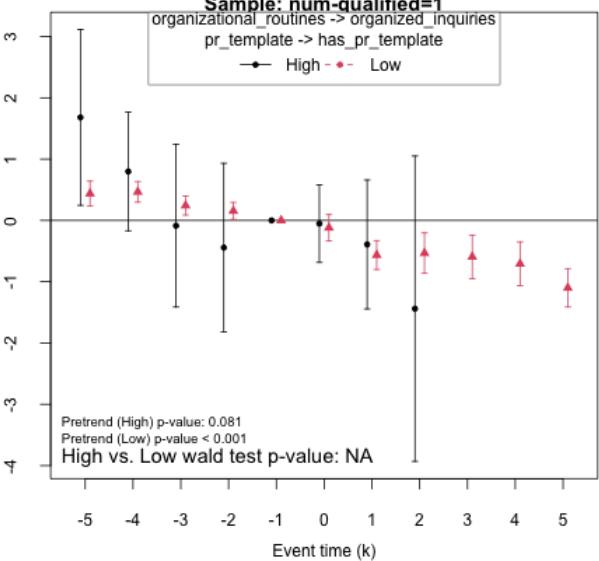
**pull_request_opened rolling5**

Sample: num-qualified=1

organizational_routines -> organized_inquiries

pr_template -> has_pr_template

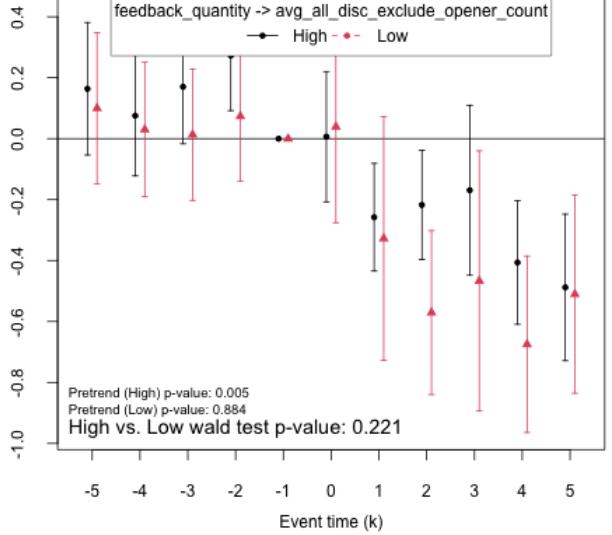
● High - ● Low



major_minor_release_count rolling5

Sample: num-qualified=1

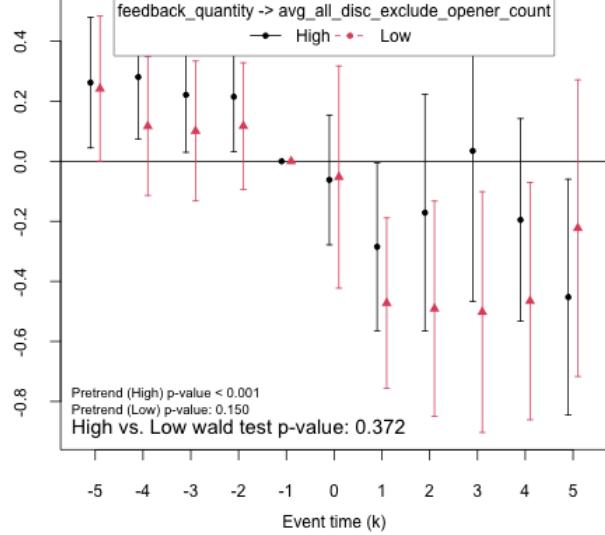
talent_investment -> feedback
feedback_quantity -> avg_all_disc_exclude_opener_count



overall_new_release_count rolling5

Sample: num-qualified=1

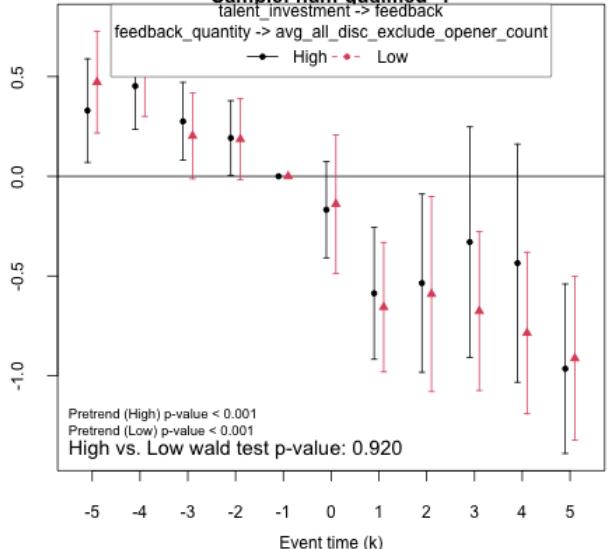
talent_investment -> feedback
feedback_quantity -> avg_all_disc_exclude_opener_count



pull_request_merged rolling5

Sample: num-qualified=1

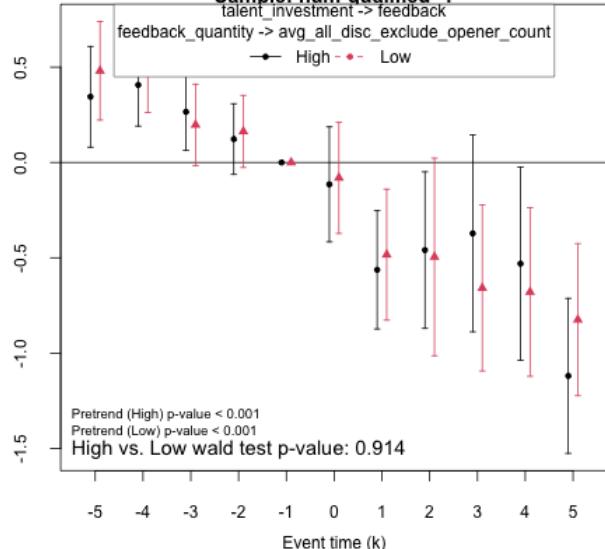
talent_investment -> feedback
feedback_quantity -> avg_all_disc_exclude_opener_count



pull_request_opened rolling5

Sample: num-qualified=1

talent_investment -> feedback
feedback_quantity -> avg_all_disc_exclude_opener_count

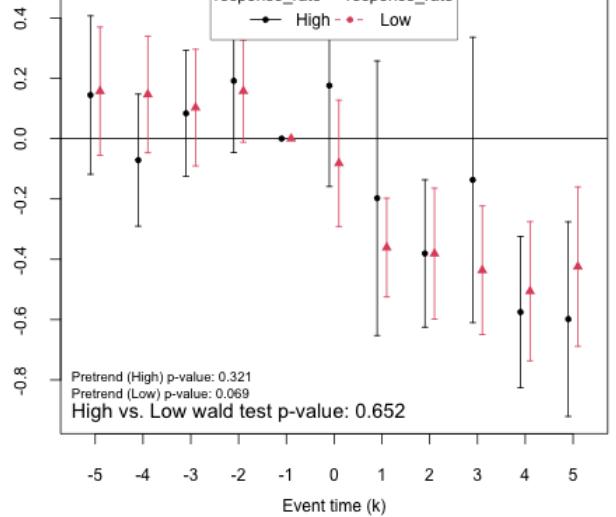


major_minor_release_count rolling5

Sample: num-qualified=1

talent_investment -> feedback
 response_rate -> response_rate

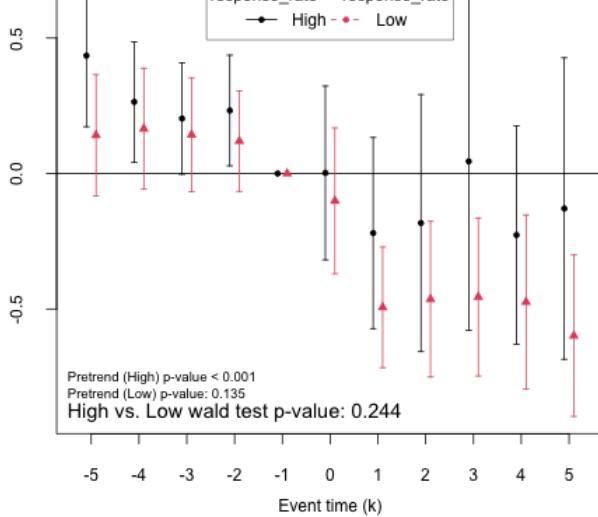
- High
- ▲ Low

**overall_new_release_count rolling5**

Sample: num-qualified=1

talent_investment -> feedback
 response_rate -> response_rate

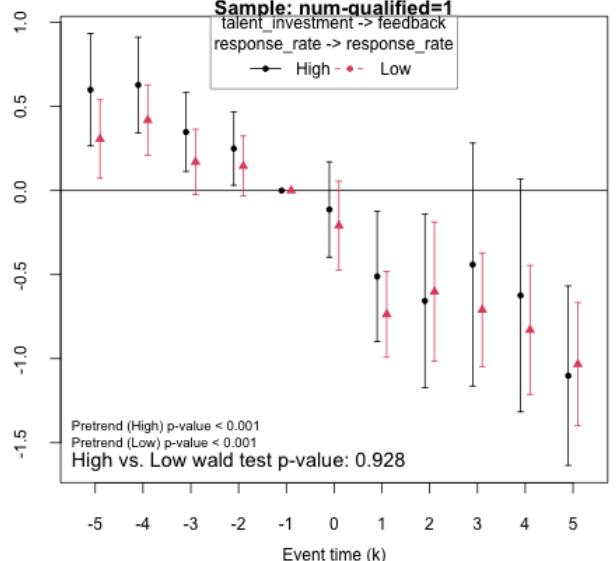
- High
- ▲ Low

**pull_request_merged rolling5**

Sample: num-qualified=1

talent_investment -> feedback
 response_rate -> response_rate

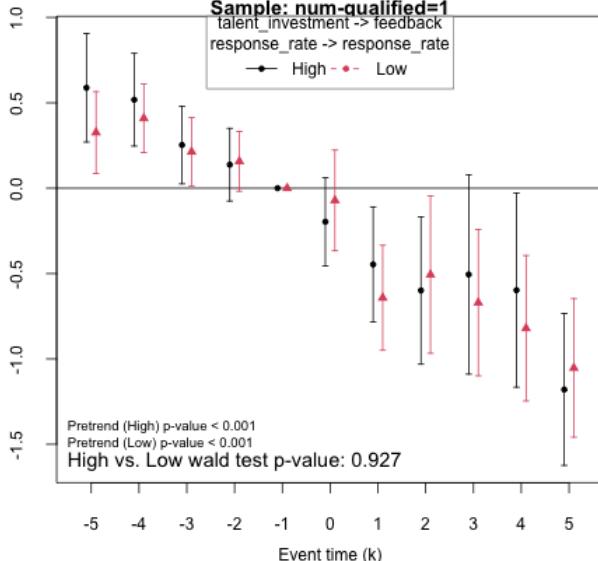
- High
- ▲ Low

**pull_request_opened rolling5**

Sample: num-qualified=1

talent_investment -> feedback
 response_rate -> response_rate

- High
- ▲ Low

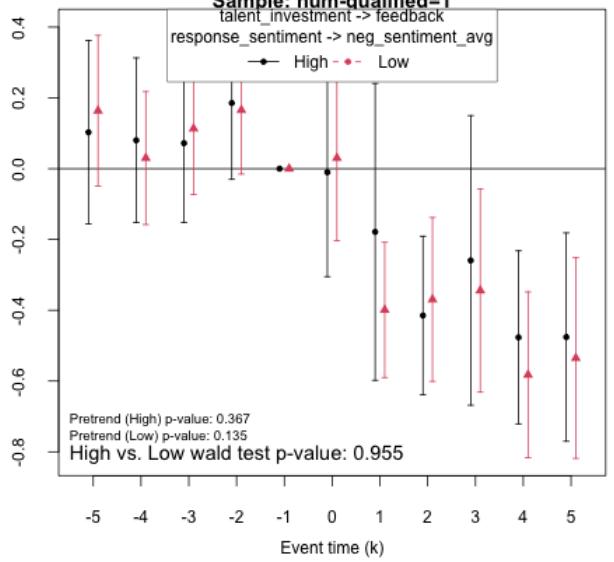


major_minor_release_count rolling5

Sample: num-qualified=1

talent_investment -> feedback
response_sentiment -> neg_sentiment_avg

● High ▲ Low

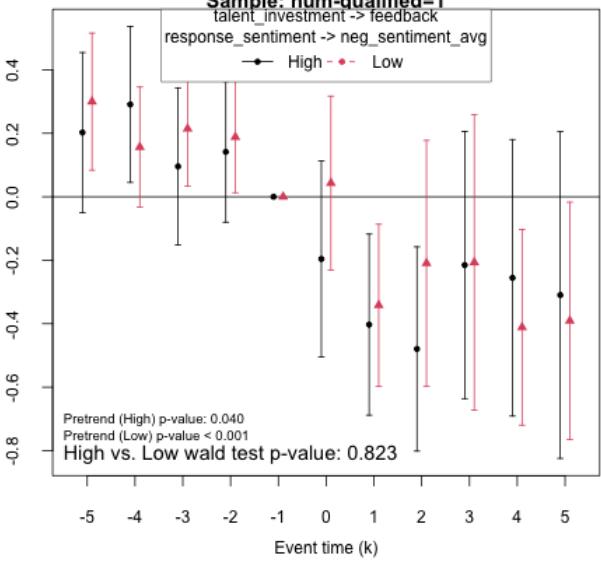


overall_new_release_count rolling5

Sample: num-qualified=1

talent_investment -> feedback
response_sentiment -> neg_sentiment_avg

● High ▲ Low

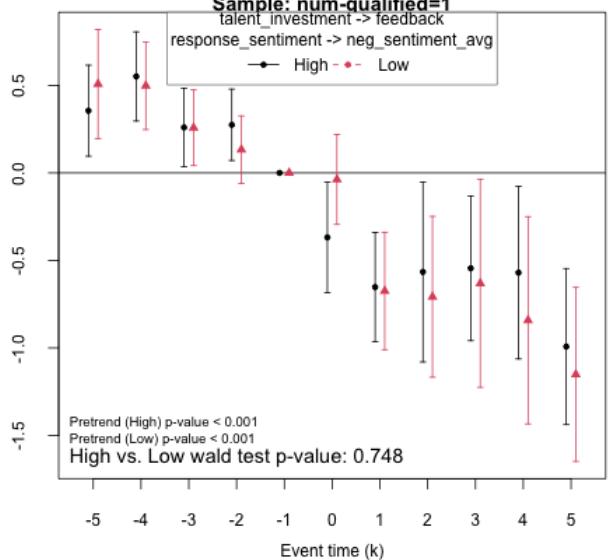


pull_request_merged rolling5

Sample: num-qualified=1

talent_investment -> feedback
response_sentiment -> neg_sentiment_avg

● High ▲ Low

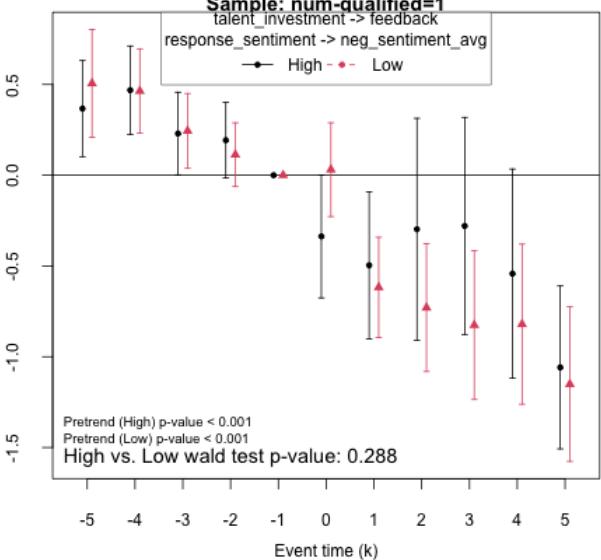


pull_request_opened rolling5

Sample: num-qualified=1

talent_investment -> feedback
response_sentiment -> neg_sentiment_avg

● High ▲ Low

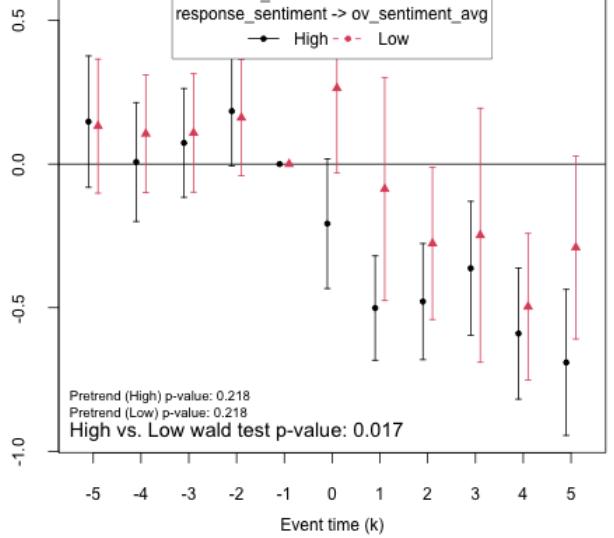


major_minor_release_count rolling5

Sample: num-qualified=1

talent_investment -> feedback
response_sentiment -> ov_sentiment_avg

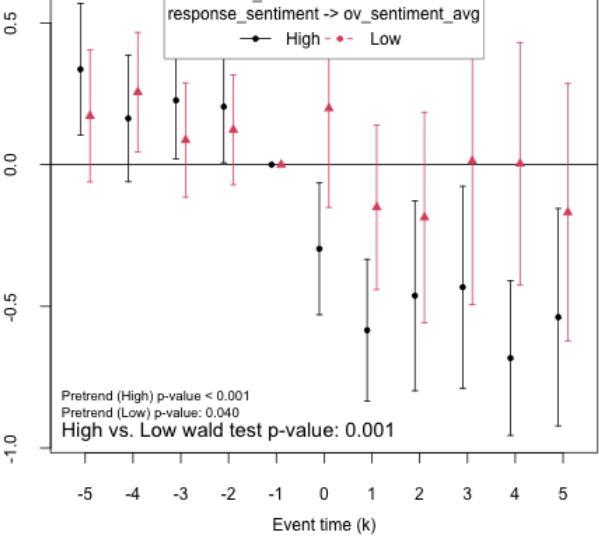
● High ▲ Low

**overall_new_release_count rolling5**

Sample: num-qualified=1

talent_investment -> feedback
response_sentiment -> ov_sentiment_avg

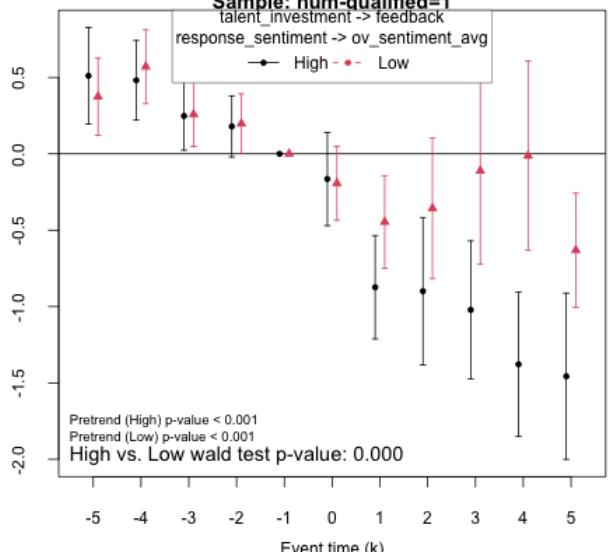
● High ▲ Low

**pull_request_merged rolling5**

Sample: num-qualified=1

talent_investment -> feedback
response_sentiment -> ov_sentiment_avg

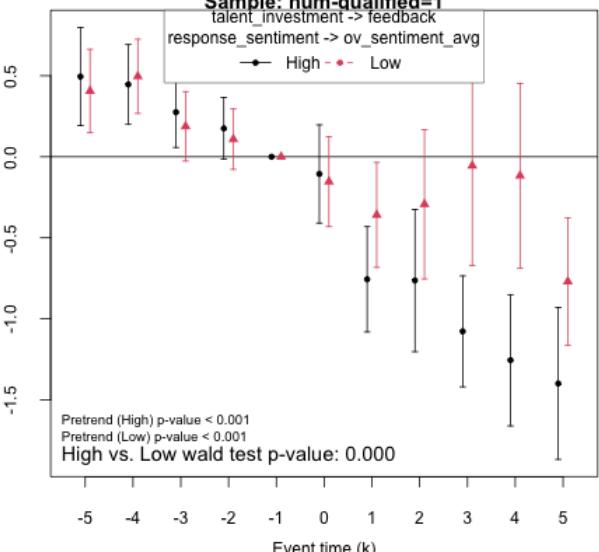
● High ▲ Low

**pull_request_opened rolling5**

Sample: num-qualified=1

talent_investment -> feedback
response_sentiment -> ov_sentiment_avg

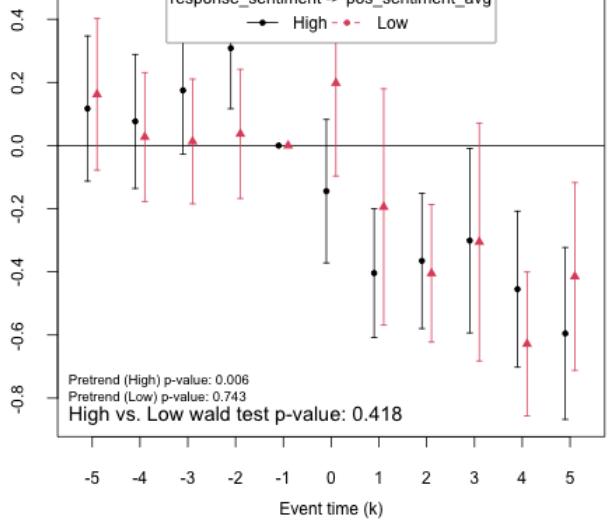
● High ▲ Low



major_minor_release_count rolling5

Sample: num-qualified=1

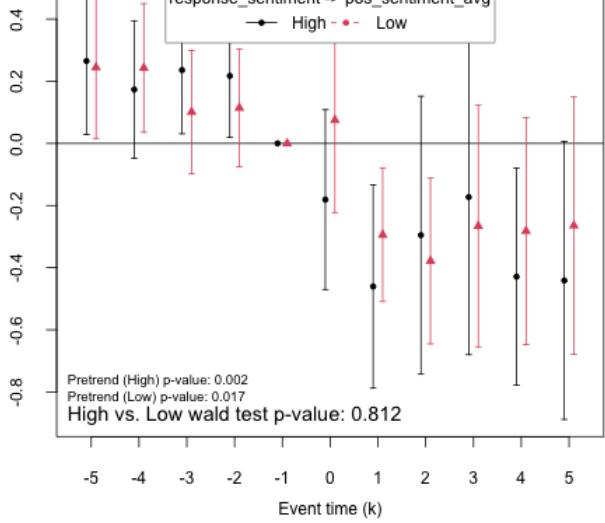
talent_investment -> feedback
response_sentiment -> pos_sentiment_avg



overall_new_release_count rolling5

Sample: num-qualified=1

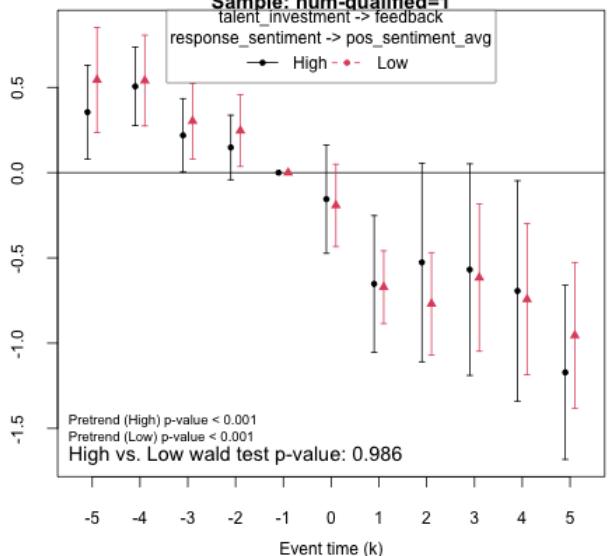
talent_investment -> feedback
response_sentiment -> pos_sentiment_avg



pull_request_merged rolling5

Sample: num-qualified=1

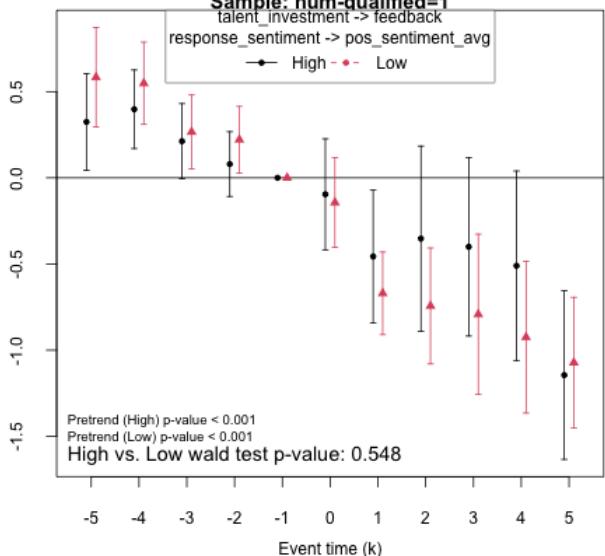
talent_investment -> feedback
response_sentiment -> pos_sentiment_avg



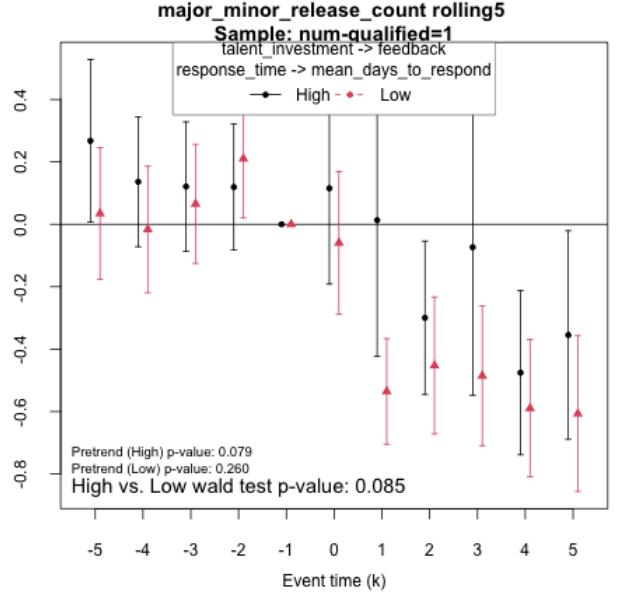
pull_request_opened rolling5

Sample: num-qualified=1

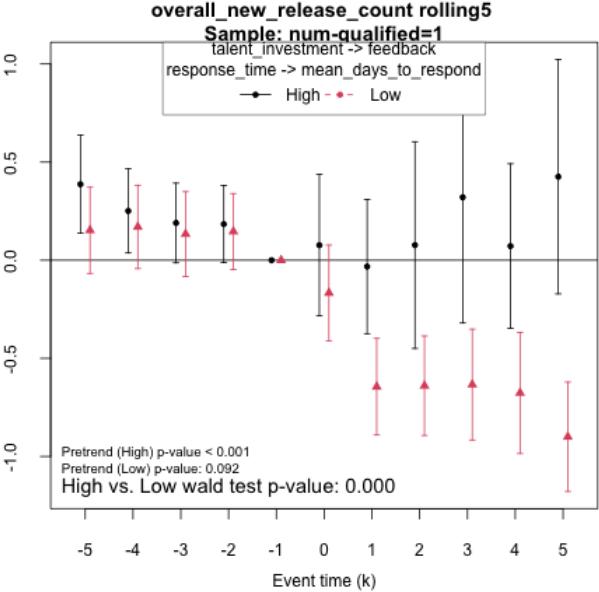
talent_investment -> feedback
response_sentiment -> pos_sentiment_avg



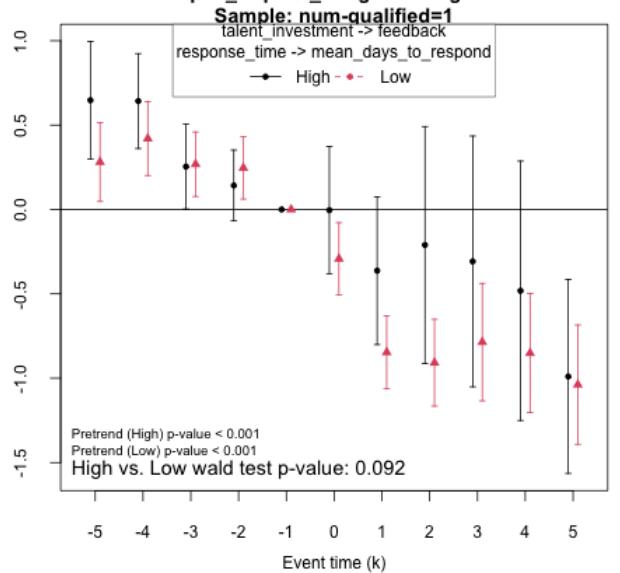
major_minor_release_count rolling5



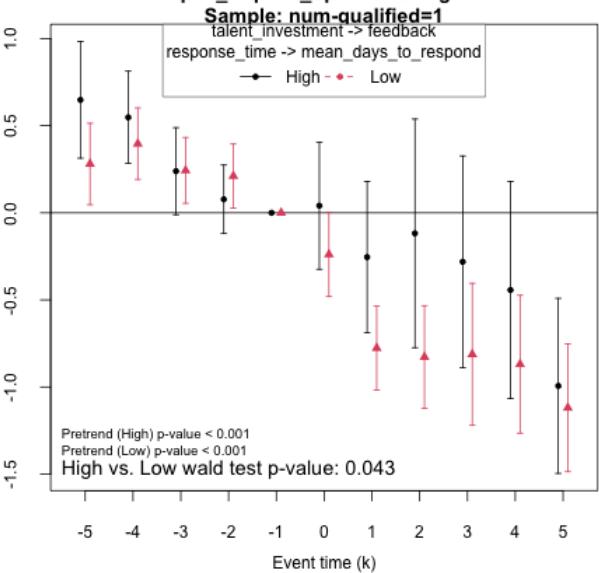
overall_new_release_count rolling5



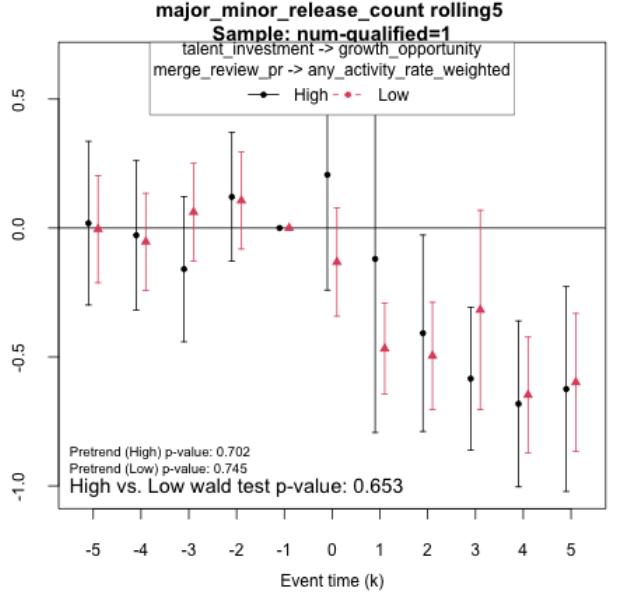
pull_request_merged rolling5



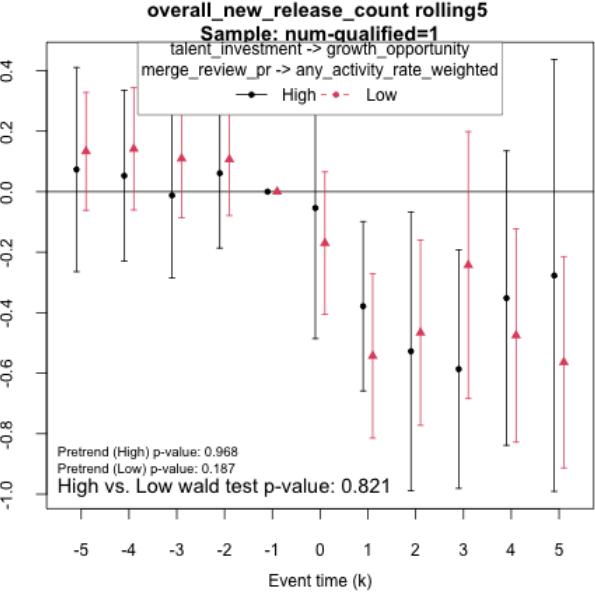
pull_request_opened rolling5



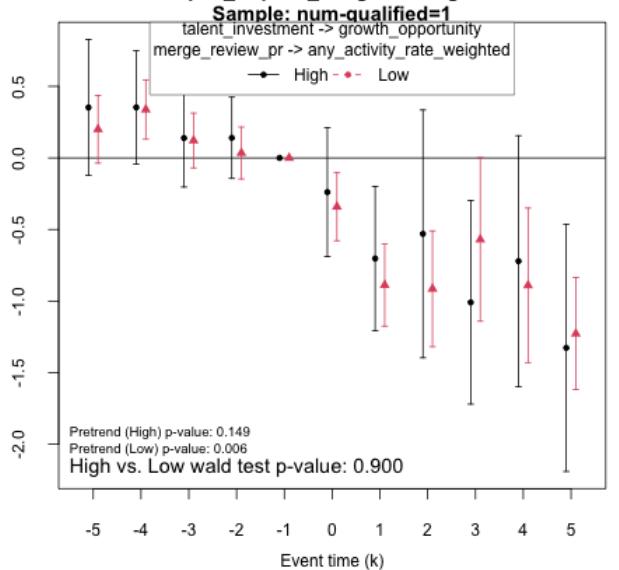
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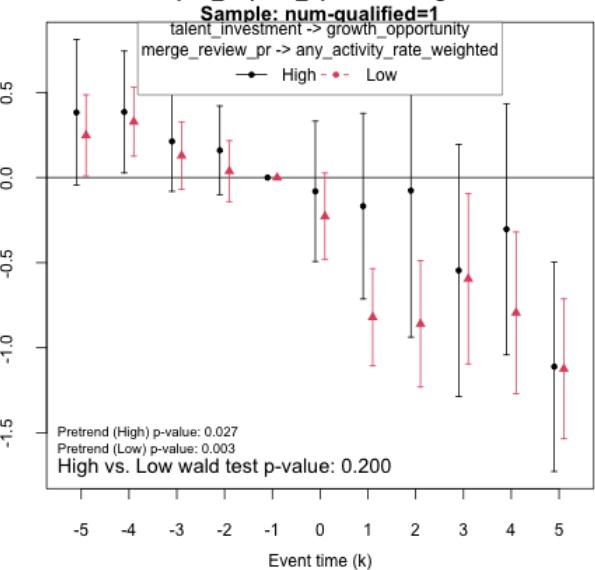
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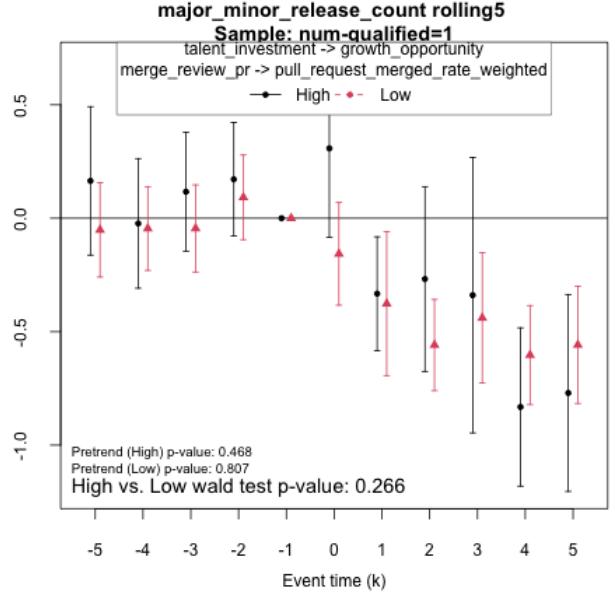
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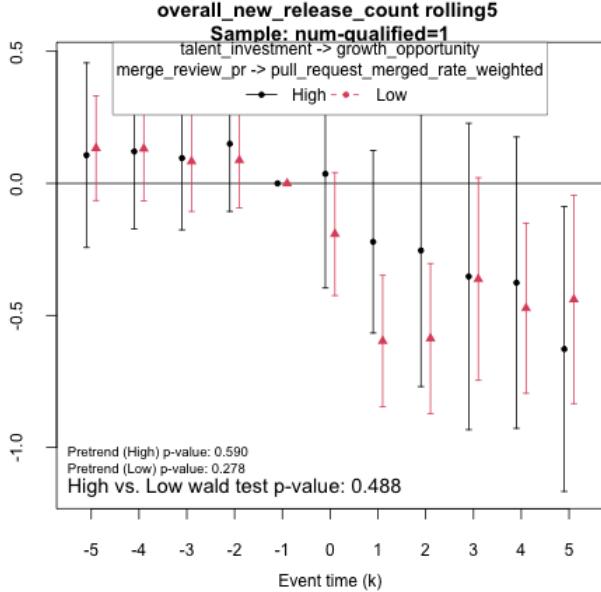
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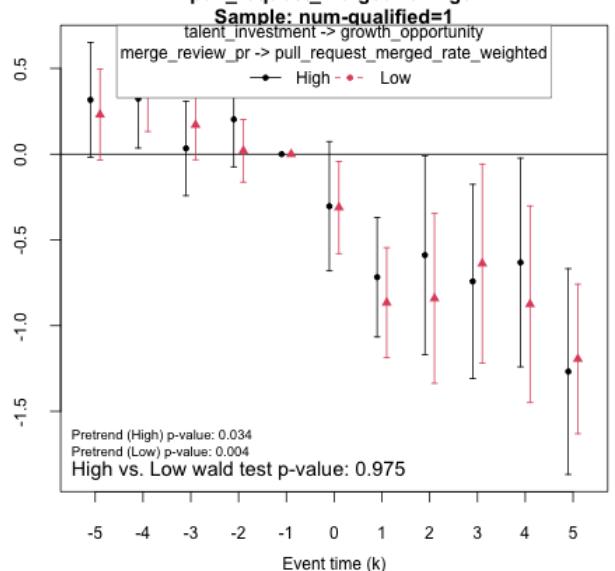
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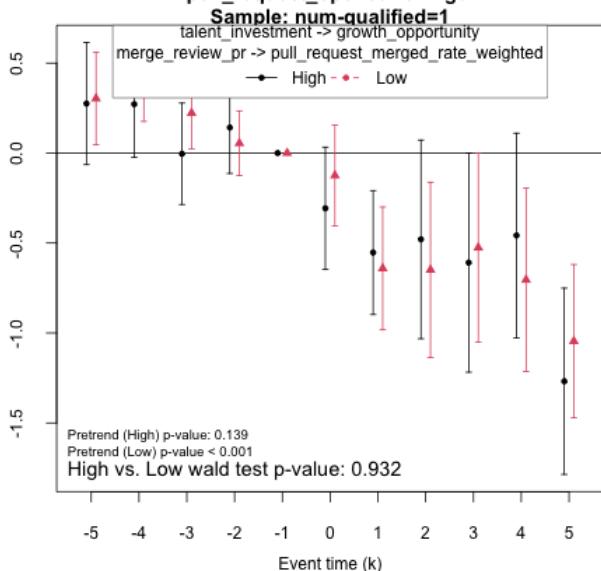
overall_new_release_count rolling5



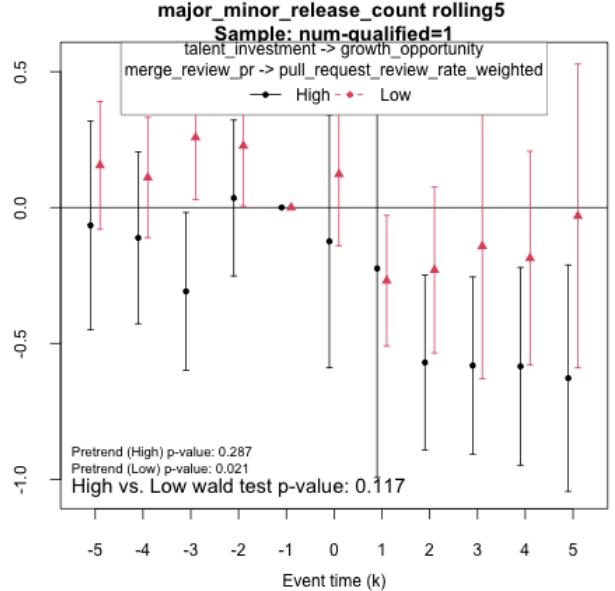
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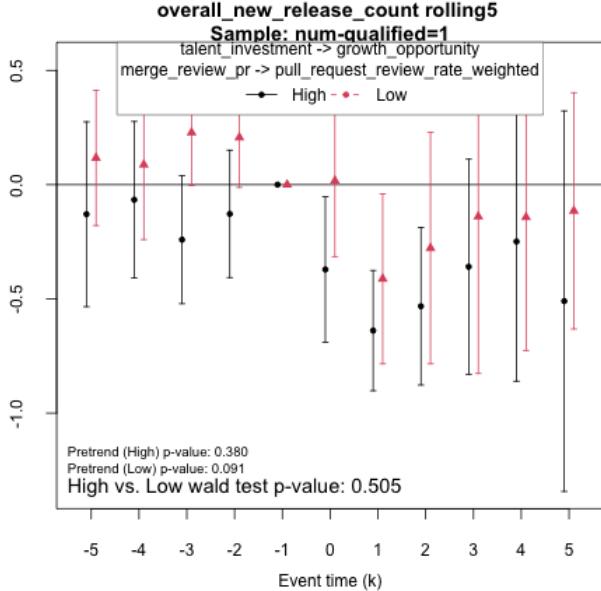
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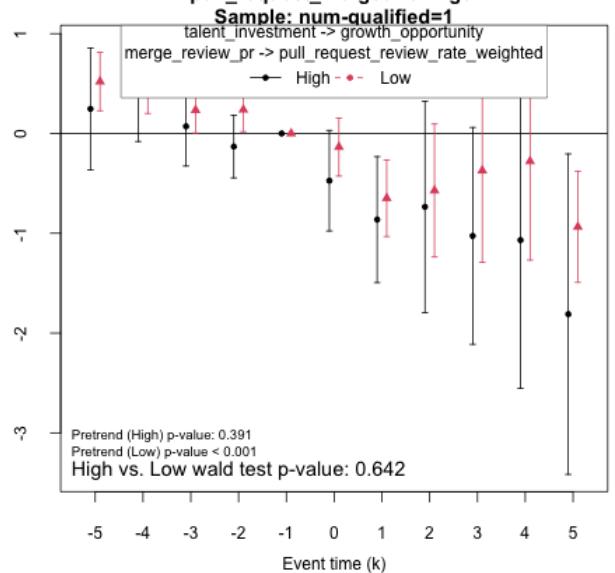
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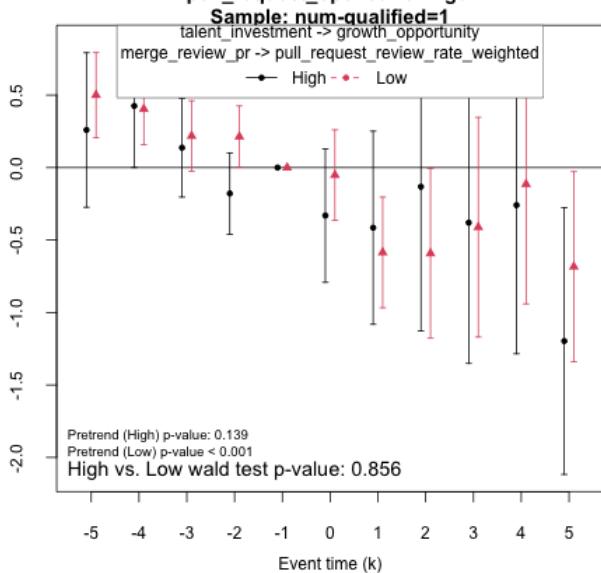
overall_new_release_count rolling5



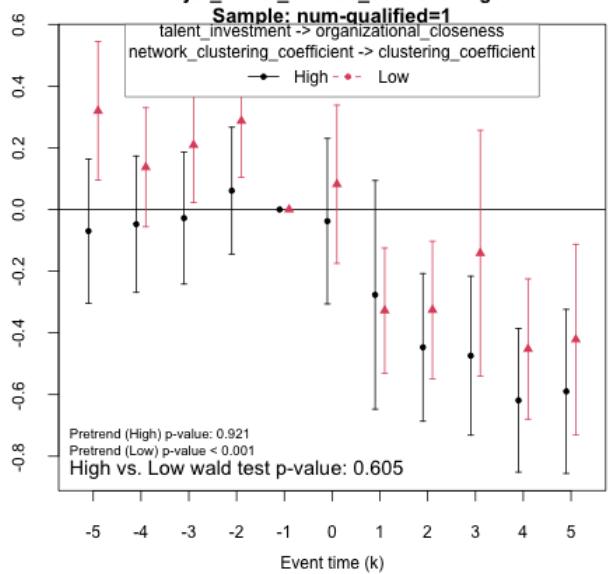
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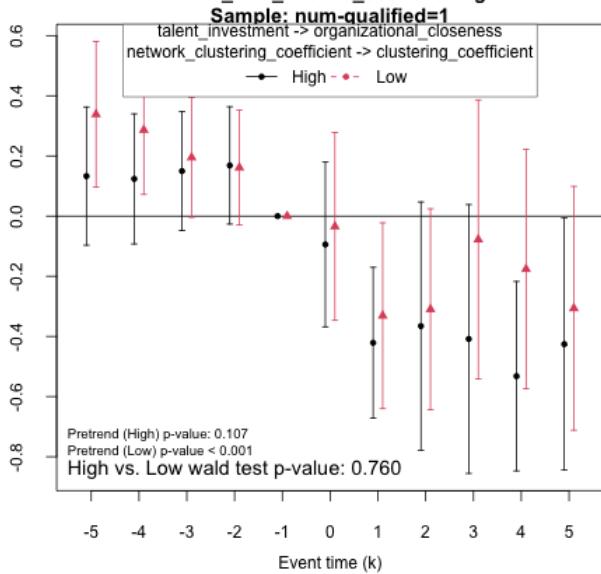
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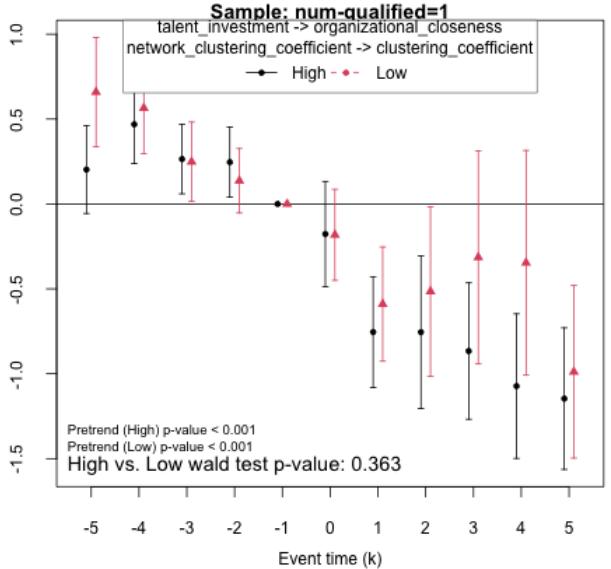
major_minor_release_count rolling5



overall_new_release_count rolling5



pull_request_merged rolling5



pull_request_opened rolling5

