

# Analytics and the Editorial Office: exploring powerful data at your fingertips

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With thanks to **Sherrie Hill** and **Dave Allen**



# Outline

- Using visuals to make complex comparisons
  - Examining Associate Editor/Editorial Board behavior
- Visualizing decisions
  - Simplifying the presentation of multiple initial decision data points
- Measurements of variance
- Tracking the behavior of reviewers
- Reporting checklist

# 1. Using visuals to make complex comparisons

- Great visual presentation can simplify complex messages
- *Tables* contain vast arrays of data for comparative purposes
  - Order and rank data
  - Provide numerical precision
  - Several data points can be concatenated in to one table
  - Use conditional formatting to detect thresholds/KPI's
- *Figures* might be usefully deployed to reveal trends
  - Aid interpretation by revealing patterns
  - Act as an interpretative shortcut if presentation time is limited

# Using visuals to make complex comparisons

- Going to explore smart visual presentation and strong table design to better highlight data
- Will use Editorial Board data to show novel techniques to consider
- Examples are both summary reports and operational reports
  - Could be used to summarize comparative performance
  - Reports that could be delivered to the Editorial Board themselves to improve their performance



# Using visuals to make complex comparisons



Will ask the following questions of the data while revealing a **presentation technique**

- How best can you identify if an Editor is deviating from the mean? How to report to Editors on reviewers that are running late?
  - Using **conditional formatting** in EAR and Excel
- Is there a simple visual technique to compare editor performance?
  - Using **bubble charts**

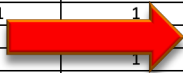
# Data Elements in Example Table

- Associate Editor Name
- Total MSS Completed FULL Peer Review
- MSS Undergoing Peer Review
- MSS Returned by AE without Peer Review
- Time (Days) from Assignment to Recommendation Posted
- Maximum Days from Assignment to Recommendation Posting
- Mean Number of Reviewers Invited
- Maximum Number of Reviewers Invited
- Mean Number of Reviewers Agreed
- Count of Accept Recommendations
- Count of Minor Revision Recommendations
- Count of Major Revision Recommendations
- Count of Reject Recommendations
- Total Decisions
- % Rejected

# Using visuals to make complex comparisons



Associate Editor	Total	Completed FULL Peer Review	Undergoing Peer Review	Returned by AE without Peer Review	Time (Days) from Assignment to Recommendation Posted	Maximum Number of Reviewers Invited	Mean Number of Reviewers Agreed	Count of Accept Recommendations	Count of Minor Revision Recommendations	Count of Major Revision Recommendations	Count of Reject Recommendations	Total Decisions	% Rejected
B	6	5		1	22.70	5	2.80		3		3	6	50%
C	12	9	1	2	23.86	9	2.11		4	3	4	11	36%
D	27	20	1	6	28.36	7	1.90		2	18	5	25	20%
E	17	17			23.86	13	2.06		7	1	9	17	53%
F	23	16	1	6	28.36	6	2.19		6		16	22	73%
G	7	6	1		28.36	6	2.00		1		5	6	83%
H	16	12		4	32.69	10	2.25		7	1	8	16	50%
I	10	7	1	2	32.69	8	2.14		6		1	7	14%
J	8	6		2	28.88	12	1.83		3		5	8	63%
K	2	2			28.88	5	1.50		1		1	2	50%
L	12	10	1	1	32.78	13	2.20		7	1	2	10	20%
M	2	2			15.51	4	2.00		2			2	0%
N	6	5		1	26.54	4	2.60		2		4	6	67%
O	8	5		3	27.98	7	2.40		5		3	8	38%
P	16	12	1	3	30.63	9	2.33		7		8	15	53%
Q	19	18	1		21.00	10	2.33		3	1	14	18	78%
R	29	15	1	13	31.37	13	2.00		9		19	28	68%
S	15	11	1	3	25.93	10	2.55		6	2	6	14	43%
T	30	27	2	1	27.65	11	2.15		7	1	19	27	70%
Means and Totals	13.80	10.35			22.48	8.45	2.17						51%



Time (Days) from Assignment to Recommendation Posted
29.01
22.70
23.86
28.36
32.69
28.88
32.78
27.87
30.63
31.37
25.93
27.65

# Conditional formatting in EAR

Journal of  
**Neuro-Ophthalmology**  
The Official Journal of the North American Neuro-Ophthalmology Society

em Editorial Manager®

HOME • LOGOUT • HELP • REGISTER • UPDATE MY INFORMATION • JOURNAL OVERVIEW  
MAIN MENU • CONTACT US • SUBMIT A MANUSCRIPT • INSTRUCTIONS FOR AUTHORS • PRIVACY


Go to: -- Quick Access --  
Role: Managing Editor Username: jroberts

Data Sources Fields Summary Chart Gauge Misc Style Filters Preview

Report List | New | Save | Save As... | Print | SQL | | | | | Results 1000 | SFTP

Records

Field	Description	Sort	VG	A	Function	Format				
Manuscript Number	Manuscript Number	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Group	...	<input type="checkbox"/>			
Article Title	Article Title	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Group	...	<input type="checkbox"/>			
Article Type	Article Type	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Group	...	<input type="checkbox"/>			
Section/Category Name	Section/Category Name	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Group	...	<input type="checkbox"/>			
Reviewer Last Name	Reviewer Last Name	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Group	...	<input type="checkbox"/>			
E-mail Address	E-mail Address	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Group	...	<input type="checkbox"/>			
Reviewer Role	Reviewer Role	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Group	...	<input type="checkbox"/>			
Agree Date	Days Old(Agree Date)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Days Old	0,000	<input type="checkbox"/>			
Editorial Status	Editorial Status	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Group	...	<input type="checkbox"/>			
...		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	...	...	<input type="checkbox"/>			





Hide this field	<input type="checkbox"/>
Sort (z-a)	<input type="checkbox"/>
Italic	<input type="checkbox"/>
Bold	<input type="checkbox"/>
Width	<input type="text"/>
Label Justification	<input type="checkbox"/>
Value Justification	<input type="checkbox"/>
Subreport	<input type="text" value="..."/>
Drill-Down Style	<input type="text" value="..."/>
Url	<input type="text"/>
Subtotal Function	<input type="text" value="(Default)"/>
Gradient Cells Shading	<input type="checkbox"/>
Text Highlight	<input type="text"/>
Cell Highlight	<input type="text" value="0 to 14:green;15 to 21:yellow;22 to 1000000:red"/>
Value Ranges	<input type="text"/>

**OK**



# Conditional formatting in EAR

Records

Field	Description	Sort	VG	A	Function	Format					
Manuscript Number	Manuscript Number	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Group	...	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Article Title	Article Title	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Group	...	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Article Type	Article Type	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Group	...	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Section/Category Name	Section/Category Name	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Group	...	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Reviewer Last Name	Reviewer Last Name	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Group	...	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
E-mail Address	E-mail Address	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Group	...	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Reviewer Role	Reviewer Role	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Group	...	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Agree Date	Days Old(Agree Date)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Days Old	0,000	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Agree Date	Agree Date	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Group	Short Date	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Editorial Status	Editorial Status	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Group	...	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
...		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	...	...	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>



	Reviewer Role	Days Old(Agree Date)	Agree Date	Editorial Status
	Reviewer	5	6/12/2019	Under Review
	Reviewer	6	6/11/2019	Under Review
	Reviewer	79	3/30/2019	Under Review
	Reviewer	94	3/15/2019	Under Review
	Reviewer	18	5/30/2019	Under Review
	Reviewer	18	5/30/2019	Under Review

# New Formatting Rule

## New Formatting Rule

Style: Classic



## New Formatting Rule

## New Formatting Rule

## New Formatting Rule

## Manage Rules

Show formatting rules for: Current Selection

Change rule order:  

Rule (applied in order shown)	Format	Applies to	Stop if true
Above Average	AaBbCcYyZz	'Total Papers Handled'!\$1\$8:\$1\$27	<input type="checkbox"/>

+ - Edit Rule...

Cancel OK





Time (Days) from Assignment to Recommendation Posted
29.01
22.70
23.86
28.36
32.69
28.88
32.78
27.87
30.63
31.37
33.13
22.48
15.51
26.54
27.98
26.35
21.00
33.39
32.62
25.93
<b>27.65</b>



Bubble

X Axis Title

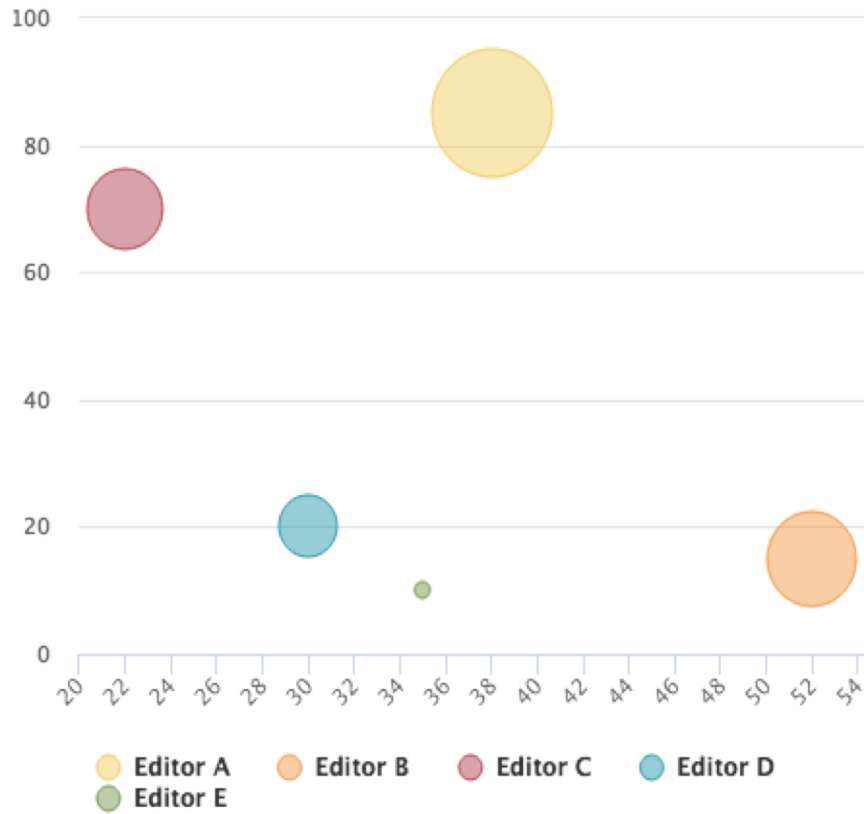
Y Axis Title



Update

Cancel

### Bubble



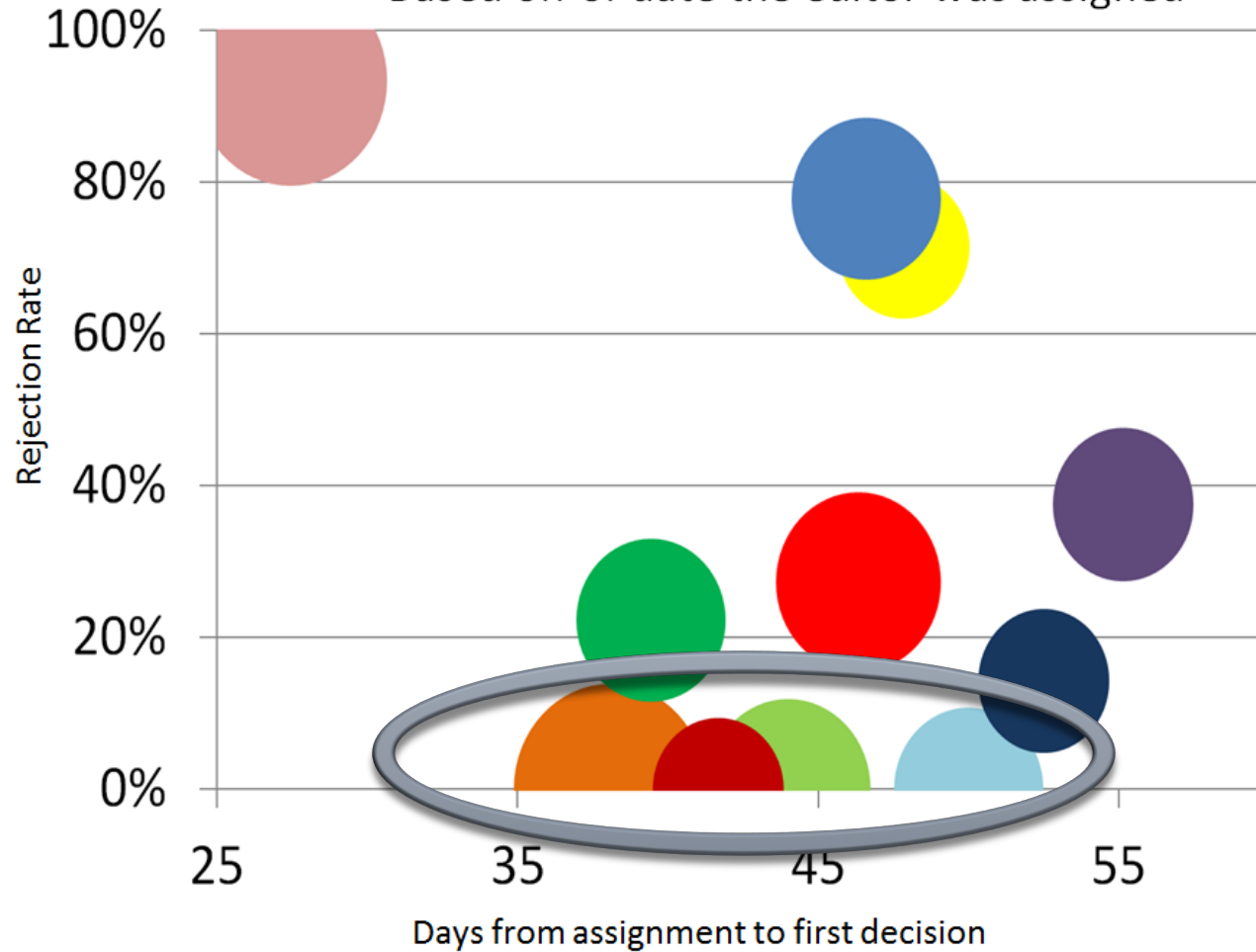
D3

fx | 25

	A	B	C	D
1		Mean Days (sub. to dec.)	% Rejected	Handled Papers
2	Editor A	38.00	85	40
3	Editor B	52	15	25
4	Editor C	22	70	20
5	Editor D	30	20	15
6	Editor E	35	10	10
7				
8				
9				
10				
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				

# Editor Performance

Based off of date the editor was assigned



Editors	# Manuscripts Assigned	Mean Days (Assigned to Initial Decision)	Rejection Rate
Brown	15	27	93%
McMann	15	38	0%
Smith	11	46	27%
Coleman	11	44	0%
Gray	9	50	0%
Thomas	9	39	22%
Walker	9	47	78%
Johns	8	55	38%
Phillips	7	42	0%
Black	7	48	71%
Williams	7	53	14%

- Brown
- Gray
- Phillips
- McMann
- Thomas
- Black
- Smith
- Walker
- Williams
- Coleman
- Johns

Time Period  
01/01/19 to 06/06/19  
2019 YTD

Rejection Rate for year YYYY =

$$\frac{\# \text{ reject decisions in year YYYY}}{\# \text{ manuscripts assigned in year YYYY}} * 100$$

## 2. Visualizing Decisions

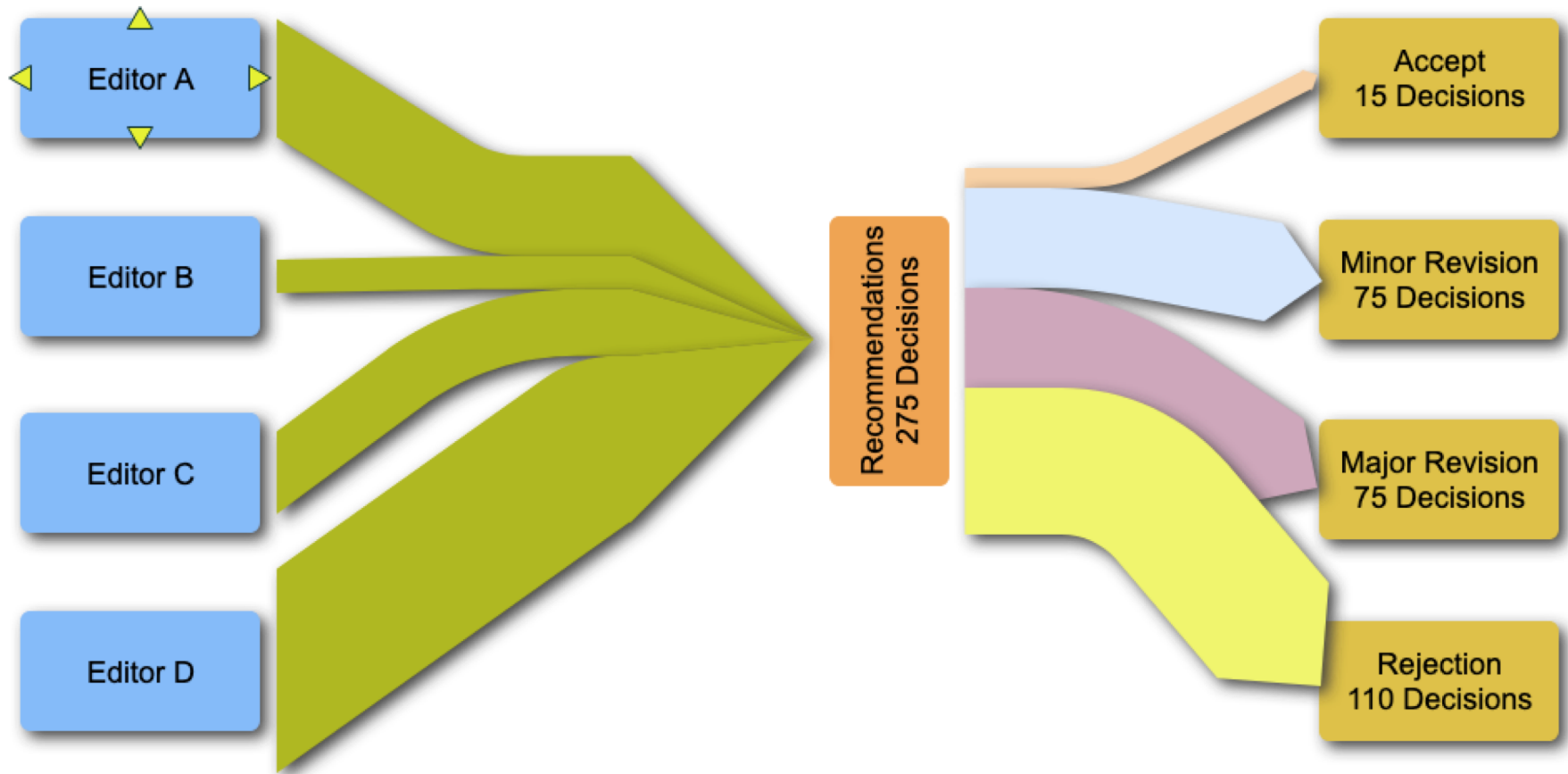
Multiple ways to break down decision data

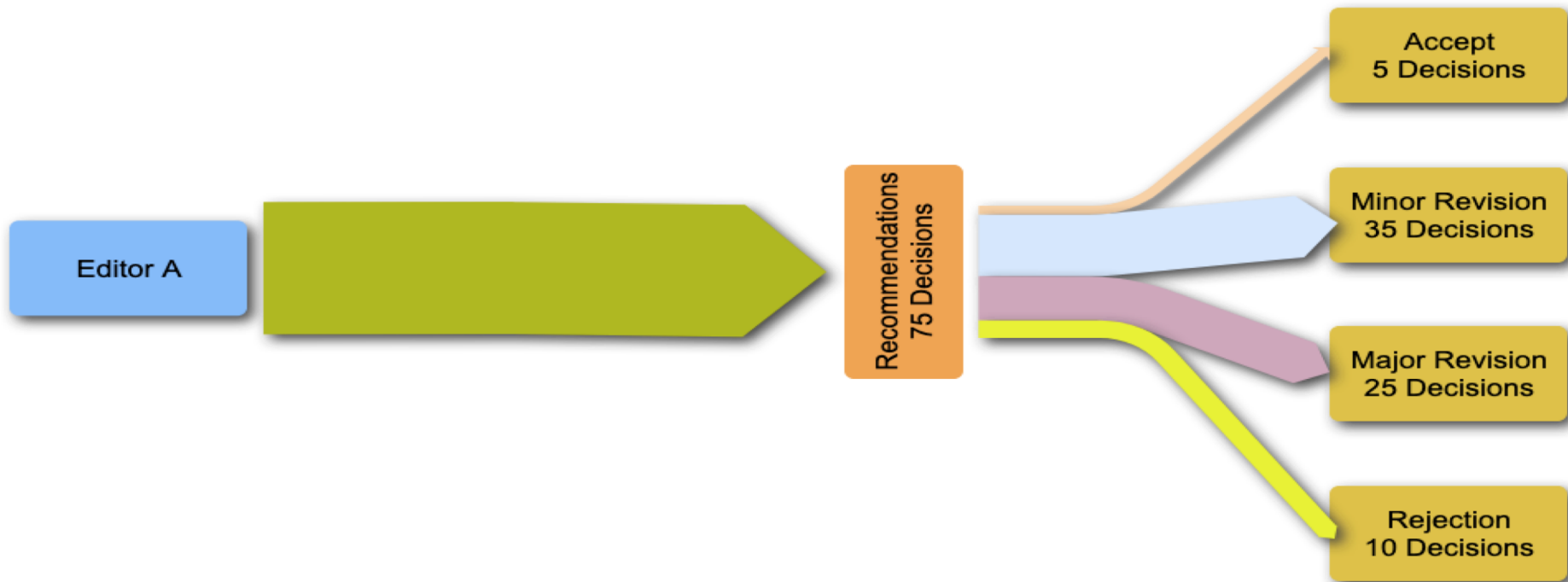
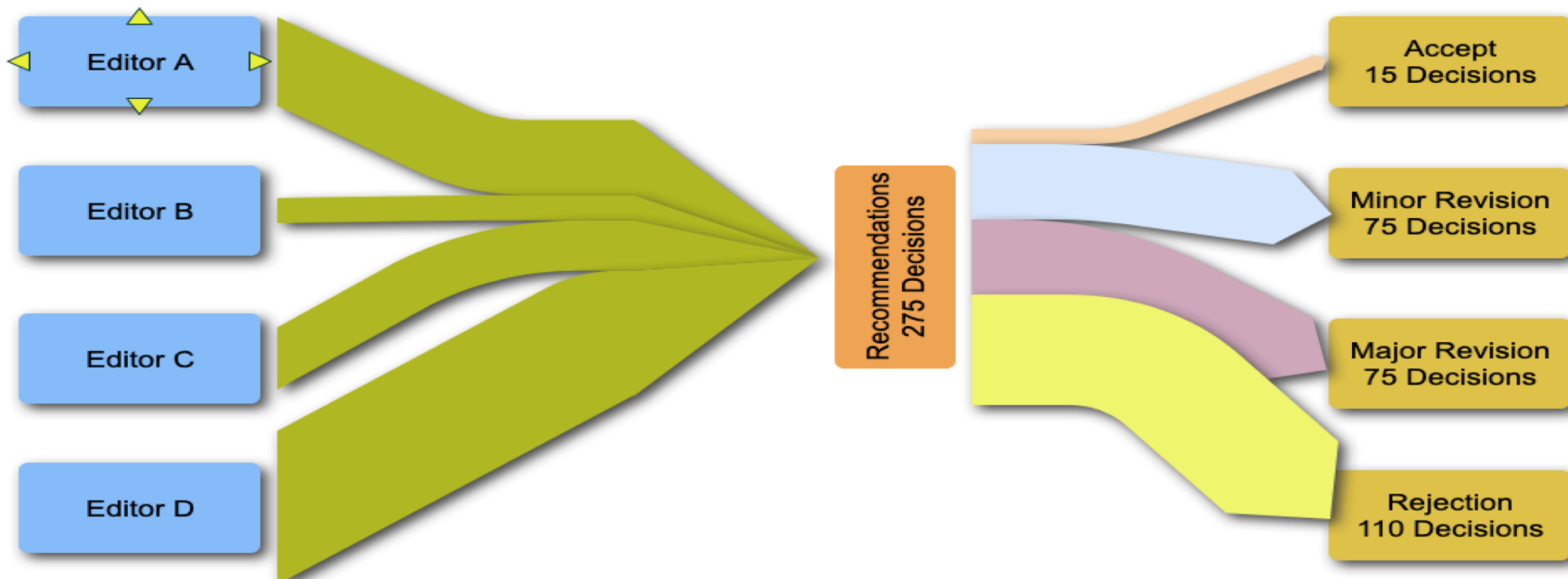
- Absolute numbers and percentages by decision type
- By role – most obviously editors
- Could look at recommendations by reviewer
- Even measure how much they deviate from the editor's decision
- By country
- By article type

Clear visuals

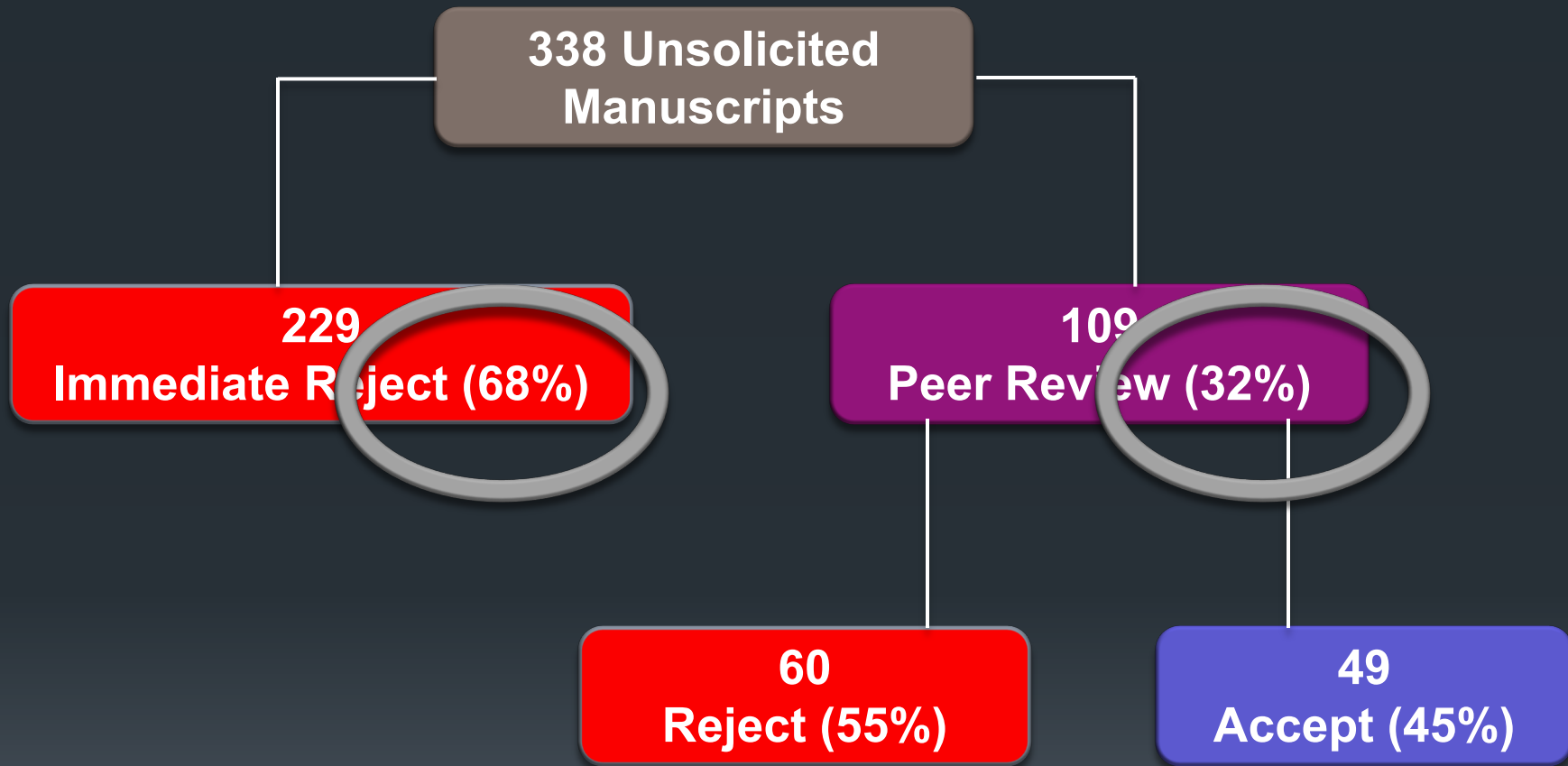
- Allow for quick interpretation > fuel more granular follow up
- Use scale, proportion and comparison to reveal more
- Trends are more obvious
- Eye-catching design draws attention

# Sankey Chart to Visualize Decisions





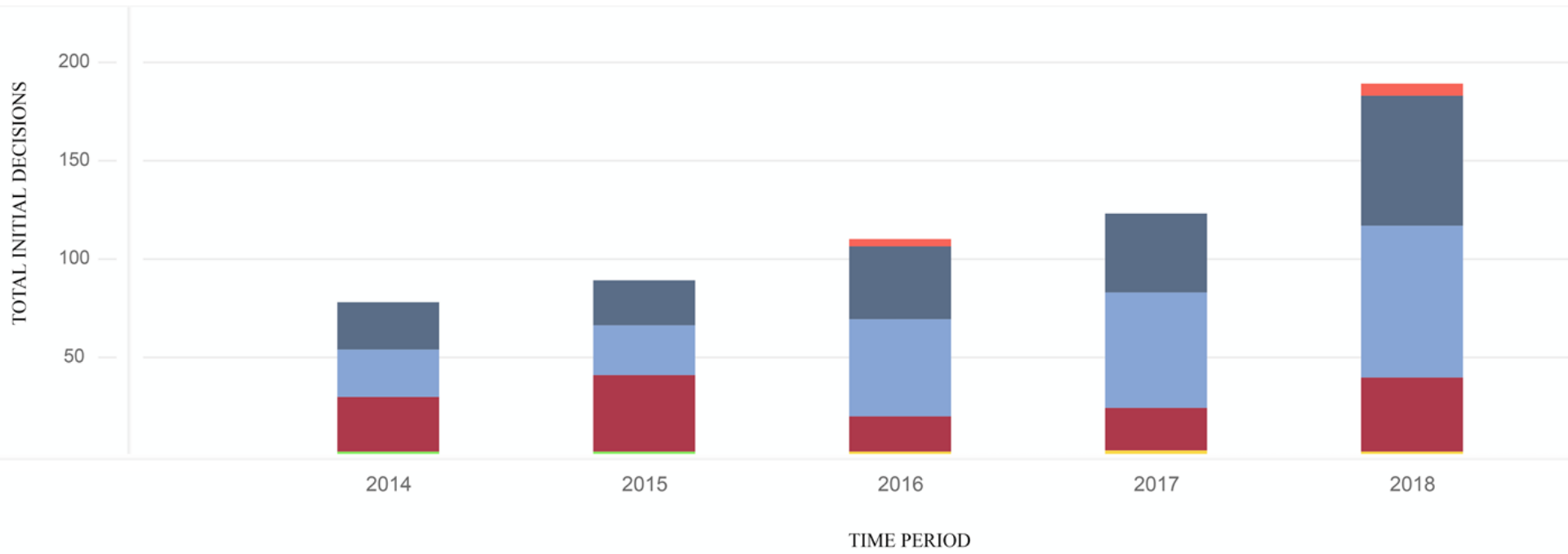
# Visual flow of peer review decisions



Rejection rate:  $\frac{229 + 60}{338} = 86\%$

Acceptance rate:  $\frac{49}{338} = 14\%$

# Initial Decisions



- MANUSCRIPT TYPES INCLUDED**
- Clinical Focus
  - Letter to the Editor
  - Research Forum
  - Review
  - Special Issue
  - Tutorial
  - Introduction
  - Research Article
  - Research Note
  - Review Article
  - Special Report
  - Viewpoint

**TIME PERIOD**  
01/01/14 to 12/31/18

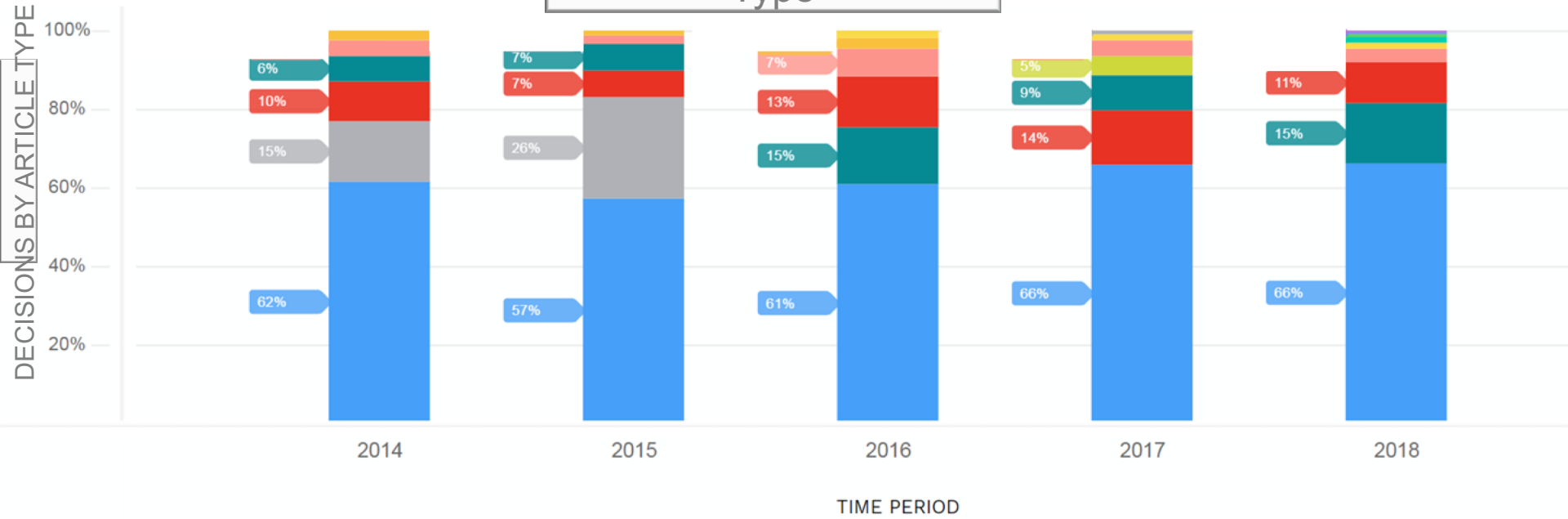
- DECISION TYPES**
- Accept
  - Editor Immediate Accept Manuscript
  - Minor Revision
  - Major Revision
  - Reject
  - Editor Immediate Reject Manuscript



# 100% stacked bar chart



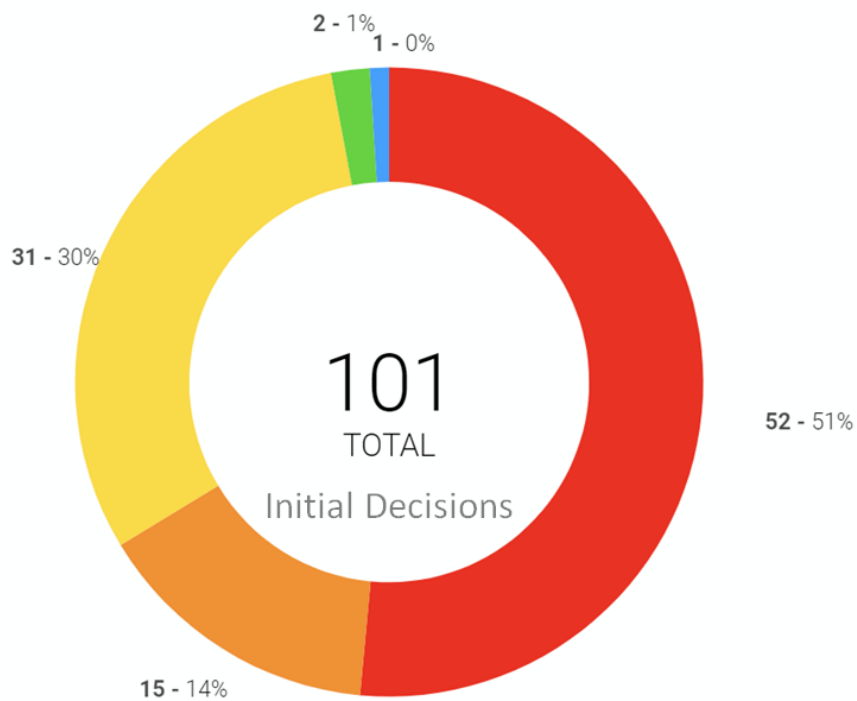
Decisions by Article Type



MANUSCRIPT TYPES INCLUDED

- Clinical Focus
- Research Article
- Research Forum
- Research Note
- Review Article
- Tutorial
- Letter to the Editor
- Special Issue
- Introduction
- Viewpoint
- Review
- Special Report

TIME PERIOD  
01/ 1/14 to 12/31/18



### United States DECISION TYPES

- Accept
- Major Revision
- Reject
- Editor Immediate Reject Manuscript
- Minor Revision

#### MANUSCRIPT TYPES INCLUDED

- Clinical Focus
- Research Article
- Review Article
- Introduction
- Research Note
- Special Report
- Letter to the Editor
- Review
- Viewpoint

#### TIME PERIOD

2018

# 3. Measurements of variance

- Poor use of averages
- No measurement of variance – need to be aware of the **spread** of data
  - No mention of *standard deviations* when using the mean
  - Not stating the *range* of data
  - For medians: consider showing the *interquartile range*
- If data are skewed by outliers, calculate the median value and report the *interquartile range*
- Failure to look at the measure of variance over time, which might be a good indicator of performance consistency

# Reviewer Turnaround Time and the Spread of Data



Field	Description	Sort	VG	A	Function	Format					
Reviewer First Name	Reviewer First Name	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Group	...	<input type="checkbox"/>				
Reviewer Last Name	Reviewer Last Name	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Group	...	<input type="checkbox"/>				
Agree Date	Year(Agree Date)	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Group(Year)	...	<input type="checkbox"/>				
Days between Agreement and Review Completion	Days between Agreeer	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Group	0,000	<input type="checkbox"/>				
...		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	...	...	<input type="checkbox"/>				



Filter on Agree Date

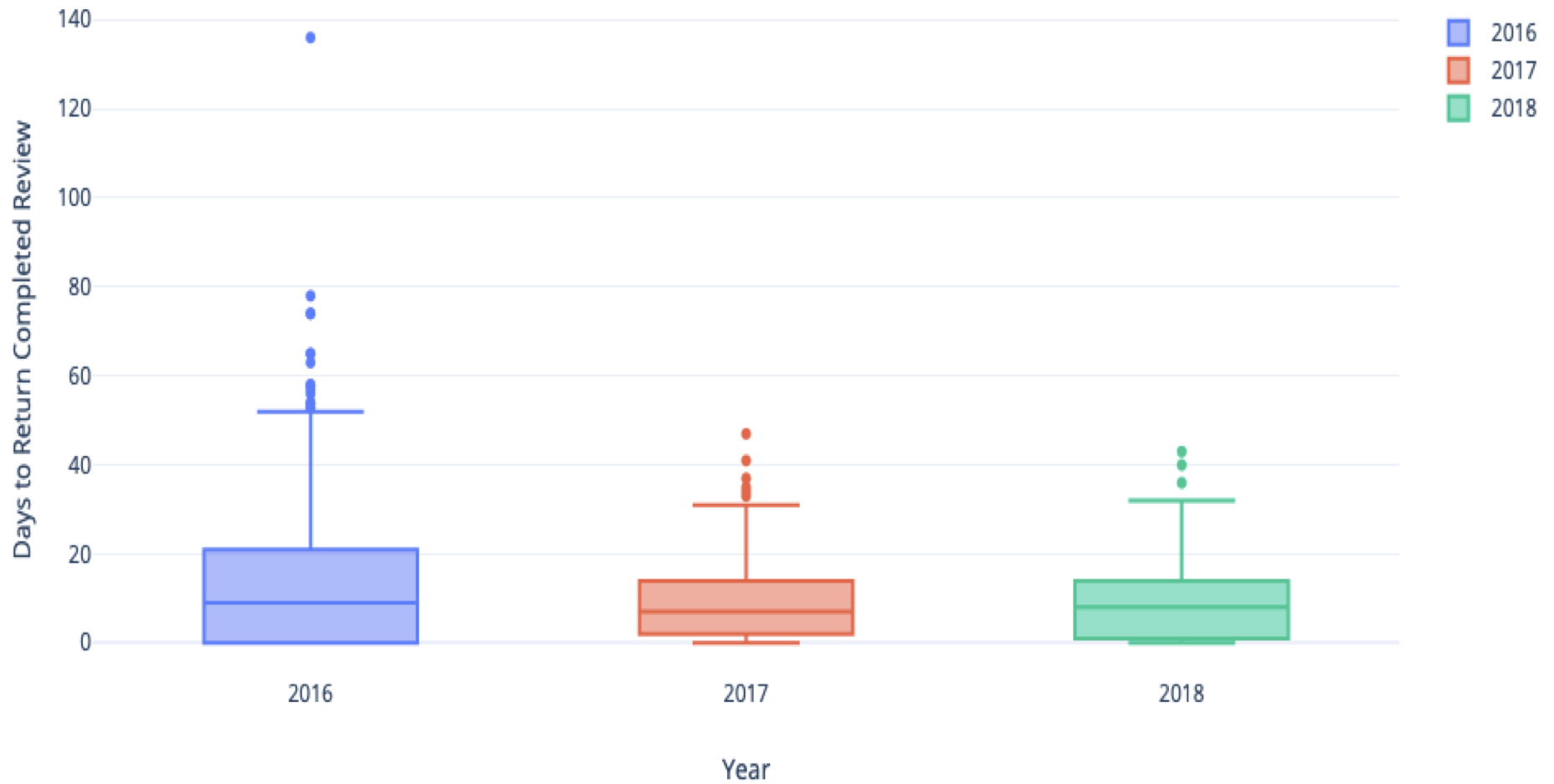


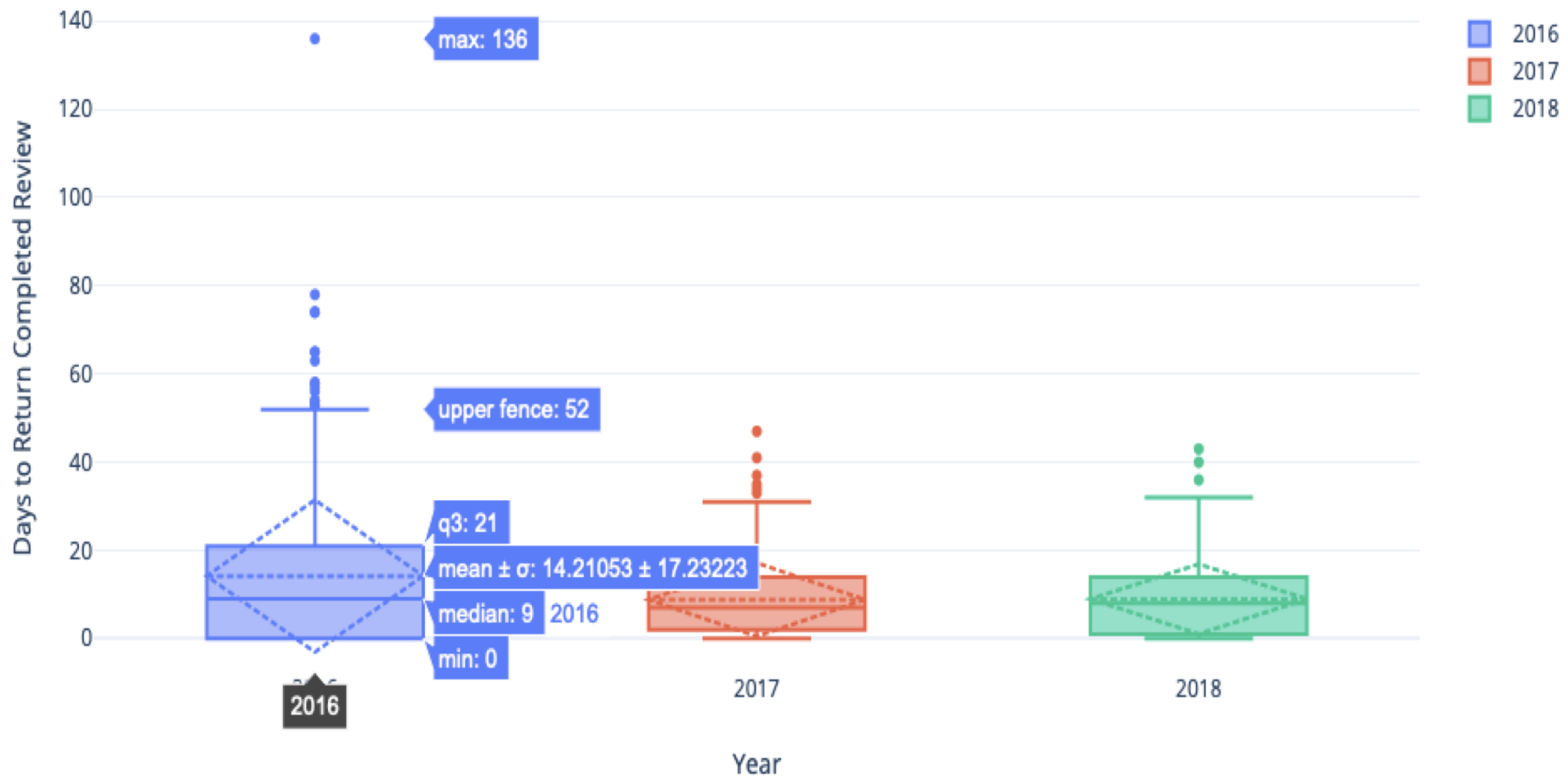
Year	Total Reviews	Mean Turnaround	Maximum Turnaround	SD
2016	342	14.21	136	17.25
2017	344	8.84	47	8.34
2018	347	8.99	43	7.92

# Box plots to visualize the spread of data

- Box plots enable quick visual comparison
- Can show mean and median graphically
- The charts that follow were generated for free at:

<https://plot.ly/create/box-plot/#/>





# 4. Tracking Reviewer Behavior



Most of us just report:

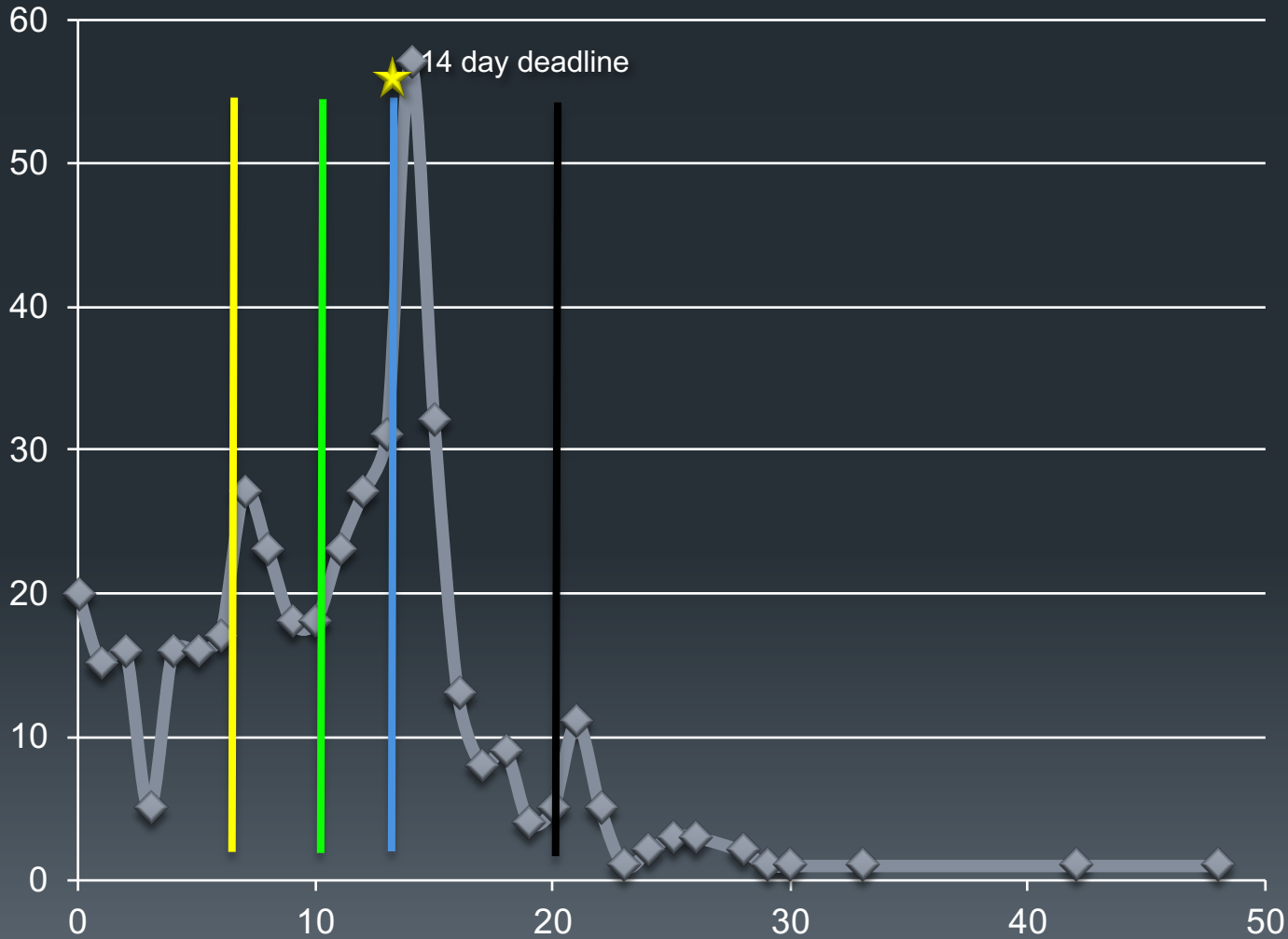
- Time to complete review
- Number of reviews completed
- Conversion rate of number of invitations into agreements to review

Consider also looking at:

- The effectiveness of reviewer reminders
- How speedily do reviewers respond +/- to invitations to review



Allocated Review Time: **14 d**  
Median: **11 d**  
IQR: **15**  
N=**432**  
% of reviews returned by deadline: **76.2%**



- 7 day reminder
- 3 day reminder
- 0 day reminder
- +7 day reminder

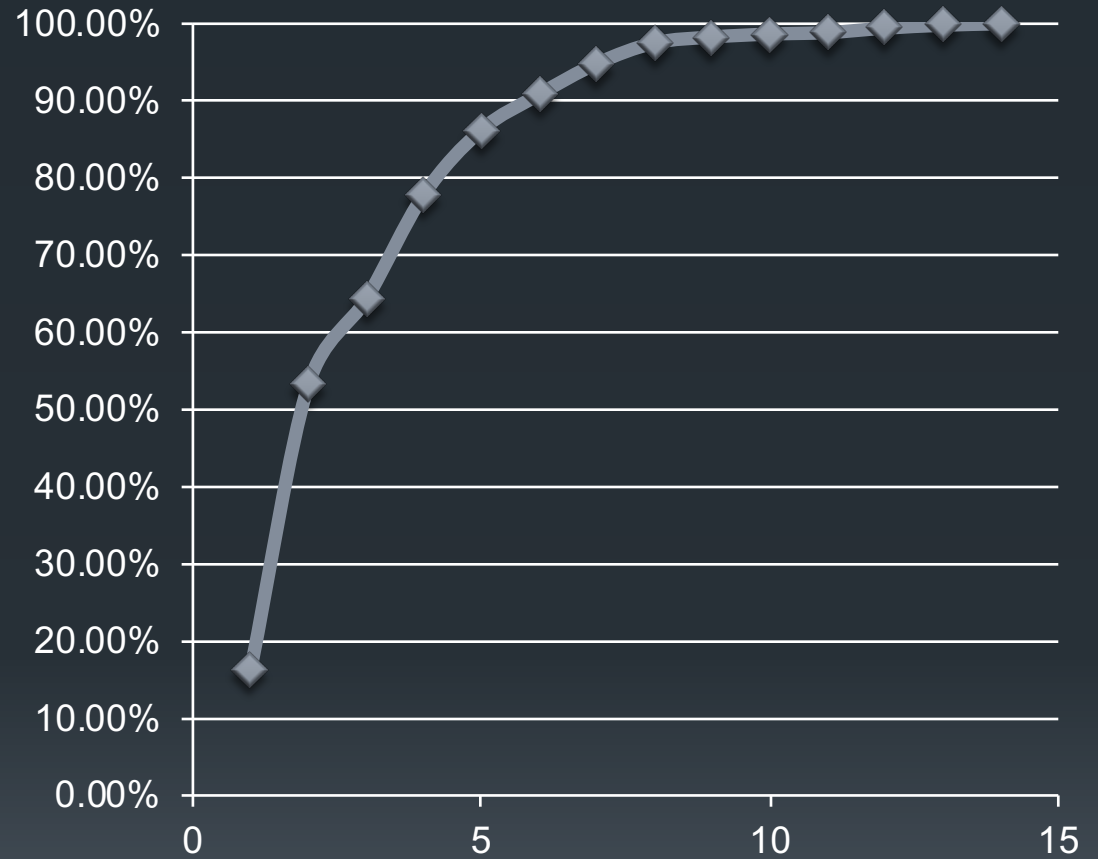
Time taken by reviewers (2018)  
X axis – days in review  
Y axis – number of reviews completed



**Number of days for reviews to be completed**  
Based on reviewer invitation date

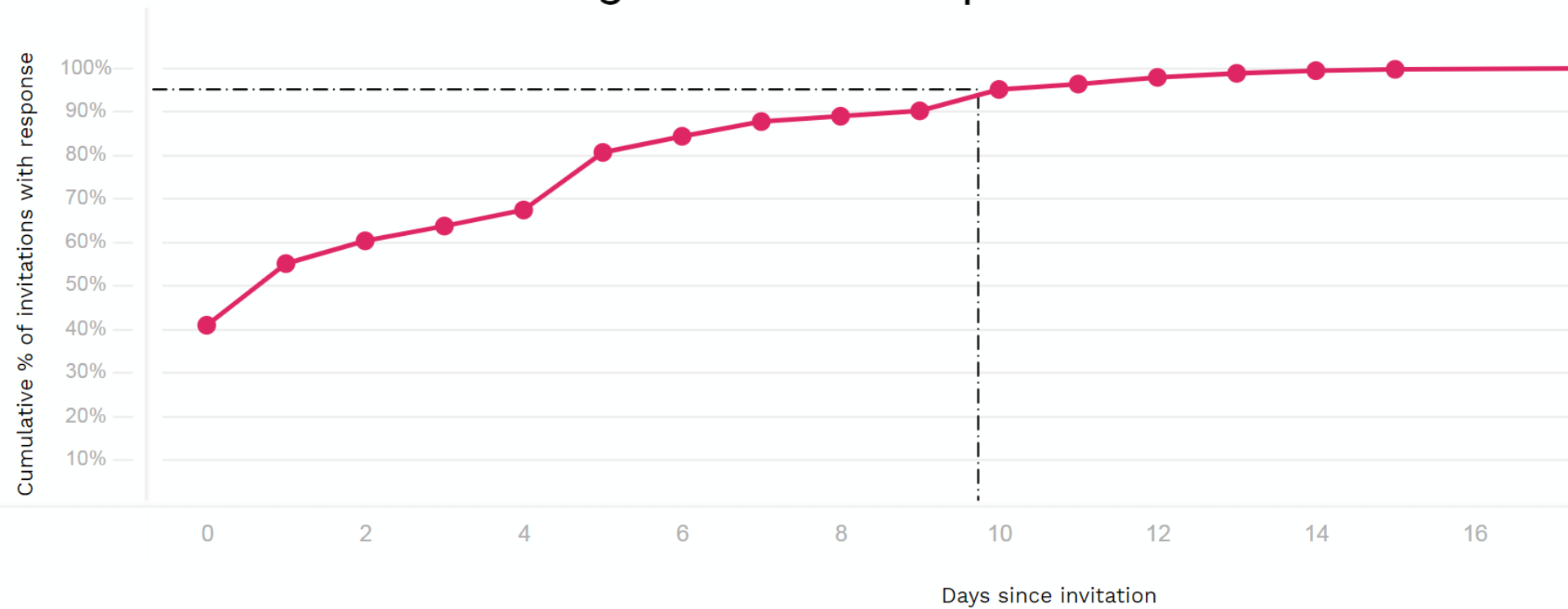


Days	Cumulative percentage
0	16.25%
1	53.15%
2	64.24%
3	77.82%
4	86.23%
5	90.82%
6	94.84%
7	97.51%
8	98.28%
9	98.66%
10	98.85%
11	99.43%
12	99.81%
17	100.00%



X axis – days since invitation  
Y axis – % of invitations with response

# Proportion of invitations to reviewers with agree/decline responses



# Reporting Checklist

- ✓ Define precisely your study question and determine what study items to include and exclude
- ✓ Think about potential confounders that could skew your data
- ✓ Do you have sufficient data to report with confidence?
- ✓ Document all your reporting parameters
- ✓ Determine the most effective way to present your data

# Generating Reports: documenting what you did

- Note what data sets you included/excluded
- Record the time period studied
- What did you do with blank cells?
- Were any outliers removed?
- Highlight if an intervention took place, especially if data is subsequently transformed
- Document who created/ran report and on what day
- Write down the name of the report used and, if relevant, the software used to generate a visual data presentation

# The Origin Reporting Tool

- Suite of optimally designed charts and tables to quickly summarize data
  - Charts that correctly report the data
  - Developed around feedback from what editorial offices/editors want to see
- Use extraction reports, upload .csv file, pick your chart or table and then generate
- Toggle on/off data parameters – results recalculated immediately
- Allows user to spend time analyzing and interpreting, not creating report and engineering the data
- No battling Excel!

## Stats

To get started, select a **Report Type** from the data selection window on the left side of the screen, then click **Generate**.

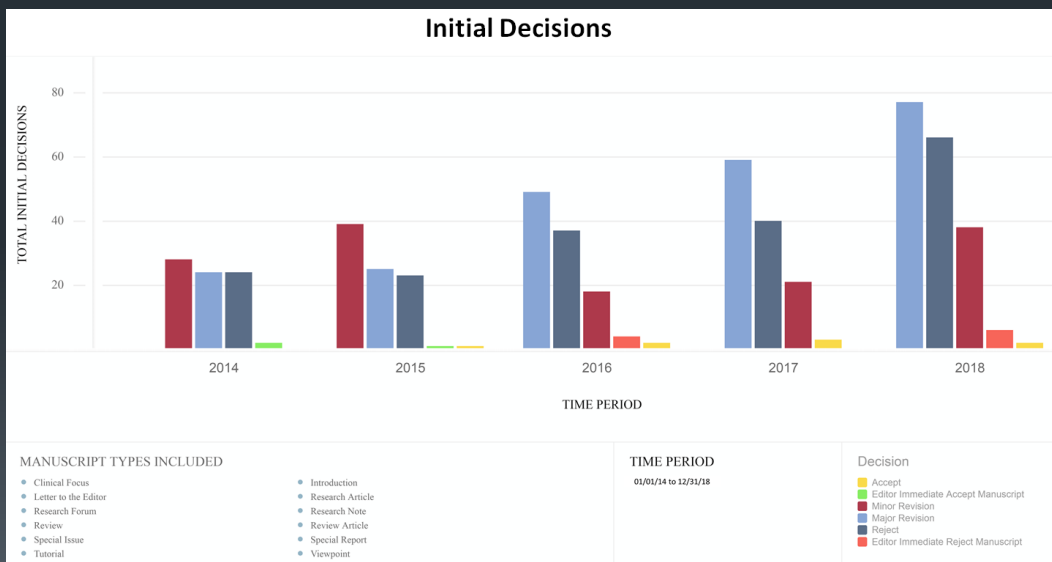
**Data set name:** Origin Reports - Submissions & Decisions.csv

**Date range:** 05/03/2002 to 06/07/2019

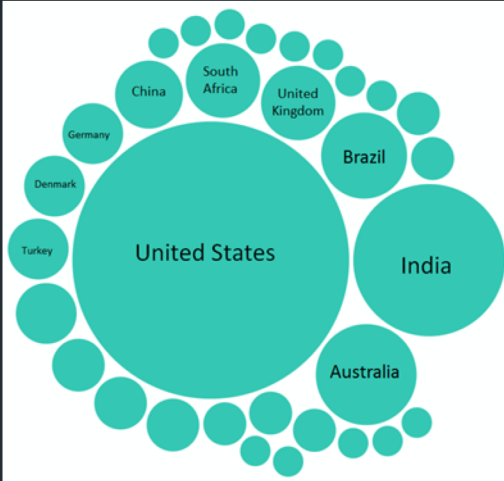
### In Brief:

Submissions	2015	2016	2017	2018	2019 YTD
<i>Previous 5 years</i>					
<b>Total Submissions</b>	156	191	215	323	117
<b>Number of Countries with Submissions</b>	23	27	29	33	24

Initial Decisions	2015	2016	2017	2018	2019 YTD
<i>Previous 5 years</i>					
<b>Total Initial Decisions Rendered</b>	173	172	225	315	144
<b>Total Number of Reject Initial Decisions</b>	25	46	50	79	20
<b>Overall Reject Rate</b>	14.45%	26.74%	22.22%	25.08%	13.89%



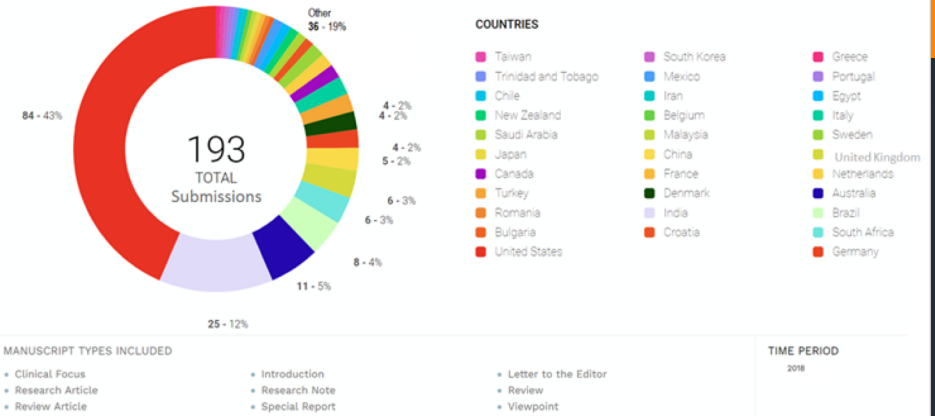




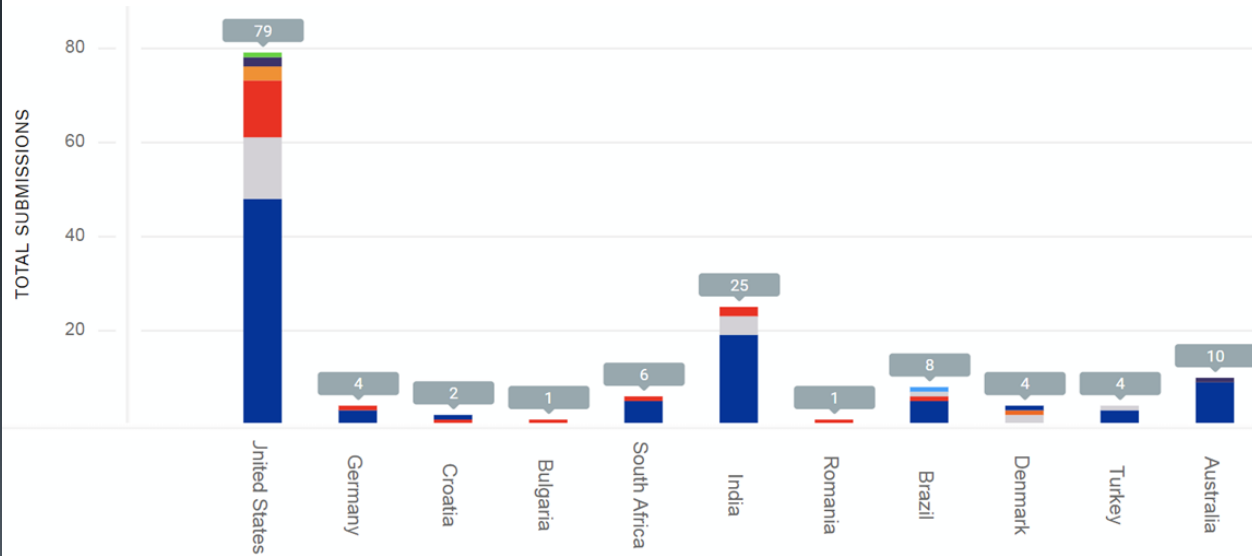
TOP 10 COUNTRIES WITH MOST SUBMISSIONS 2018

1		United States	83
2		India	25
3		Australia	11
4		Brazil	8
5		United Kingdom	6
6		South Africa	6
7		China	5
8		Germany	4
9		Denmark	4
10		Turkey	4

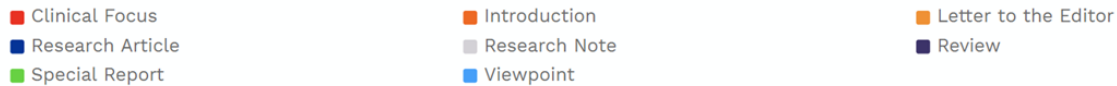
Total Submissions by Country



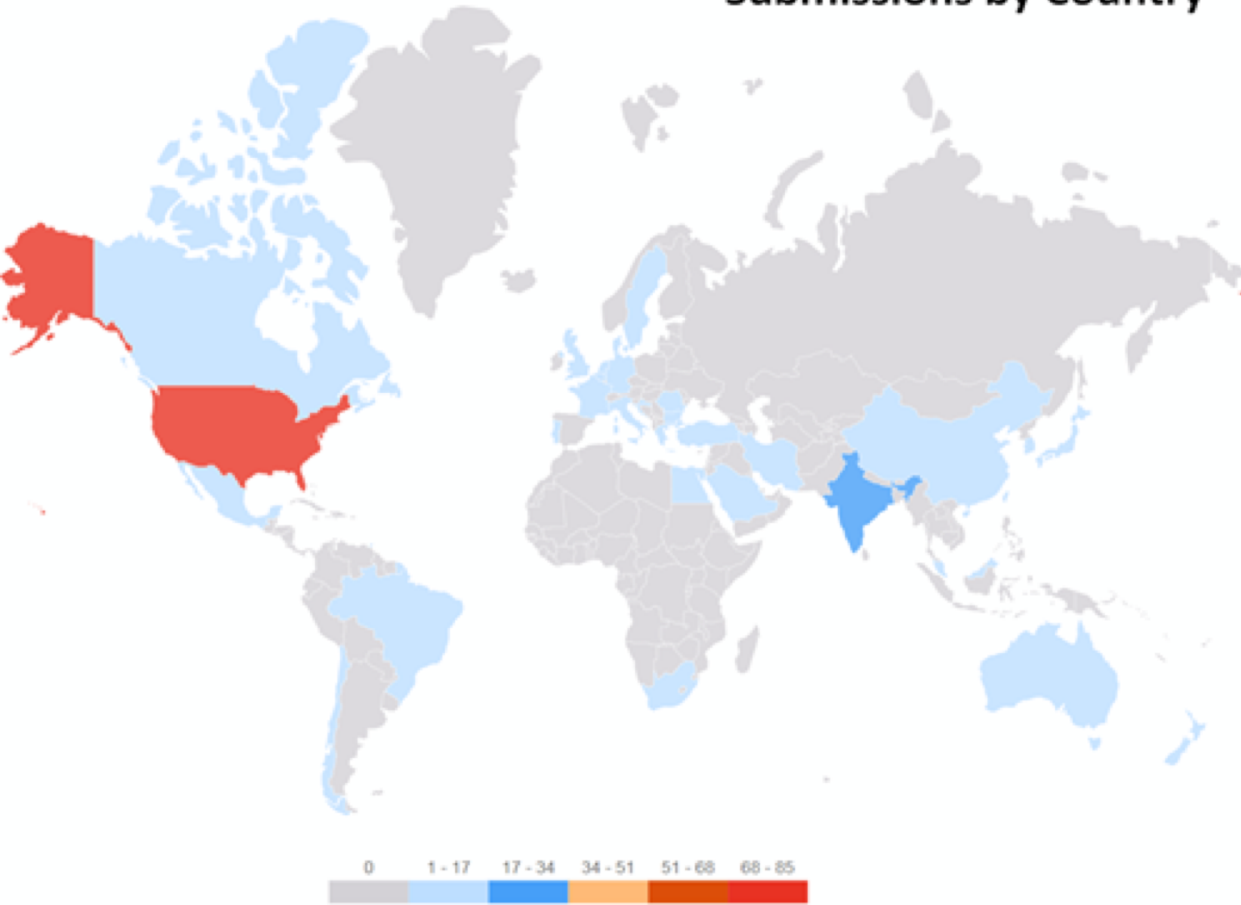
Submissions by Country



MANUSCRIPT TYPES INCLUDED



# Submissions by Country



## TOP 10 COUNTRIES WITH MOST SUBMISSIONS 2018

		TOTAL	% OF TOTAL
1	United States	83	43.23
2	India	25	13.02
3	Australia	11	5.73
4	Brazil	8	4.17
5	South Africa	6	3.13
6	United Kingdom	6	3.13
7	China	5	2.6
8	Turkey	4	2.08
9	Italy	4	2.08
10	Denmark	4	2.08

Show submissions for all countries

- Original Research - Basic Science
- Original Research - Endocrinology
- Original Research - Oncology
- Original Research - Surgery
- Original Research - Anatomy/Physiology
- Original Research - Education
- Review
- Case Report

01/23/13 to 12/29/17

### MEASURE OF VARIANCE

$$(1+2+4+5)/4=12/4=3$$