

# Research Integrity in Norway (RINO): The Murky Waters of QRP – Attitudes and Self-Reported Questionable Research Practices

Johs. Hjellbrekke, Helene Ingierd & Matthias Kaiser.

Project members : Laura Drivdal, Ole Bjørn Rekdal, Heidi Skramstad,  
Ingrid Torp.



UNIVERSITETET I BERGEN



# The RINO-survey on FFP and QRP

- Distributed by e-mail to 31 206 researchers at Norwegian universities, scientific and university colleges and research institutes.
- 7291 respondents completed the whole survey. Net response rate = 23,4%.
- The univariate distributions in the RINO-sample was compared to the distributions found in official statistics on four variables: Sex, job category, discipline and age.



Table 1: Ranking of practices. Scale 1-4. Averages and Standard Deviations.

	Average	Standard deviation
Falsify data	3,96	,324
Fabricate data	3,95	,338
Plagiarize	3,88	,406
Deny authorship in spite of major contribution to study	3,73	,606
Not to inform about limitations/uncertainties	3,58	,588
Change design, method, resultats because of pressure	3,55	,678
Not to whistleblow	3,53	,709
Gift authorship	3,36	,763
Use data when ownership is contested	3,29	,735
Copy references	3,07	,748
Include irrelevant reference in order to increase citation index	2,96	,771
Salami slicing	2,81	,812



# Subgroups in the data

- Systematic differences in response patterns? ANOVA-analysis showed larger variation within, than between faculties.
- Why look for subgroups? Because subgroups can constitute a problem.
- How many subgroups are there in the data? With respect to attitudes? With respect to self-reported QRPs?
- How large are they?
- How are they to be interpreted?
- What are their profiles?

# Method

- Latent class analysis (Lazarsfeld 1968, McCutcheon 1987)
- Binarized variables (recoding of original 1-4 scale, of frequency of self-reported practices)
- Two analyses
- One analysis of attitudes
- One of self-reported practices

# Variables included in the analysis

- Gift authorship
- Deny authorship despite significant contribution
- Not to inform about limitations
- Change design after pressure
- Not to whistle blow about serious breaches
- Include irrelevant references in order to increase citation index
- Use data when ownership is contested
- Copy references without consulting source
- Coding: 1-4 scale, «Highly problematic» – «Not problematic at all»

# Table 2: Model fit, attitudes to QRPs. 8 variables. N=7073

Model	L-square	D.F.	P-value	Chi-square	P-value	D.I	BIC
1 latent class	5335.84	247	.00	10070833.71	.00	.27	3147.09
2 latent classes	1293.11	238	.00	7146.12	.00	.107	-815.89
3 latent classes	475.93	229	.00	662.43	.00	.053	-1553.32
4 latent classes	315.53	220	.00	349.89	.00	.042	-1634.07
5 latent classes	235.81	211	.12	267.58	.00	.0271	-1633.94
6 latent classes	207.02	202	.39	205.54	.42	.023	-1582.97
7 latent classes	190.40	193	.54	180.80	.73	.023	-1519.84

	Latent class 1	Latent class 2	Latent class 3	Latent class 4	Latent class 5	Latent class 6
Size, latent class	.52	.36	.06	.03	.016	.014
Gift authorship, little problematic	.05	.16	.20	.58	.74	.87
Gift authorship, problematic	.95	.84	.80	.42	.26	.13
Deny authorship, little problematic	.02	.02	.04	.28	.90	.90
Deny authorship, problematic.	.98	.98	.96	.72	.10	.10
Not inform, little problematic	.00	.03	.35	.35	.04	.99
Not inform, problematic.	1.00	.97	.65	.65	.96	.01
Not whistle blow, little problematic	.01	.04	.21	.52	.01	.96
Not whistle blow, problematic.	.99	.96	.81	.48	.99	.04
Irrelevant reference, little problematic	.03	.51	.81	.72	.12	.95
Irrelevant reference, problematic.	.97	.49	.19	.28	.88	.05
Copy reference, little problematic	.03	.35	.83	.52	.04	.91
Copy reference, problematic	.97	.65	.17	.48	.96	.09
Change design, little problematic	.01	.06	.23	.38	.07	.94
Change design, problematic.	.99	.94	.27	.62	.93	.06
Contested ownership, little problematic	.02	.16	.57	.53	.05	.95
Contested ownership, problematic	.98	.84	.43	.47	.95	.05



# Interpretation

- Latent class 1, 52%: High conditional probabilities for regarding all listed practices as problematic. In this group of «pure», there is no or little acceptance for QRPs.
- Latent class 2, 36%: Higher acceptance for strategic citations and for copying references without consulting original source.
- Latent class 3, 6%: More divided in their views. But also in this group, a higher acceptance for strategic citations and for copying references.

# Interpretation

- Latent class 4, 3%: Internally heterogeneous. More systematically divided. Conditional probabilities vary from .35-.65
- Latent class 5, 1,6%: Defined by two variables; Gift authorship and Deny Authorship. High degree of acceptance.
- Latent klasse 6, 1,4%: High acceptance for all QRPs; in the .87-.99-interval.

# Results so far

- While the acceptance for *specific*, questionable research practices is more widespread, a general acceptance for QRPs is clearly a marginal phenomenon
- To what degree is attitudes converted into actions?
- Latent class analysis of self-reported QRPs.

# Latent class analysis (Lazarsfeld 1968, McCutcheon 1987)

- Gift authorship
  - Deny authorship
  - Not to inform about limitations of study
  - Change design because of pressure from financing bodies
  - Not to inform about colleagues' breaches
  - Include irrelevant reference in order to increase score on citation index etc
- 
- Coding: Never = 1 Yes, one, two or several times = 2

# Results

- The model with three latent classes shows the best fit with the data
- The model with four latent classes have some better values for some measures, but a bootstrap shows that it is not a statistically significant improvement over Model 3.
- Model with two latent classes: Worse fit with data. Model P-value  $<.00$
- Statistics for Model 3
- DF: 43
- L-square: 54.30                      p-value: 0.12
- Chi-square: 59.02                      p-value: 0.053
- Dissimilarity index: .007                      BIC: -323.15 (2-class model: -339.46)

	The Ethical	The Generous	The Murky
Latent Class Size	.82	.13	.05
Gift Authorship – Yes	.98	.41	.62
Gift Authorship - No	.02	.59	.38
Deny Authorship - Yes	.99	.93	.91
Deny Authorship – No	.01	.07	.09
Not inform limitations – No	.99	.99	.65
Not inform limitations – Yes	.01	.01	.35
Not to whistleblow – No	.97	.89	.79
Not to whistleblow – Yes	.03	.11	.21
Irrelevant reference – No	.92	.75	.44
Irrelevant reference – Yes	.08	.25	.56
Change design – Yes	.97	.97	.69
Change design - No	.03	.03	.31

# Three subgroups of practioners and non-practioners

- «The Ethical» – ca. 82%
- «The Generous» – ca. 13%
- «The Murky Waters»-group – ca. 5%

# Brief summary

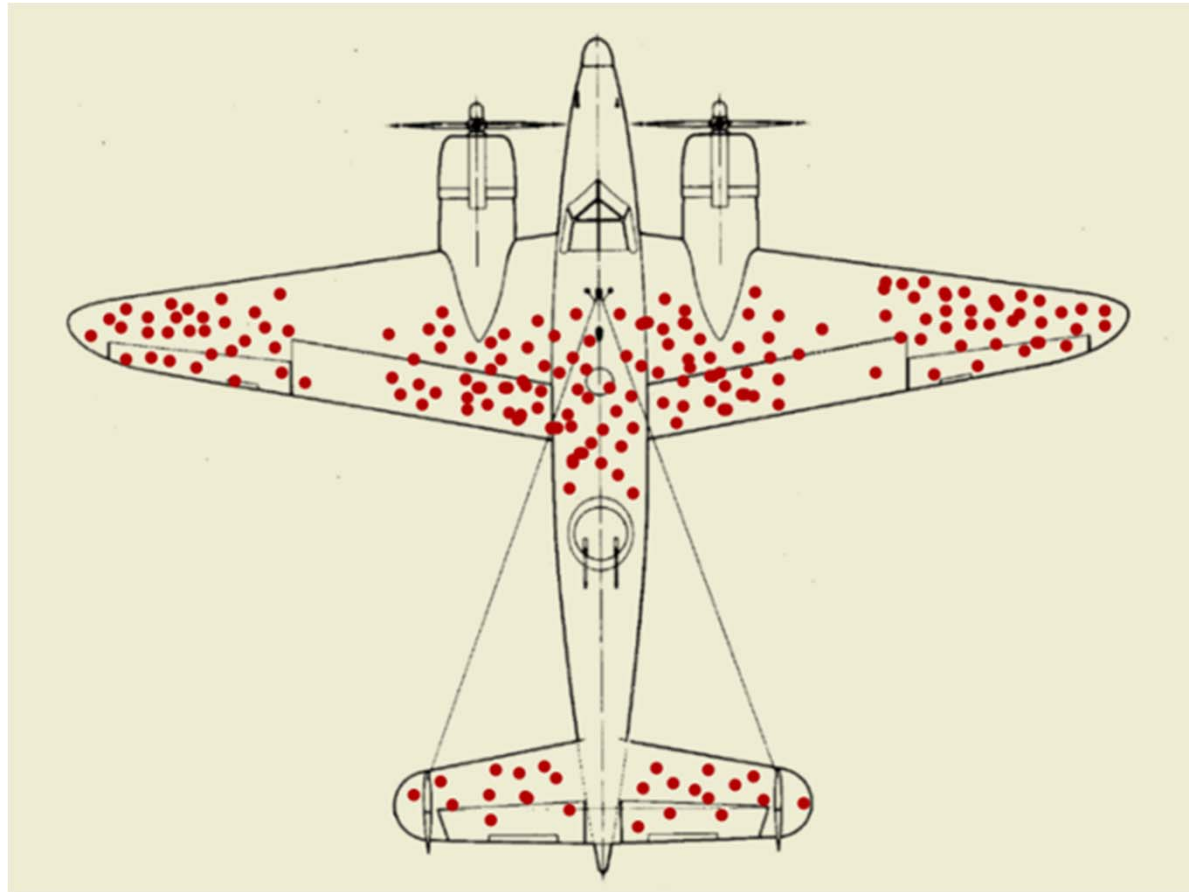
- «The Ethical», 82%, have not committed any of the QRPs.
- «The Generous», 13%, have a higher conditional probability for having given a gift authorship.
- «The Murky Waters»-group, have consistently higher conditional probabilities for having committed one or more of the listed QRPs. We regard them as as a risk group.
- Associations with disciplinary boundaries, institutional belonging etc.?



# Associations with with background variables

	The Ethical	The Generous	«The Murky Waters»
Over- representation (>5% in <b>BOLD</b> )	General cluster	Public research inst. <b>Medicin/Health Science</b> <b>30-39 yrs</b>	<b>Private research inst.</b> <b>Social Science</b> <b>Postdok</b> <b>Researcher II</b> <b>Senior Researcher</b> <b>30-39 yrs</b>
Under- representation (>5% in <b>BOLD</b> )	General cluster	<b>Humanities</b> <b>Social Science</b>	Humanities <b>PhD-candidates</b> <b>Associate professors</b> <b>60-69 yrs</b>

Systematic dropout, under-reporting and selection bias.  
Wald's (1943) analysis of where to strengthen the bomber's armour:  
Focus on where there are no hits?



- Thank you for your attention!