

Introduction

- Colour effects argued to exert effects on psychology<sup>(1)</sup> and behaviour.<sup>(2)</sup>
- Hill & Barton found a ‘winning red’ effect at the Athens (2004) Olympics.
- Effect more pronounced when competition was ‘close’.
- **Objective: Does red affect the likelihood of winning in a large sample of Olympic combat sports / World Boxing Championships?**

Methods

- We included data from 6 Olympic events (1996-2016) and 6 World Boxing Championships.
- For Olympic events, we coded Taekwondo, Greco-Roman Wrestling, Freestyle Wrestling, and Boxing.
- Following Hill & Barton, we agreed upon a pre-specified protocol for close contests, and selected the first quartile of closest matches.
- We used the 'meta' package<sup>(4)</sup> to synthesise our findings (note that other analyses including Bayes Factors have also been used but are not reported here).

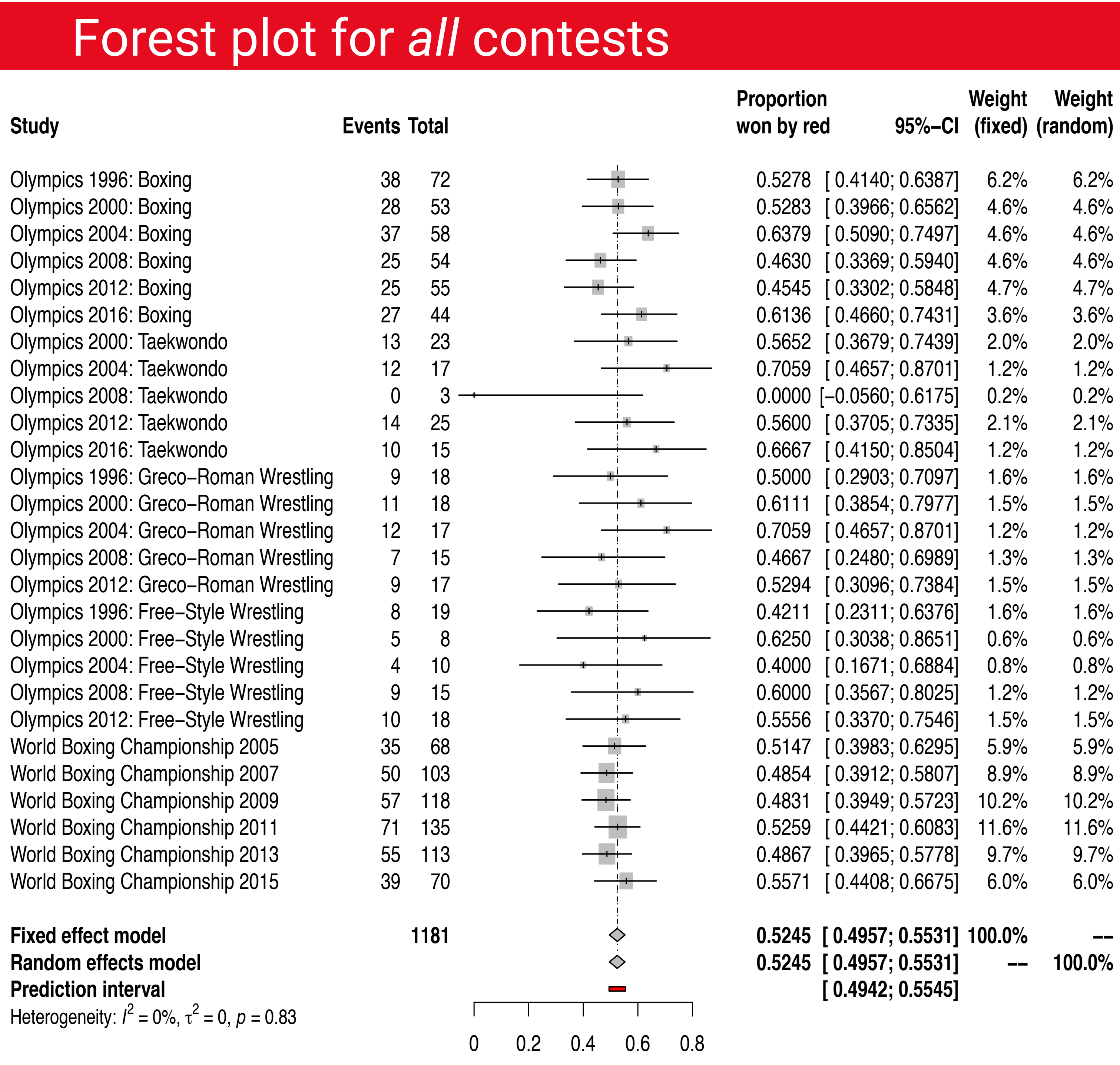
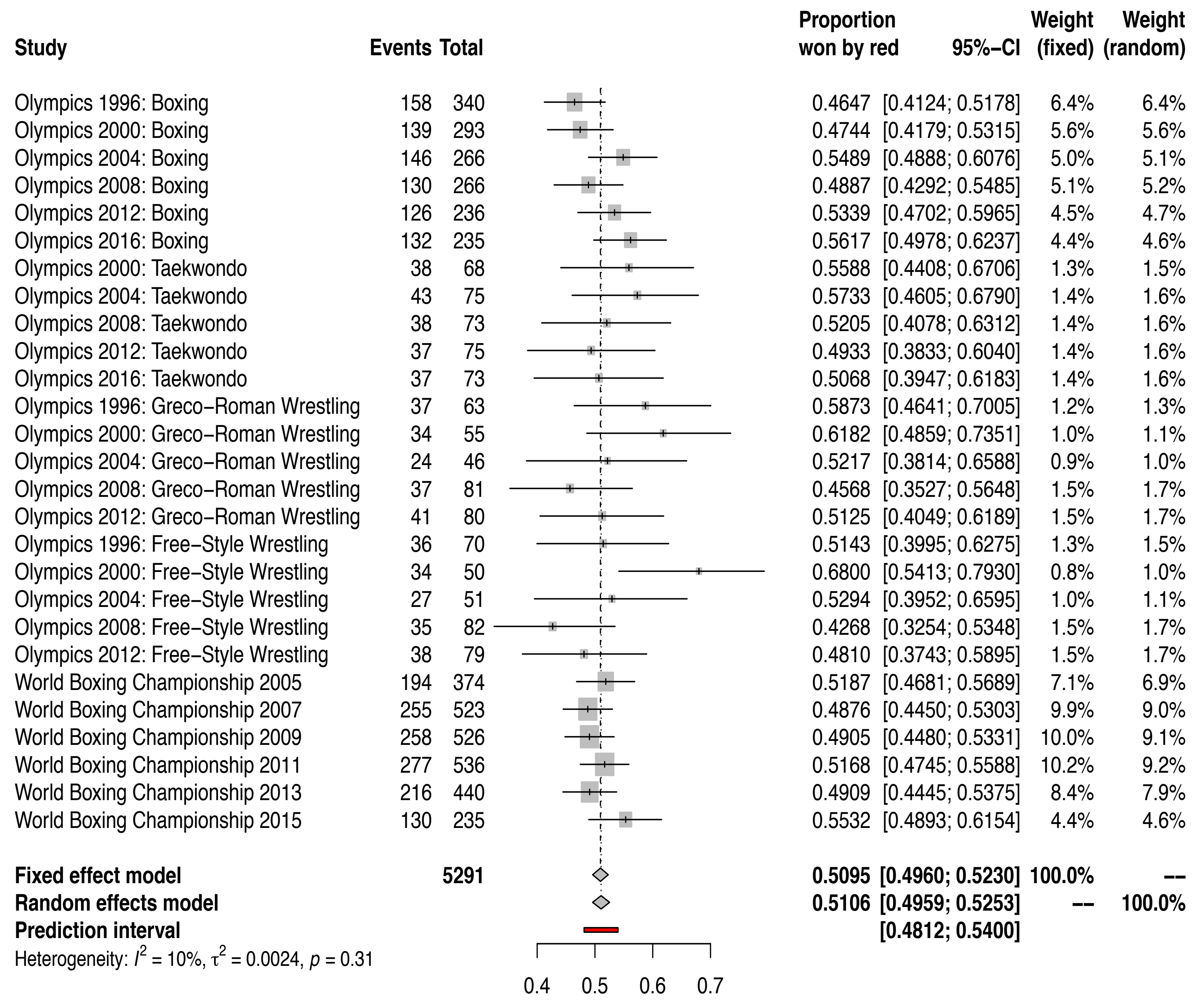
(Key) Results

- See Figures.

Discussion

- No statistically significant effects of colour (but suggestion of small effect when competition is close).
- Alternative explanations? (Time?, Small but noisy effect?, statistical outlier(s)?)

# Does red enhance human performance in contests? A meta-analysis



Forest plot for close contests (quartiles)



Picture by Boxing AIBA, [http://commons.wikimedia.org/wiki/File:2016\\_Olympic\\_Boxing\\_-\\_Box\\_4\\_Pol27000011.com](http://commons.wikimedia.org/wiki/File:2016_Olympic_Boxing_-_Box_4_Pol27000011.com)

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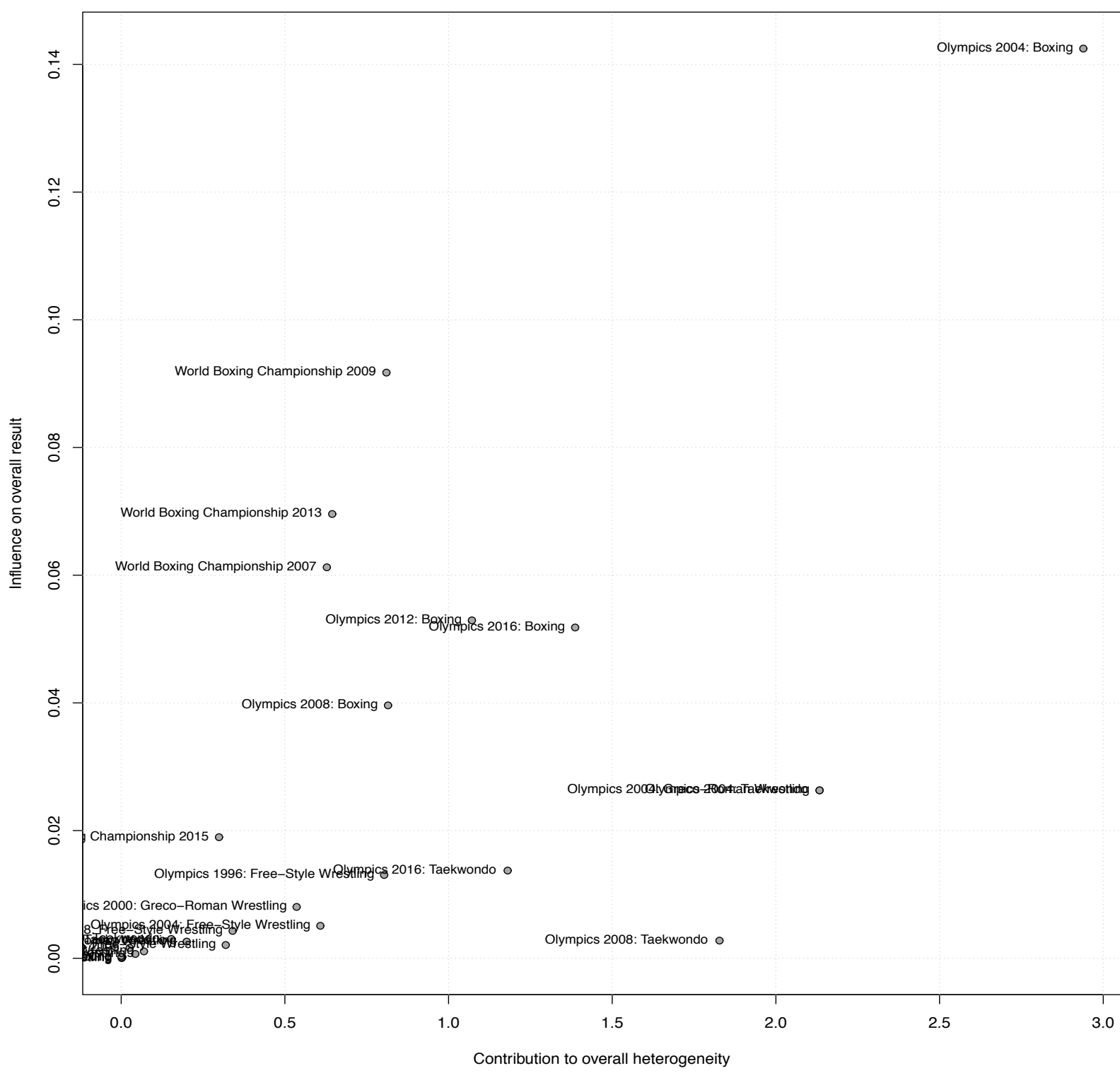
 @tvpollet



- BONUS
- As expected, no suggestion of publication bias.
  - No evidence for (strong) heterogeneity.
  - We also conducted analyses with tertiles.
  - These show an effect for close competitions *but* likely driven by outlier (see graph below).

Alternative explanations / Questions / moving forward.

- Was Athens (2004), a statistical outlier? (Perhaps for close contests but not for overall effect)
- Potential non-independence issues?
- What is the effect of rule changes?
- Are we underpowered to detect a ‘noisy’ effect?
- Should we move toward more studies which experimentally manipulate colour? For example <sup>(5)</sup>



Baujat plot for close contests (quartiles)



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References

[1] Elliot, A.J. & Maier, M.A. (2012). “Color-in-Context Theory”. In: Advances in Experimental Social Psychology. Ed. by A Devine and P Plant. Vol. 45. Academic Press, pp. 61–125. doi: 10.1016/B978-0-12-394286-9.00002-0.

[2] Elliot, A.J. & Niesta, D. (2008). Romantic Red: Red Enhances Men’s Attraction to Women. Journal of Personality and Social Psychology 95(5), 1150–1164. doi: 10.1037/0022-3514.95.5.1150.

[3] Hill, R.A. & Barton, R.A. (2005). Red Enhances Human Performance in Contests. Nature 435, 293. doi:10.1038/435293a.

[4] Schwarzer, G. Meta: Meta-Analysis with R. R Package Version 4.4–0.

[5] Hagemann, N., Strauss, B., & Leißing, J. (2008). When the Referee Sees Red .... Psychological Science 19(8):769–771. doi: 10.1111/j.1467-9280.2008.02155.x