The presence of the relative age effect within the identification of talent for professional cycling

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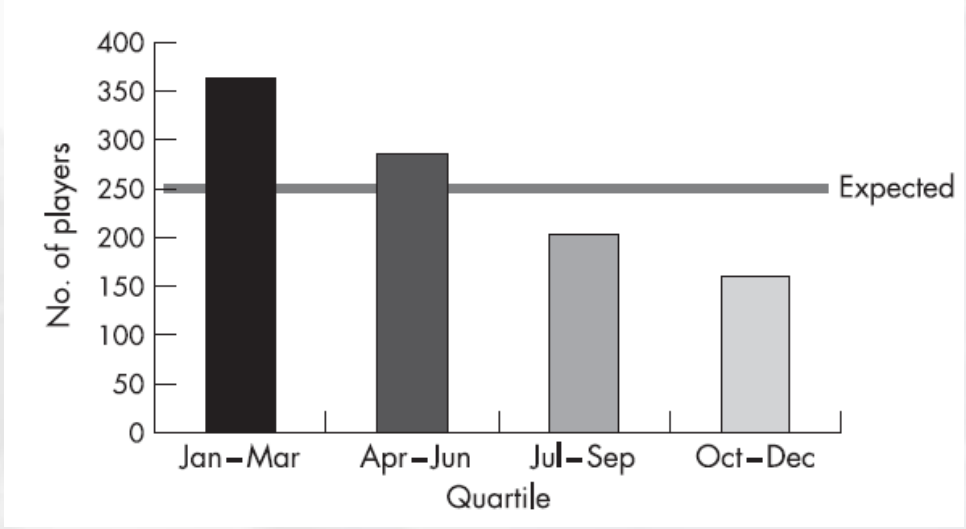
Introduction

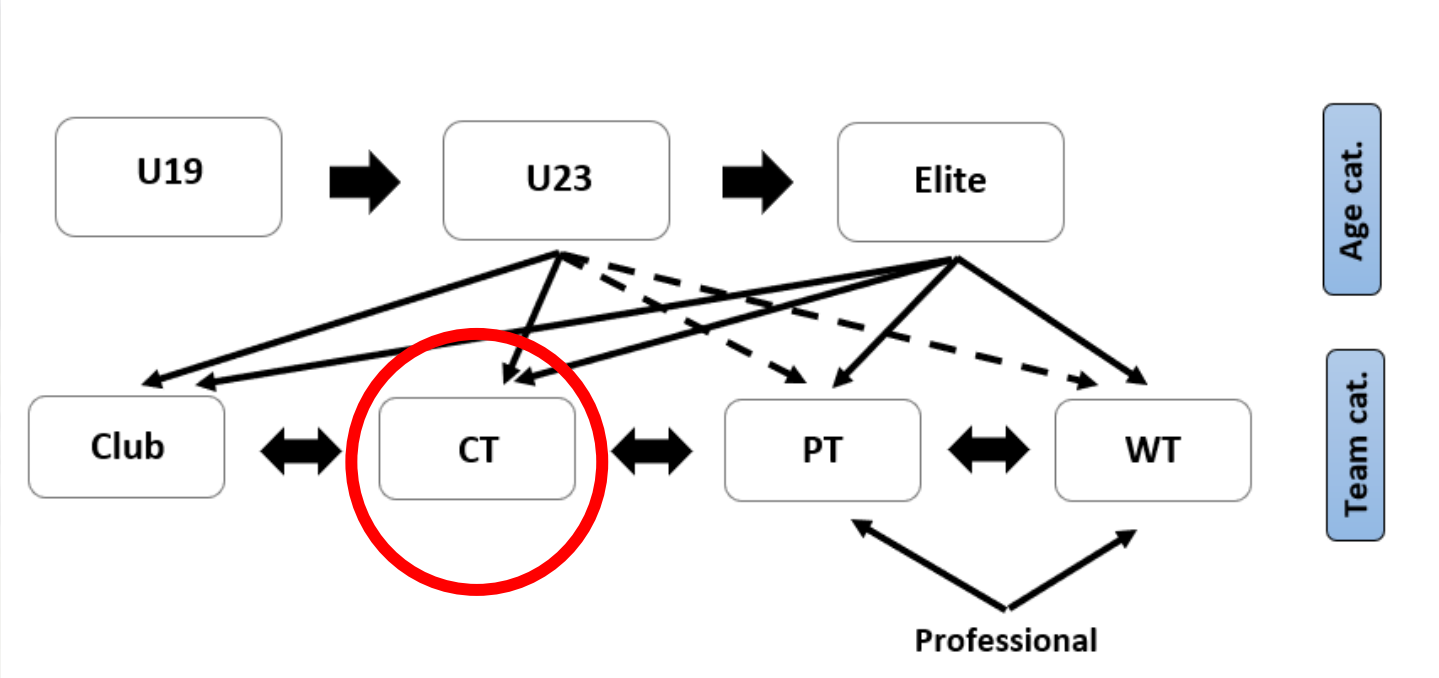
- Relative Age Effect
- Investigated in various sports



Baker & Logan (2007)

Introduction

- Study of Mostaert et al. (2021) suggests no presence of RAE in Belgian cycling >U17



Aims of the study

- To investigate the presence of the RAE in (semi-)professional cycling
- To investigate the presence of a selection bias towards relatively older (Q1) cyclists for CT teams
- To investigate if the potential RAE differs between countries
- To investigate performance differences caused by the RAE in the case of reaching professional level

Subjects

- Data collected from www.procyclingstats.com
- Inclusion criteria:
  - Born in a country placed within the top-25 of the PCS ranking
  - Have been part of a UCI CT team between 2005 and 2016
  - Born between January 1986 and December 1997

Research design

- Data collected:
  - Date of birth
  - Nationality
  - Years on CT, PT and WT level
  - Starting year at CT level

Research design

- Cyclist allocated to a birth quarter: Q1(Jan-Mar), Q2(Apr-Jun), Q3(Jul-Sep) or Q4(Oct-Dec)

- Noted if the cyclist reached professional level (Pro Tour or World Tour)

- Starting year at CT level determined:
  - 19 years old -> $U23_{year1}$
  - 20 years old -> $U23_{year2}$
  - 21 years old -> $U23_{year3}$
  - 22 years old -> $U23_{year4}$

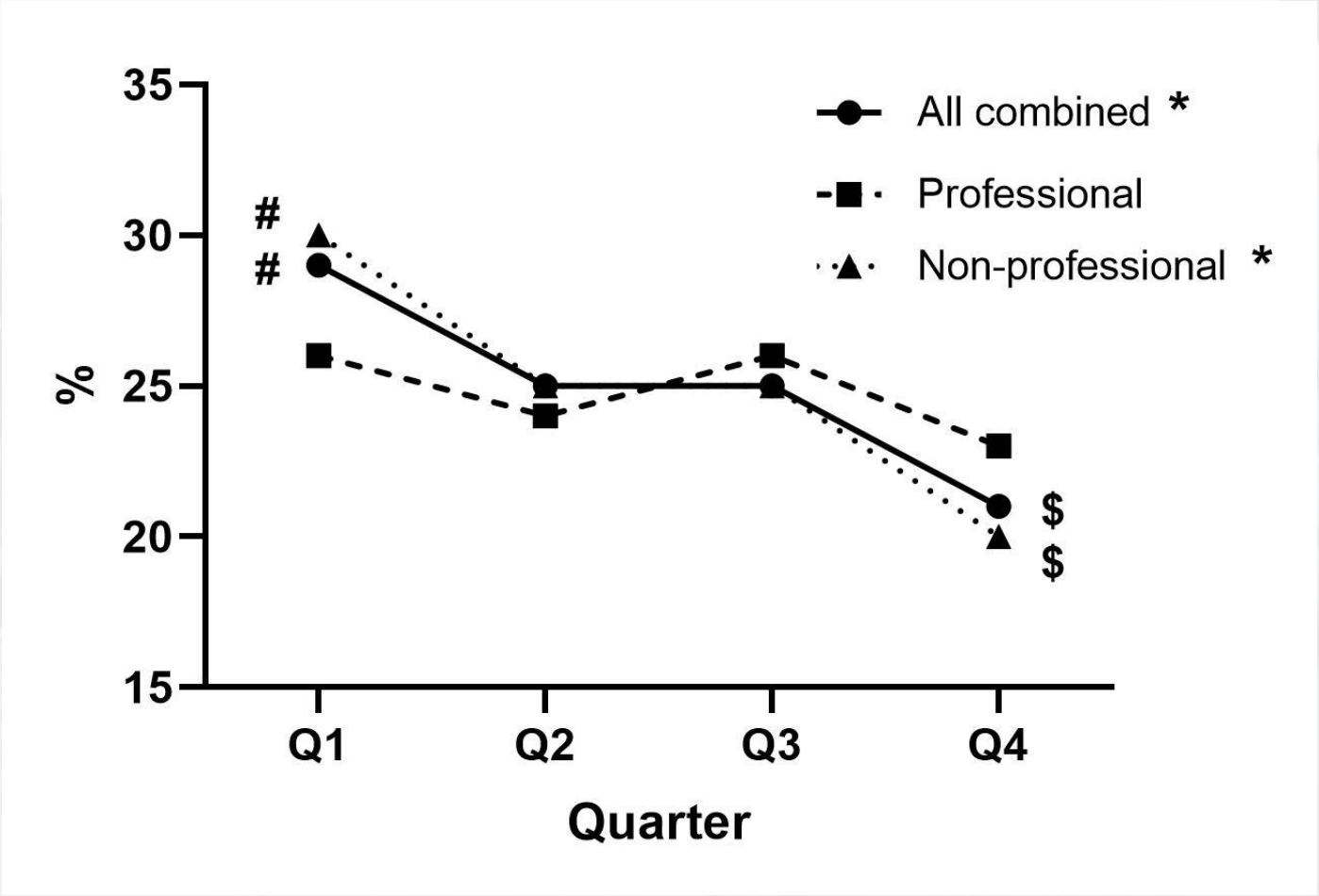
Statistical analyses

- Chi-square (χ^2) goodness of fit test with W as effect size

$$W = \sqrt{\frac{\chi 2}{n}}$$

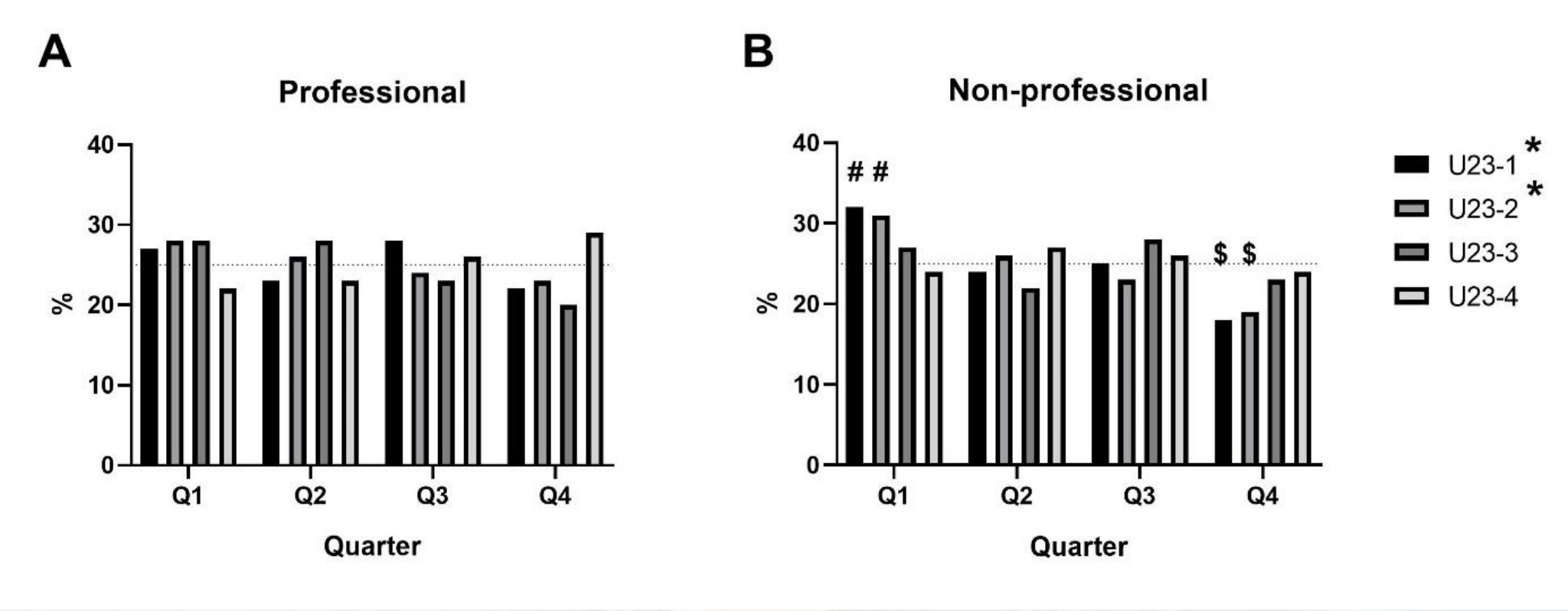
- Standardized residual as post-hoc

Results



* Sig ($p<0.05$) with Chi-squared goodness of fit
# overrepresentation with Standardized residual post-hoc >2
$ underrepresentation with Standardized residual post-hoc <-2

Results



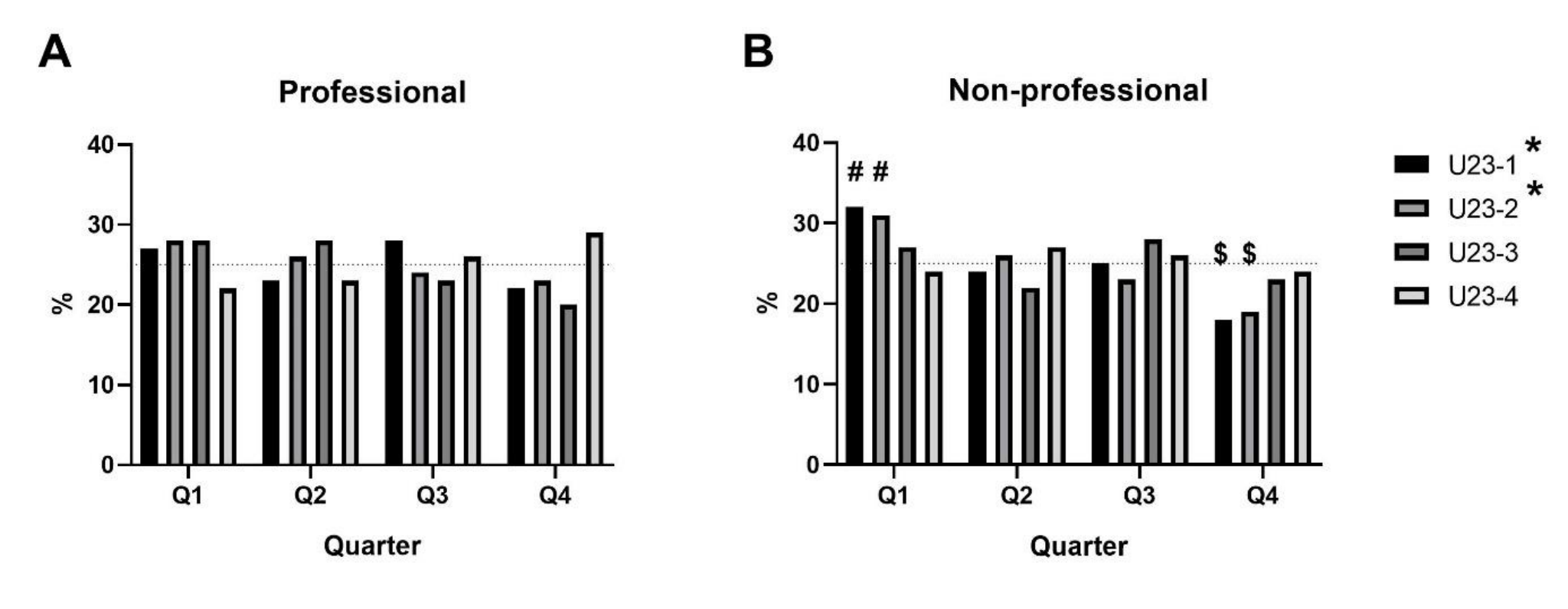
* Sig ($p<0.05$) with Chi-squared goodness of fit
# overrepresentation with Standardized residual post-hoc >2
$ underrepresentation with Standardized residual post-hoc <-2

Results

- Riders that made it to professional level:
  - 1 country with overrepresentation in Q1
  - 1 country with overrepresentation in Q3
  - No RAE in 22 other countries

- Riders that did not made it to professional level:
  - 5 countries with an overrepresentation in Q1
  - 3 countries with an underrepresentation in Q4
  - No RAE in the 16 other countries

Discussion



* Sig ($p<0.05$) with Chi-squared goodness of fit
# overrepresentation with Standardized residual post-hoc >2
$ underrepresentation with Standardized residual post-hoc <-2

Discussion

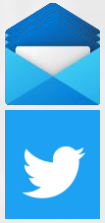
- Effect is disappearing within professional cycling:
  - Dependent on physical capacities

- Differences between countries
  - Different development structure in several countries (Spain, Italy, France)
  - Popularity of the sport (Musch & Grondin, 2001)

Take home message

- No RAE present in professional cycling
- Selection bias in CT teams when selecting 18 and 19 years old riders, no equal chance
- Differences between countries in the RAE

Thanks for listening!



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Additional slides

	Professional					Non-professional				
	Q1	Q2	Q3	Q4	χ^2	Q1	Q2	Q3	Q4	χ^2
Australia	11	11	14	10	0.78	28	30	31	20	2.74
Austria	4	5	2	5		37	21	23	19	8.00*
Belgium	14	19	16	24	3.11	66	58	62	62	0.52
Colombia	9	9	10	11	2.92	17	5	18	17	8.05*
Czech	4	4	3	3		27	27	32	25	0.96
Denmark	16	4	7	5	11.25*	41	23	35	30	5.42
England	7	4	8	8	1.59	29	15	13	20	7.94*
France	7	11	8	7	1.30	12	12	12	5	3.59
Germany	11	12	8	14	1.67	89	60	73	60	8.07*
Ireland	1	0	2	1		7	5	9	4	2.36
Italy	9	6	13	2	8.67*	22	26	30	13	6.98#
Kazakhstan	6	2	3	3		20	13	7	3	15.33*
New Zealand	4	3	2	0		9	12	3	8	1.62
Norway	5	7	7	5	0.67	30	29	28	16	5.00
Poland	7	2	3	4		33	27	17	19	6.83#
Portugal	1	0	3	2		11	8	4	9	3.25
Russia	12	16	10	5	5.84	34	30	15	7	22.37*
Slovakia	2	0	0	2		12	9	8	11	1.00
Slovenia	2	3	3	3		20	15	24	20	2.06
South Africa	2	2	4	3		9	4	7	7	1.89
Spain	10	11	11	9	0.27	10	12	11	8	0.85
Switzerland	1	5	3	3		10	9	7	5	1.90
The Netherlands	13	15	22	19	2.83	50	53	55	35	5.11
United States	17	11	10	5	6.77#	27	40	28	24	5.00

*Sig. (<0.05), #(<0.10) with Chi-squared goodness of fit test. Dark grey = sig. overrepresentation of birth quarter, light grey = sig. underrepresentation of birth quarter. No statistics applied if expected frequency for each quarter was lower than 5.