

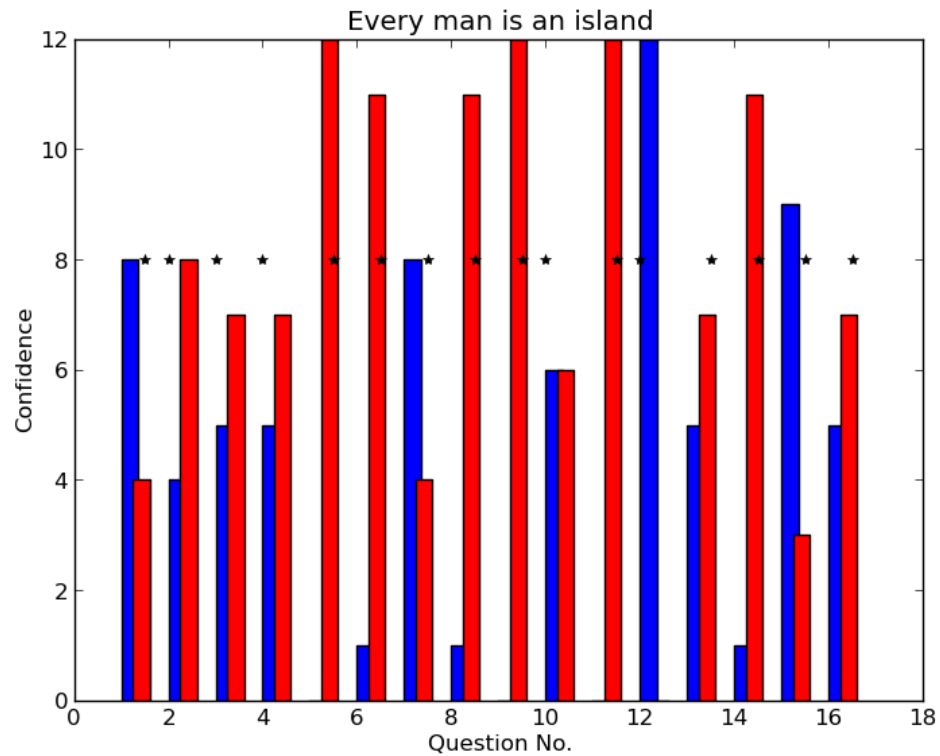
# Wisdom of the Crowd:

Group decisions and confidence

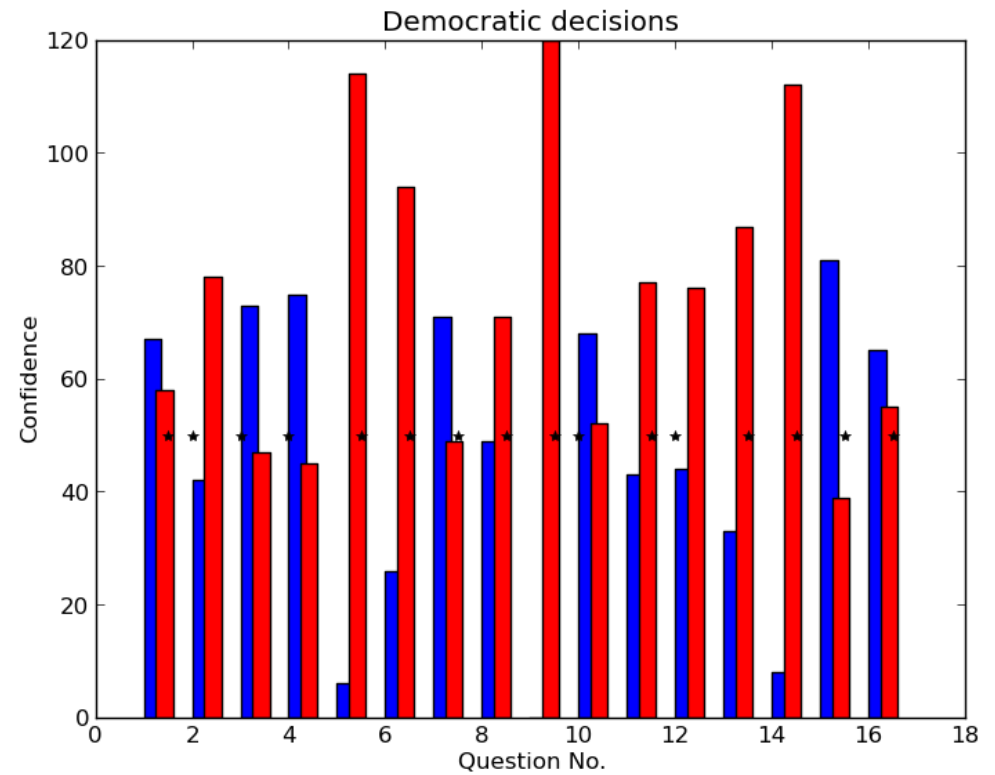
Alexander C Sutton  
CCNSS Shanghai  
July, 2014



Pooled confidences/ probabilities show that groups are better at making correct decisions than individuals:

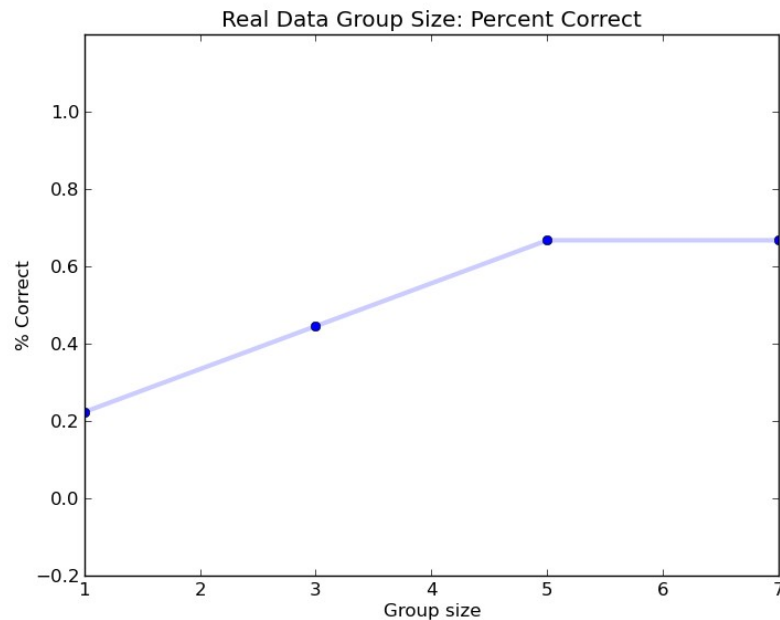


Individual % correct: 0.635

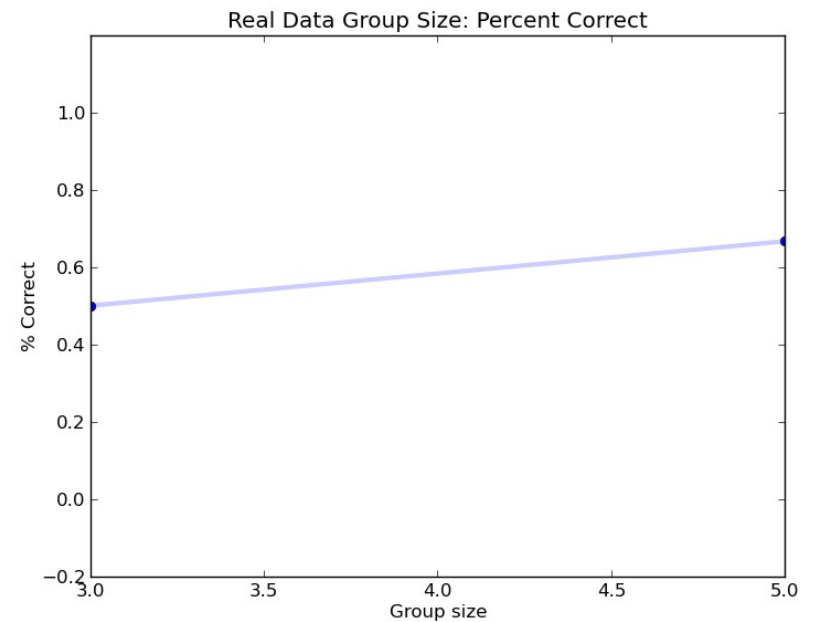


Collective % correct: 0.75

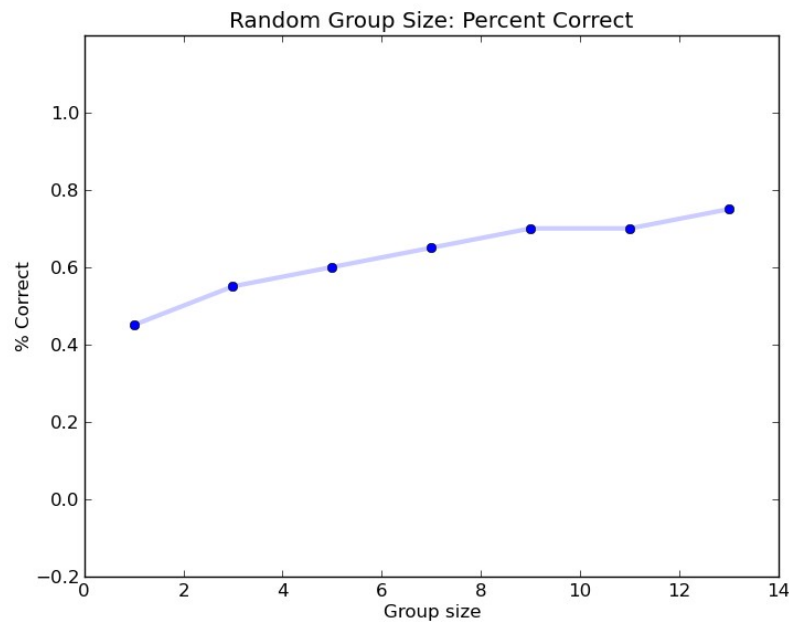
Even with average responses (i.e.: 60% correct),  
grouping individuals increases the probability of being correct



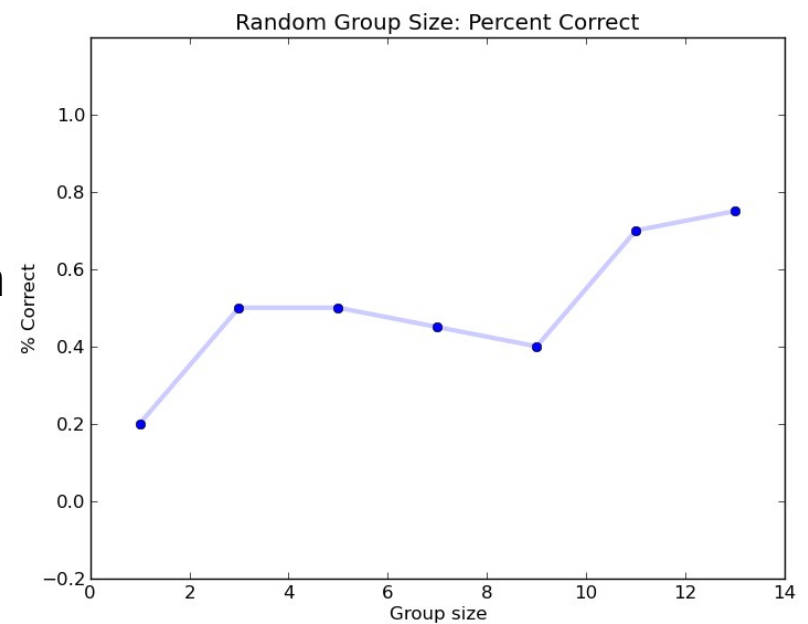
N=9 individuals



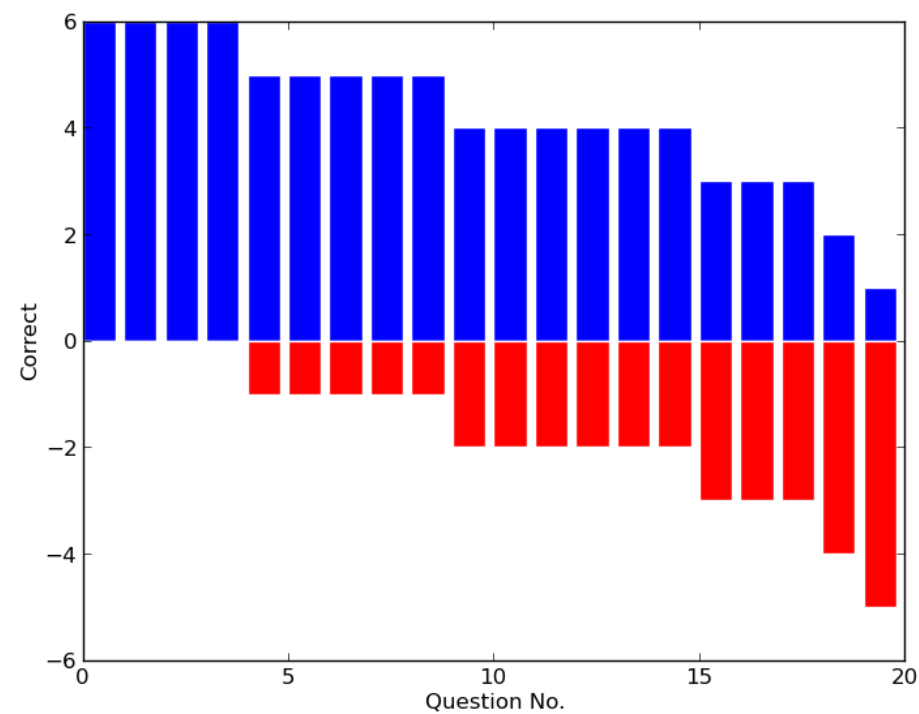
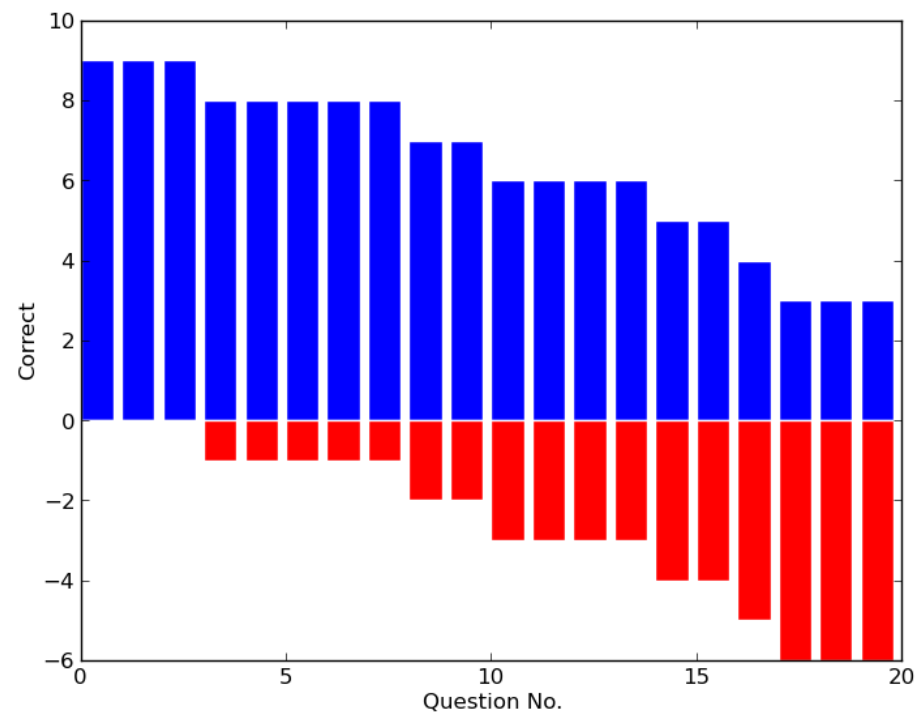
N=6 couples



N=15 random  
subjects  
(both)

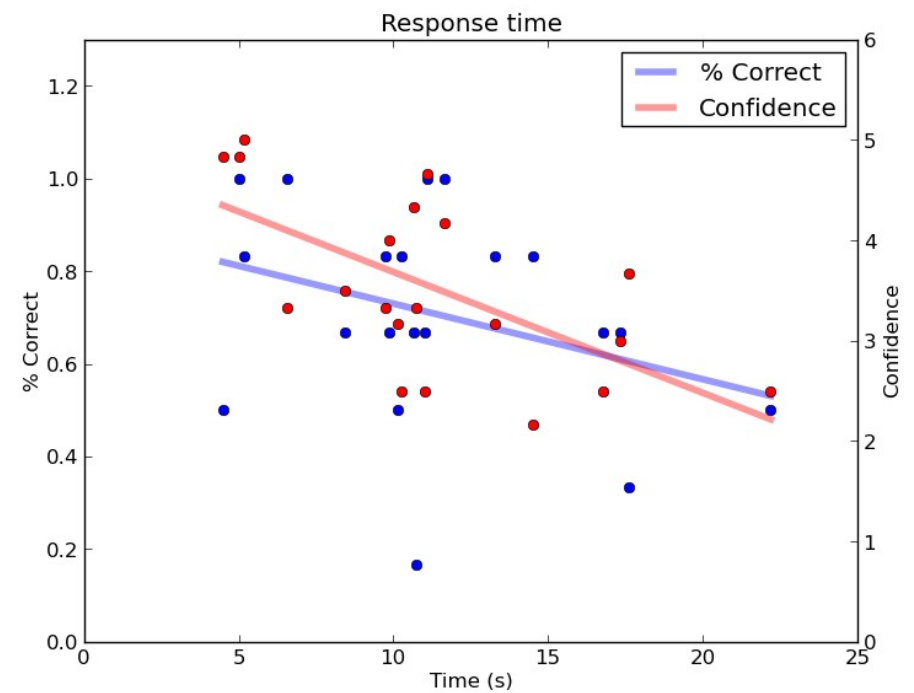
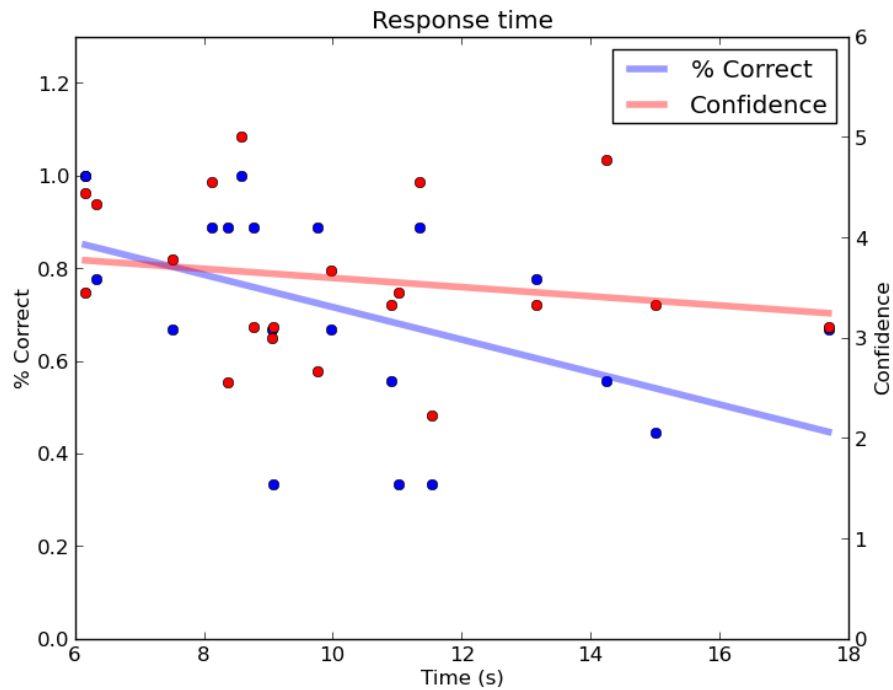


# Question by question



Question by question, individuals and groups of 2 perform about the same across the board

Overall, % correct diminishes toward chance with longer reaction times

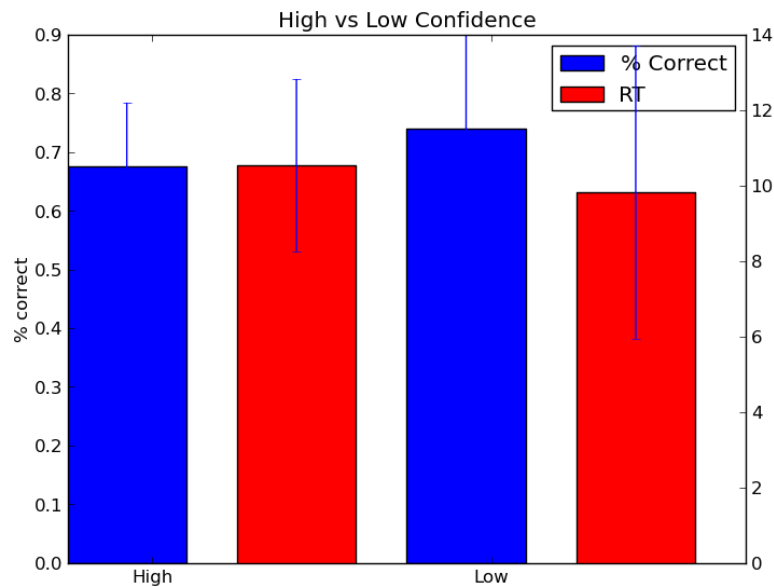


RT vs correct:  $R^2$  is 0.22506 , P is 0.03457

RT vs confidence:  $R^2$  is 0.03184, P is 0.45165

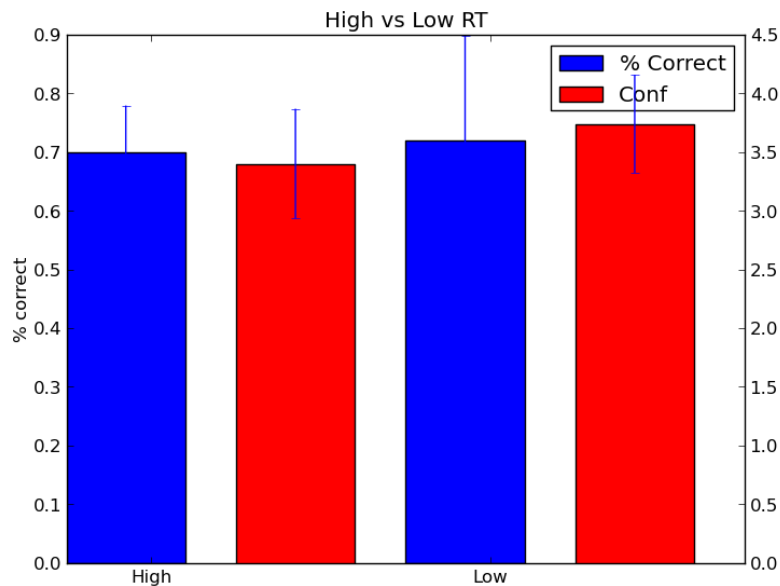
RT vs correct:  $R^2$  is 0.10780 , P is 0.15756

RT vs confidence:  $R^2$  is 0.39088, P is 0.00320



No significant effect of confidence on response time or % correct

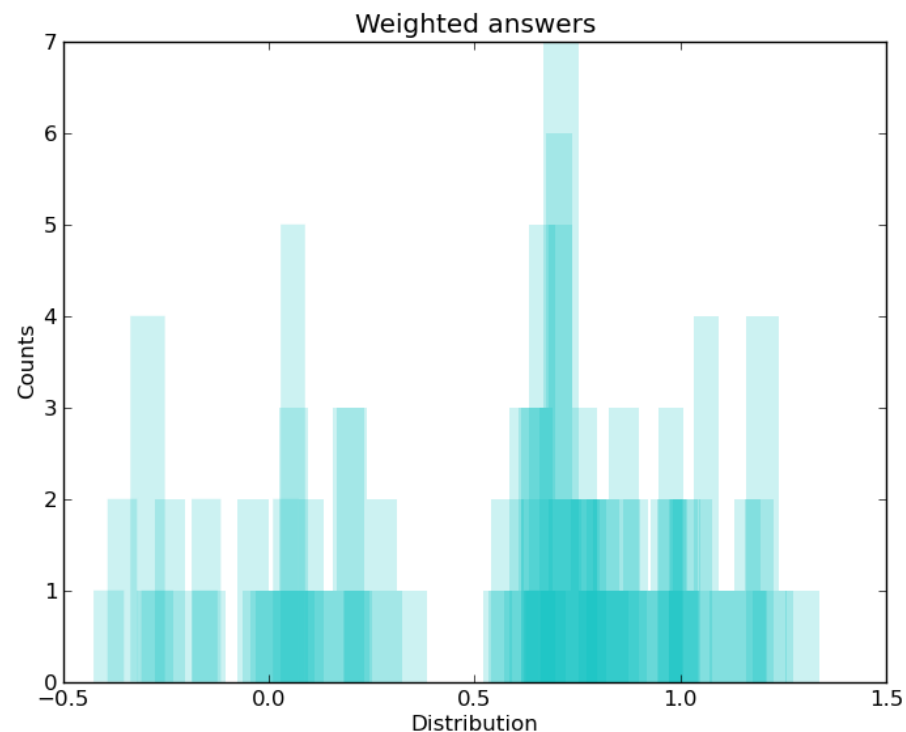
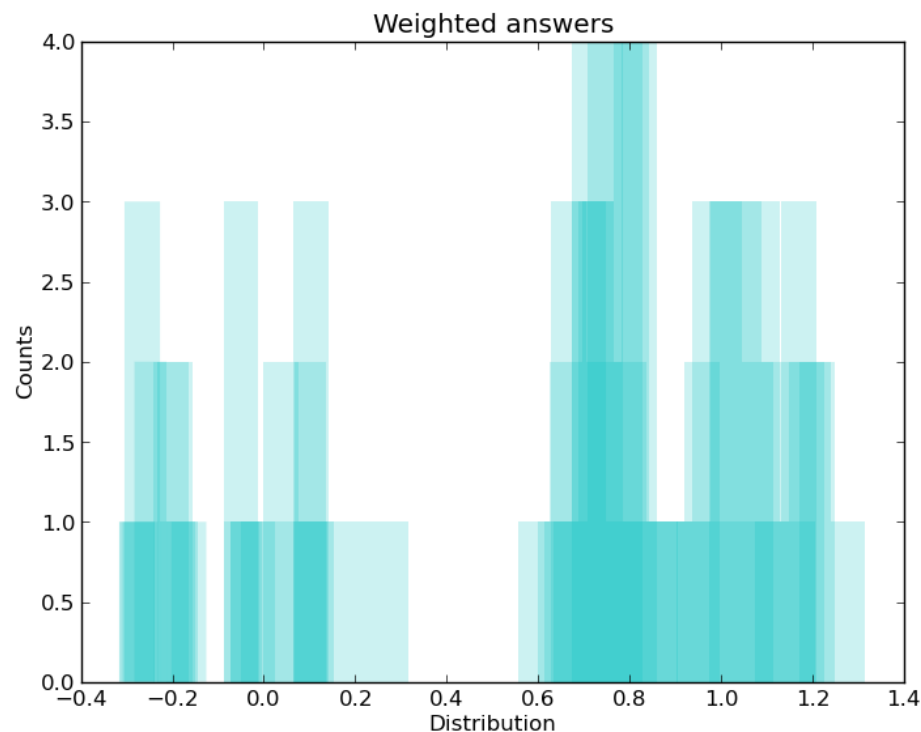
- individuals and groups were pooled based on their confidence levels
- 2 groups: high confidence ( $>3$ ) or low confidence ( $<3$ )



No great effect of response time on confidence or % correct

- individuals and groups were pooled based on response times
- 2 groups: high response ( $>\text{median}$ ) or low response time ( $<\text{median}$ )

## Answers weighted by confidence

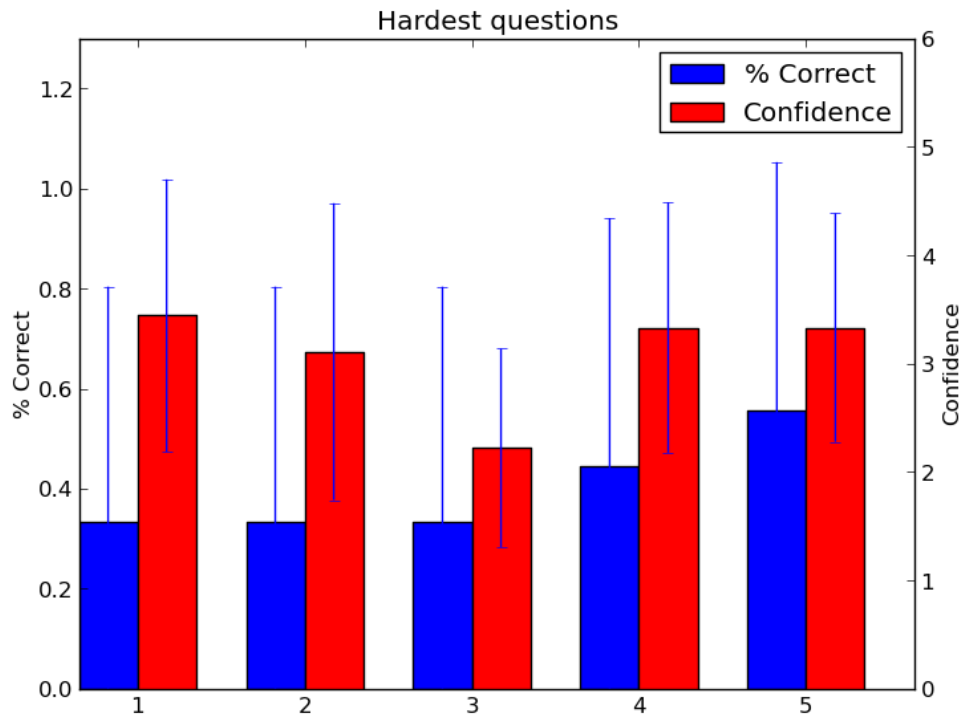


Correct answers were weighted fractionally greater than 1 if  $\text{conf} > 3$ ,  
and fractionally less than 1 if  $\text{conf} < 3$

Incorrect answers were similarly weighted but  $> 0$  for  $\text{conf} < 3$  (not sure that your  
incorrect answer is correct) and  $< 0$  for  $\text{conf} > 3$  (sure that your incorrect answer is  
correct)

No group (individuals or couples) is clearly better than the other

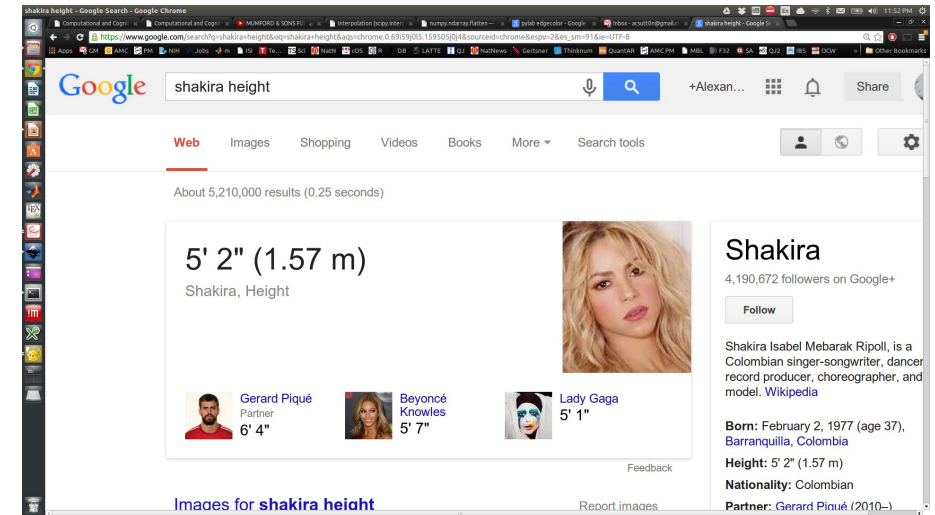
What were the hardest questions:



Who is taller: Shakira or Zach Mainen?

A. Zach Mainen

B. Shakira



Which city has more people: Beijing or Mexico City?

A. Beijing

B. Mexico City

[http://en.wikipedia.org/wiki/World's\\_largest\\_cities](http://en.wikipedia.org/wiki/World's_largest_cities)

What country has the higher average temperature: Mexico or Iran?

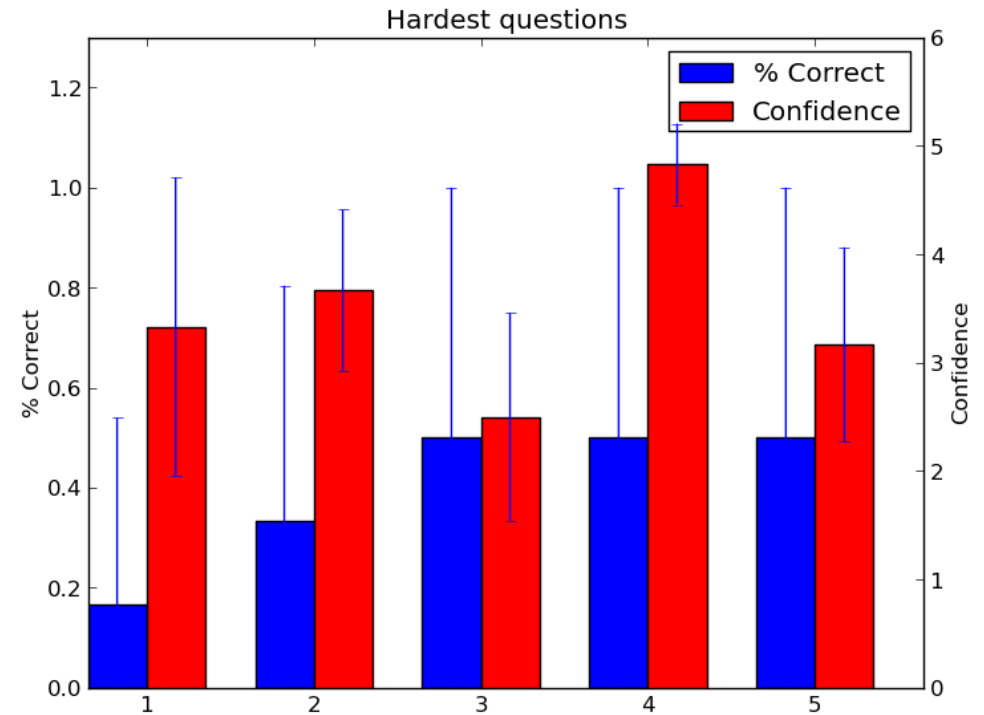
A. Mexico

B. Iran



Which country has won more World Cup titles?:

- A. Italy
- B. Argentina



List of FIFA World Cup finals - Wikipedia, the free encyclopedia - Google Chrome

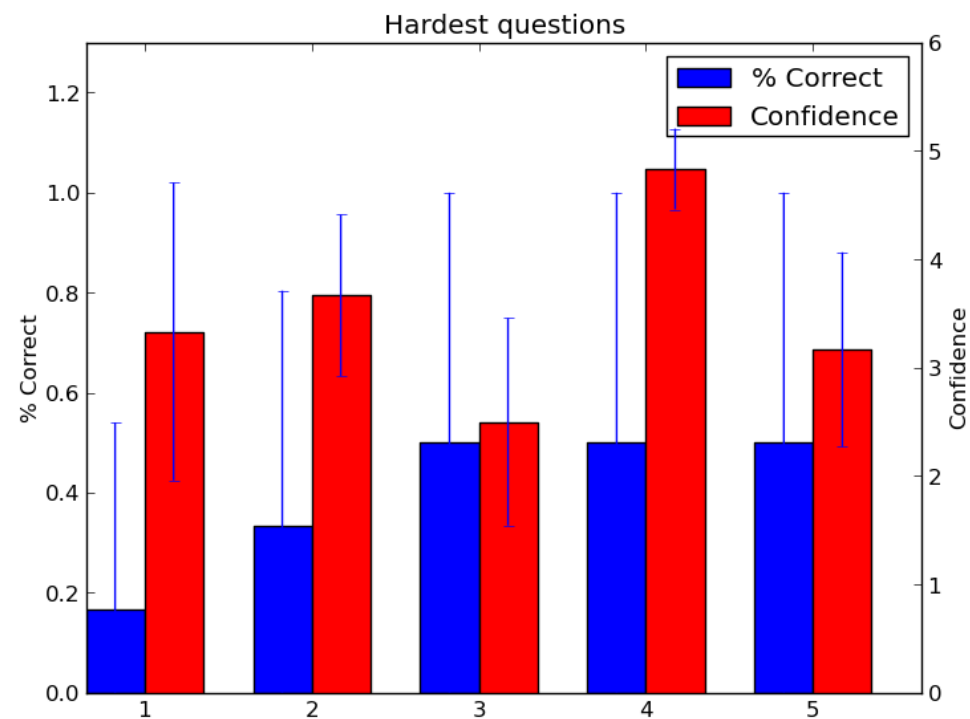
team	up	finals	up
Brazil	5	2	7
Italy	4	2	6
Argentina	2	3	5
Uruguay	2	0	2
Germany	1	1	2
France	1	1	2
England	1	0	1
Spain	1	0	1
Netherlands	0	3	3
Czechoslovakia	0	2	2
Hungary	0	2	2

Map of winning countries

Which country has won more World Cup titles: Italy or Argentina?

A. Italy

B. Argentina



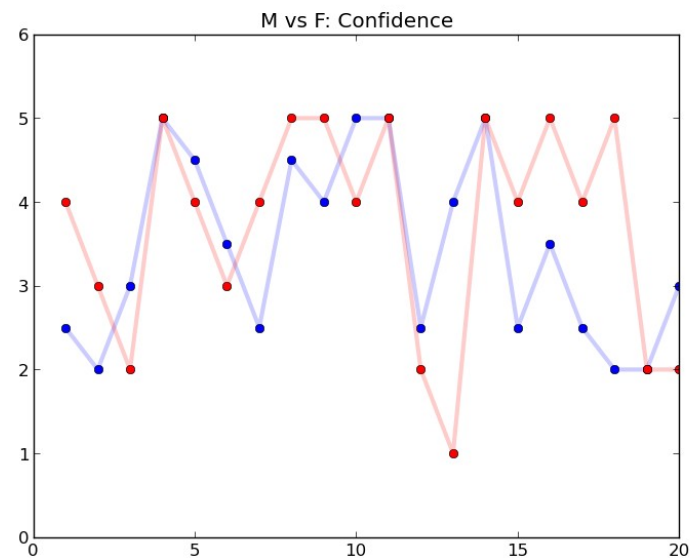
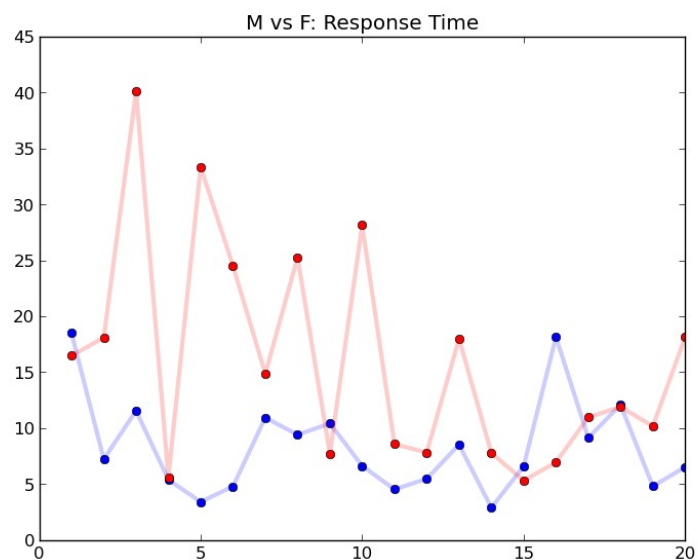
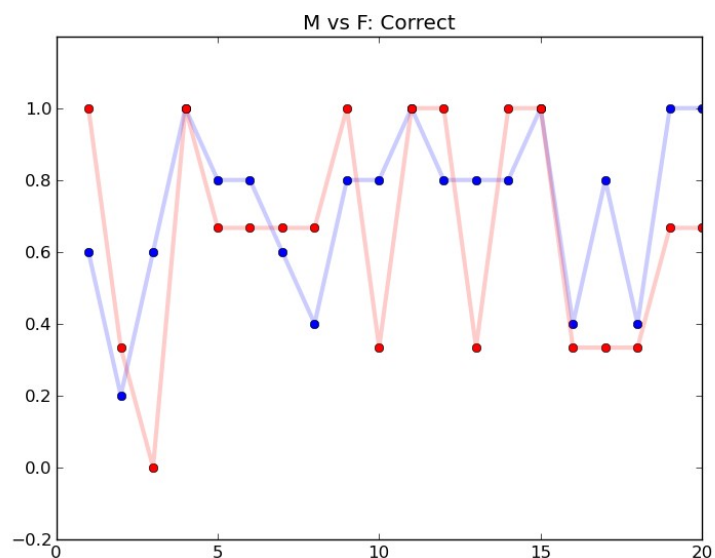
List of FIFA World Cup finals - Wikipedia, the free encyclopedia - Google Chrome

en.wikipedia.org/wiki/List\_of\_FIFA\_World\_Cup\_Finals

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England	1	0	1
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Netherlands	0	3	3
Czechoslovakia	0	2	2
Hungary	0	2	2

Map of winning countries

## Results by gender

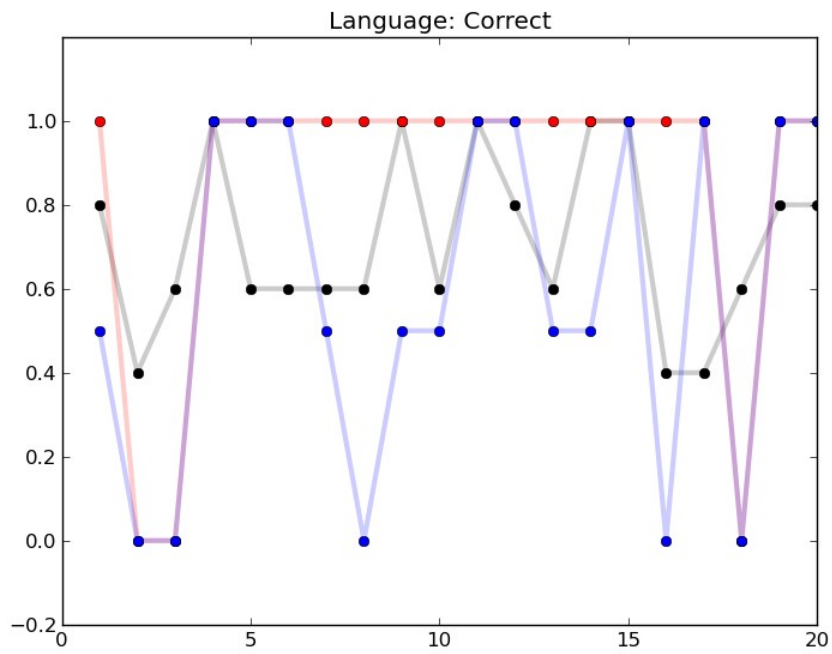


Males percent corr: 0.730 , mean conf: 3.580 , mean RT: 8.342

Females percent corr: 0.650 , mean conf: 3.617 , mean RT: 12.550

Males percent corr: 0.700 , mean conf: 3.425 , mean RT: 8.349

Females percent corr: 0.550 , mean conf: 3.700 , mean RT: 15.985

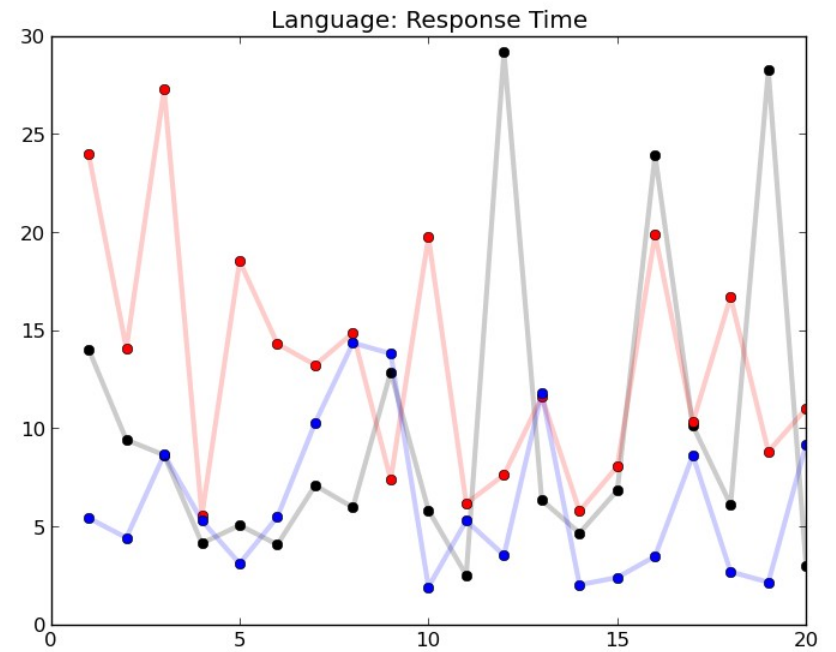
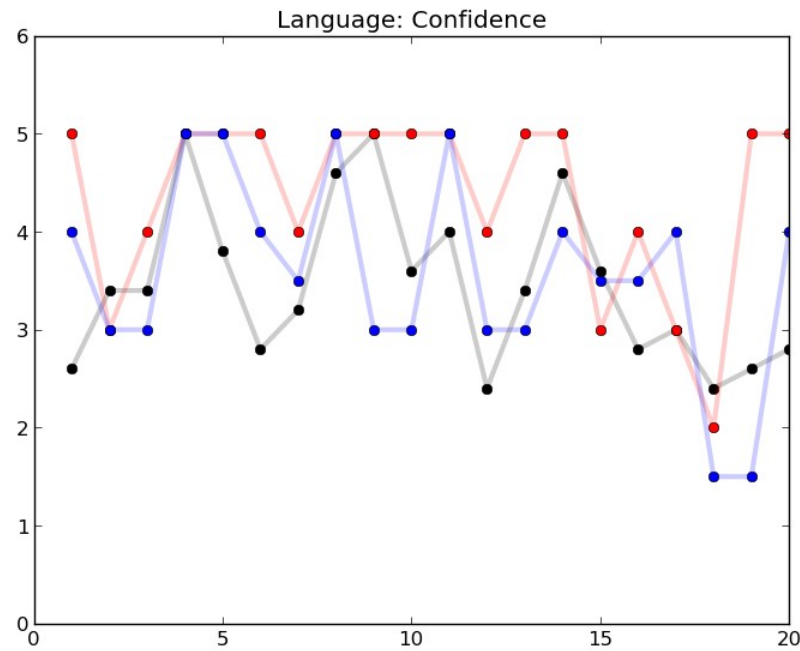


## Results by language

Solve:  $42 \% 7 = ?$

A. 6

B. 0



What country did Pele play for: Argentina or Brazil?

A. Argentina

B. Brazil

