

Day 10

The winners of the Academy Award for Best Actor and Best Actress in the last ten years are shown below:

Year	Actor	Age	Movie
2005	Jamie Foxx	37	<i>Ray</i>
2006	Philip Seymour Hoffman	38	<i>Capote</i>
2007	Forest Whitaker	45	<i>The Last King of Scotland</i>
2008	Daniel Day Lewis	50	<i>There Will Be Blood</i>
2009	Sean Penn	48	<i>Milk</i>
2010	Jeff Bridges	60	<i>Crazy Heart</i>
2011	Colin Firth	50	<i>The King's Speech</i>
2012	Jean Dujardin	39	<i>The Artist</i>
2013	Daniel Day-Lewis	55	<i>Lincoln</i>
2014	Matthew McConaughey	44	<i>Dallas Buyers Club</i>

Year	Actress	Age	Movie
2005	Hilary Swank	30	<i>Million Dollar Baby</i>
2006	Reese Witherspoon	29	<i>Walk the Line</i>
2007	Helen Mirren	61	<i>The Queen</i>
2008	Marion Cotillard	32	<i>La Vie en Rose</i>
2009	Kate Winslet	33	<i>The Reader</i>
2010	Sandra Bullock	45	<i>The Blind Side</i>
2011	Natalie Portman	29	<i>Black Swan</i>
2012	Meryl Streep	62	<i>The Iron Lady</i>
2013	Jennifer Lawrence	22	<i>Silver Linings Playbook</i>
2014	Cate Blanchett	44	<i>Blue Jasmine</i>

- Find the five-number summary for the ages of the Best Actors and construct a box-plot of the age distribution.
- Find the five-number summary for the ages of the Best Actresses and construct a box-plot of the age distribution.
- Use your results from a) and b) to compare the shape, center, and spread of each age distribution.
- Find the mean and standard deviation of the men's and women's ages. Calculate the difference between the men's mean age and the women's mean age.
- Does your data suggest that for the last ten years, the winners of the Best Actress award are younger than the winners of the Best Actor award? Explain your answer.
- The graph below shows the probability model for the difference in the mean of the actors' and actresses' ages based on the hypothesis that there really is no age difference between the genders. For each simulation, the 20 different ages of the award winners are assigned to the two genders at random and the difference between the mean ages is determined. Use the graph to comment on whether the observed difference of 7.8 indicates that there is a significant difference between the actors' and actresses' mean age. There are a total of 200 differences shown in the simulation.

