





















Hypothesis Testing

- If p=0.5, i.e., the children have no preference, then the P (X>9) = 0.4072
- Thus there is a 40% chance of incorrectly concluding that the children have a preference for red truck!
- Similarly:

P(X>12)=0.0481 P(X>15)=0.0006 P(X>17)≈0

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	True State of Nature			
Decision	H ₀ is True	<i>H</i> _a is True		
Accept H ₀	Correct Decision Prob. = $1 - \alpha$	Type II Error Prob. = β		
Reject H ₀	Type I Error Prob. = α	Correct Decision Prob. = 1 – β		

Power of a Test
 Power of a test is the probability of correctly rejecting the null hypothesis, i.e., the probability that you accept H_a when in fact H_a is true.
 Thus Power=1 - P(Type II error) =1 - β
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Toy E	oy Example (Contd.)							
Т	The probabilities of type I and II errors and the power for various decision rules							
	k	α	β	Power				
	9	0.4073	0.0043	0.9957				
	12	0.0481	0.1329	0.8671				
	15	0.0007	0.7287	0.2713				
	17	0	0.982	0.018				
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	What is True?		
Judgment	Defendant is Innocent	Defendant is Guilty	
Do not reject the presumption of innocence (verdict not guilty)	Correct Decision Prob. = $1 - \alpha$	Type II Error Prob. = β	
Reject the presumption of innocence (verdict guilty)	Type I Error Prob. = α	Correct Decision Prob. = 1 – β	











































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