

Assessing Ranges

June 1997



DDP generally uses 10/50/90 ranges in the analysis phase

- 10/50/90 range means that the “real” number will fall within that range 80% of the time
 - ◆ 10 - 1 in ten chance that the number will be lower
 - ◆ 50 - equally likely that the number will be higher or lower
 - ◆ 90 - 1 in ten chance that the number will be higher
- Tell you upfront that people tend to estimate too narrow a range

Assessing Range Worksheet-Fill out the 10/50/90 estimates

	10		50		90		Questions
							What year was the first coffee house built
							How many eggs can an Ocean Sunfish lay over its life
							How much cold can an Arctic Fox survive (Fahrenheit)
							How much does the largest Elephant Seal weigh in pounds
							How fast can an Ostrich run (miles per hour)
							How fast can a Peregrine Falcon fly? (miles per hour)
							How many vertebrae does a giraffe have in its neck
							What depth does light cease to exist in the ocean (feet)
							How far can a sea horse travel in 5 minutes (yards)
							How far was the Wright Brother's first flight (feet)
a		b		c		d	

Assessment Exercise

Answer Sheet

Tabulate how well the ranges were estimated

	10		50		90		
	1151		1682		1943		What year was the first coffeehouse built
a		b		c		d	

- For each answer, check the column where the correct answer is
 - ◆ For example, first question answer is 1470
 - ◆ The answer falls between 1151 and 1682 (the 10 and 50 range)
 - ◆ You would record the answer as “b”
- Tabulate all the estimates
- We will total them as a group
- It is expected
 - ◆ 10% of the answers will be a & 10% will be d
 - ◆ 40% of the answers will be b & 40% will be c

Assessing Range Worksheet-Fill out the 10/50/90 estimates

Questions	Answers	Source
What year was the first coffee house built	1470	Discover at Summit Place Mall
How many eggs can an Ocean Sunfish lay over its life	300 million	Discover at Summit Place Mall
How much cold can an Arctic Fox survive (Fahrenheit)	(58)	Discover at Summit Place Mall
How much does the largest Elephant Seal weigh in pounds	8,800	Discover at Summit Place Mall
How fast can an Ostrich run (miles per hour)	45	Discover at Summit Place Mall
How fast can a Peregrine Falcon fly? (miles per hour)	112	Discover at Summit Place Mall
How many vertebrae does a giraffe have in its neck	7	Discover at Summit Place Mall
What depth does light cease to exist in the ocean (feet)	600	Discover at Summit Place Mall
How far can a sea horse travel in 5 minutes (yards)	1	Discover at Summit Place Mall
How far was the Wright Brother's first flight (feet)	120	Discover at Summit Place Mall

***Tabulate the number of responses in each category
(a, b, c, d)***

	10		50		90		Questions
							What year was the first coffee house built
							How many eggs can an Ocean Sunfish lay over its life
							How much cold can an Arctic Fox survive (Fahrenheit)
							How much does the largest Elephant Seal weigh in pounds
							How fast can an Ostrich run (miles per hour)
							How fast can a Peregrine Falcon fly? (miles per hour)
							How many vertebrae does a giraffe have in its neck
							What depth does light cease to exist in the ocean (feet)
							How far can a sea horse travel in 5 minutes (yards)
							How far was the Wright Brother's first flight (feet)
a		b		c		d	

What conclusions can we draw?

- How were the estimates?
 - ◆ Any biases?
 - ◆ Which way?
- Any conclusions regarding the type of question?
 - ◆ What about questions you thought you have more knowledge about?
- Other conclusions?
- Next we will talk about what process you used in estimating the ranges
 - ◆ One or two people explain what they did

Let's discuss what process could used in estimating the ranges?

- Ensure you have a well defined uncertainty
 - ◆ Sales
 - ❖ Is it \$s or units
 - ❖ Is it number sold in a region or produced
 - ❖ What dimension is needed? (by year?)
- Start with the 10/90 first
 - ◆ Do not anchor!
 - ◆ Think about what factors could cause it to be low or high
 - ◆ Tell yourself that the 10 point is real low
 - ❖ What caused that to happen?
 - ❖ Is it possible
- Estimate the 50 point
- Wait a day then see if the range makes sense (repeat steps above as required)

Good Decision Making Requires Estimates to represent the true understanding of the situation

- People tend to think they are going to do a better job when they have a narrower range
- If you were a manager and needed to make a decision, would you rather get a “narrow” range or a more realistic range?

Additional Range Worksheets

Assessing Range Worksheet-Fill out the 10/50/90 estimates

	10		50		90		Questions
							What was the average teachers salary in Michigan between 1995-96?
							What is the age that a female can marry with parental consent in Michigan?
							What was the population of Detroit in 1990?
							How many endangered animals were in the U.S. as of 1996?
							When was paper invented?
							How many miles does Belle Isle extend?
							How many counties were in Michigan in 1992?
							What percentage of Michigan is covered with forests as of 1992?
							What percentage of Michigans population lived in the Lower Peninsula in 1992?
							Number of buses in used in Taiwan in 1980
a		b		c		d	

Tabulate how well the ranges were estimated

	10		50		90		
	20,000		40,000		60,000		What was the average teachers salary in Michigan between 1995-96??
a		b		c		d	

- For each answer, check the column where the correct answer is
 - ◆ For example, first question answer is \$49,168
 - ◆ The answer falls between 40,000 and 60,000 (the 50 and 90 range)
 - ◆ You would record the answer as “C”
- Tabulate all the estimates
- We will total them as a group
- It is expected
 - ◆ 10% of the answers will be a & 10% will be d
 - ◆ 40% of the answers will be b & 40% will be c

Assessing Range Worksheet

Questions	Answers	Source
What was the average teachers salary in Michigan between 1995-96?	49,168	World Almanac and Book of Facts 1997
What is the age that a female can marry with parental consent in Michigan?	16	World Almanac and Book of Facts 1997
What was the population of Detroit in 1990?	1,027,974	1997 Information Please Almanac Atlas & Yearbook 50th Ed.
How many endangered animals were in the U.S. as of 1996?	320	World Almanac and Book of Facts 1997
When was paper invented?	105	World Almanac and Book of Facts 1997
How many miles does Belle Isle extend?	3 miles	Hunt's Highlights of Michigan
How many counties were in Michigan in 1992?	83	Michigames!
What percentage of Michigan is covered with forests as of 1992?	50%	Michigames!
What percentage of Michigans population lived in the Lower Peninsula in 1992?	96%	Michigames!
Number of buses in used in Taiwan in 1980	18,004	International Motor Business 1st quarter 1994

Tabulate the number of responses in each category (a, b, c, d)

	10	50	90	
				What was the average teachers salary in Michigan between. 1995-96?
				What is the age that a female can marry with parental consent?
				What is the population of Detroit in 1990?
				How many endangered animals are in the U.S.?
				When was paper invented?
				How many miles long does Belle Isle extend?
				How many counties are there in Michigan?
				What percentage of Michigan is covered with forests?
				What is the weight of a single seat Kayak?
				What percentage of the state's population lives in the Lower Peninsula?
				What is the % of unemployed people in 1995?
				Number of buses in use in Taiwan in 1980
a	b	c	d	

Assessing Range Worksheet-Fill out the 10/50/90 estimates

	10		50		90		Questions
							How many females were living in Michigan in 1990?
							How much money did travelers spend in 1990 in Michigan?
							What year was Boy Scout of America founded?
							What was the speed limit in 1996 for trucks on the interstate in Michigan?
							What is the lowest recorded temperature in Michigan through 1995?
							When was stainless steel invented?
							How many seats are in the Fox Theatre located in Detroit?
							How old was Michael Jackson when the Jackson 5 recorded their first record?
							If you could speak both English and Chinese, what % of the world's population could you converse with?
							Number of motor vehicles produced in Taiwan 1985
a		b		c		d	

Tabulate how well the ranges were estimated

	10		50		90	
	1,000,000		4,000,000		5,000,000	How many females were living in Michigan in 1990?
a		b		c		d

- For each answer, check the column where the correct answer is
 - ◆ For example, first question answer is 4,787,516
 - ◆ The answer falls between 4,000,000 and 5,000,000 (the 50 and 90 range)
 - ◆ You would record the answer as “C”
- Record a,b,c, or d for each question
- Total the number a,b,c,d for your estimates
- We will total them as a group
- It is expected
 - ◆ 10% of the answers will be a & 10% will be d
 - ◆ 40% of the answers will be b & 40% will be c

Assessing Range Worksheet

Questions	Answer	Source
How many females were living in Michigan in 1990?	4,787,515	1997 Information Please Almanac Atlas & Yearbook 50th Ed.
How much money did travelers spend in 1990 in Michigan?	16.5 billion	World Almanac and Book of Facts 1996
What year was Boy Scout of America founded?	1910	World Almanac and Book of Facts 1997
What was the speed limit in 1996 for trucks on the interstate in Michigan?	65	World Almanac and Book of Facts 1997
What is the lowest recorded temperature in Michigan through 1995?	-51	World Almanac and Book of Facts 1997
When was stainless steel invented?	1916	World Almanac and Book of Facts 1997
How many seats are in the Fox Theatre located in Detroit?	5,000	Hunts' Highlights of Michigan
How old was Michael Jackson when the Jackson 5 recorded their first record?	11	Northwest
If you could speak both English and Chinese, what % of the world's population could you converse with?	75%	Tom Drumgoole
Number of motor vehicles produced in Taiwan 1985	135,387	Internation Motor Business 1st quarter 1994



Tabulate the number of responses in each category (a, b, c, d)

	10	50	90	Questions
				How many females were living in Michigan in 1990?
				How much money did travelers spend in 1990 in Michigan?
				What year was Boy Scout of America founded?
				What was the speed limit in 1996 for trucks on the interstate in Michigan?
				What is the lowest recorded temperature in Michigan through 1995?
				When was stainless steel invented?
				How many seats are in the Fox Theatre located in Detroit?
				How old was Michael Jackson when the Jackson 5 recorded their first record?
				If you could speak both English and Chinese, what % of the world's population could you converse with?
				Number of motor vehicles produced in Taiwan 1985
a	b	c	d	