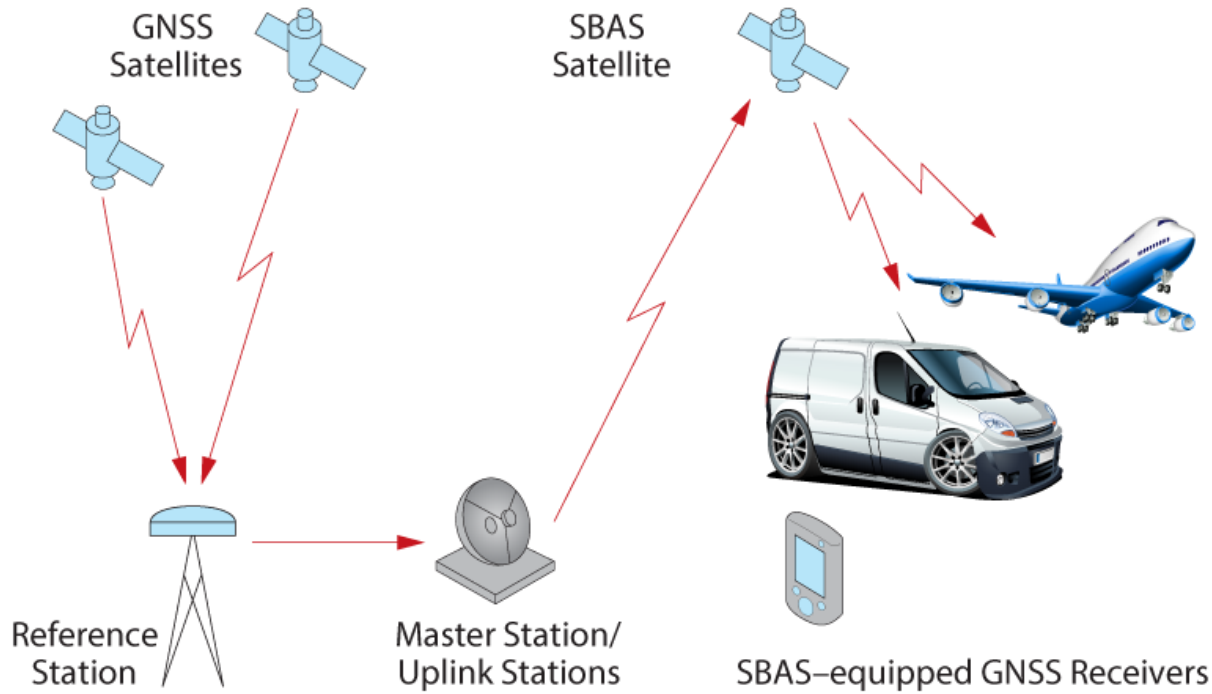
Intangibles Estimation By Survey

- Payment Cards Method
- Price Sensitivity Method
- Contingent Valuation Method

Payment Cards Method

- Asked to choose Willingness To Pay(WTP) point estimate or range from list on card

Example



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Korean government is considering to deploy Satellite based augmenting service(SBAS) which is capable of offering 1~3m location accuracy.

Example

18. Is your CP capable of using LBS ?

① Yes ☞ [Go #19] ② No ☞ [Go to #18-1]

18-1. Are you willingly to purchase CP which is capable of using LBS ?

① Yea ② No ☞ [Skip this Section]

19. Mobile phone Location Based Service(LBS) is now provided with 10~35m location accuracy, such that lot of difficulties are being experienced. If you are able to upgrade this resolution up to 3m accuracy, how much are you willingly to pay for the upgrade?

① ₩100/month② ₩500/month ③ ₩1,000/month ④ ₩1,500/month ⑤ ₩3,000/month

⑥ Nothing to pay

PSM:
Price Sensitivity Measurement

Determine Fair Prices From Subjective Awareness of Customers

1. PSM Introduction

1. Backgrounds

- Developed by Netherland economist Peter H. Westendorp
- Published in Journal of Marketing News(1982. 05)
- Progressed as a fair pricing methodology in Japan

2. Characteristics

- Investigation of price perception by confirming resistance level of customer price (Too Cheap, Cheap, Expensive, Too Expensive)
- Obtainment of results by calculating the purchase intention rate on each level
- Respondents are supposed to be familiar with the product
- Use of new products as well as existing ones
- Visualization of analysis results
- Applicability from relatively small sample sizes

2. Question

- **Measuring "Price Perception" through the four questions**

Q1. "At what price would you consider the product to be a good buy for the money"?(Good value/Cheap)

Direction of Presentation →

						V												
1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	2400	2500	2600	2700	2800	2900	3000

Q2. "At what price would you consider the product starting to get expensive, so that it is not out of question, but you would have to give some thought to buying it"?(expensive)

Direction of Presentation →

						Q1					V							
1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	2400	2500	2600	2700	2800	2900	3000

Q3. "At what price would you consider the product to be so expensive that you would not consider buying it"?(too expensive)

Direction of Presentation →

						Q1					Q2			V				
1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	2400	2500	2600	2700	2800	2900	3000

Q4. "At what price would you consider the product to be priced so low that you would feel the quality couldn't be very good"(too cheap)

← Direction of Presentation

			V			Q1					Q2			Q3				
1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	2400	2500	2600	2700	2800	2900	3000

3. Analysis

1. Frequencies

Prices	(cheap)	(expensive)	(too expensive)	(too cheap)
(1) ₩ 1,200	0	0	0	2
(2) ₩ 1,300	2	0	0	12
(3) ₩ 1,400	2	1	0	9
(4) ₩ 1,500	11	2	0	43
(5) ₩ 1,600	32	5	2	26
(6) ₩ 1,700	11	21	1	7
(7) ₩ 1,800	34	7	13	1
(8) ₩ 1,900	0	36	3	0
(9) ₩ 2,000	4	13	30	0
(10) ₩ 2,100	2	12	11	0
(11) ₩ 2,200	1	2	24	0
(12) ₩ 2,300	1	1	8	0
(13) ₩ 2,400	0	0	8	0
(14) ₩ 2,500	0	0	0	0
(15) ₩ 2,600	0	0	0	0

3. Analysis

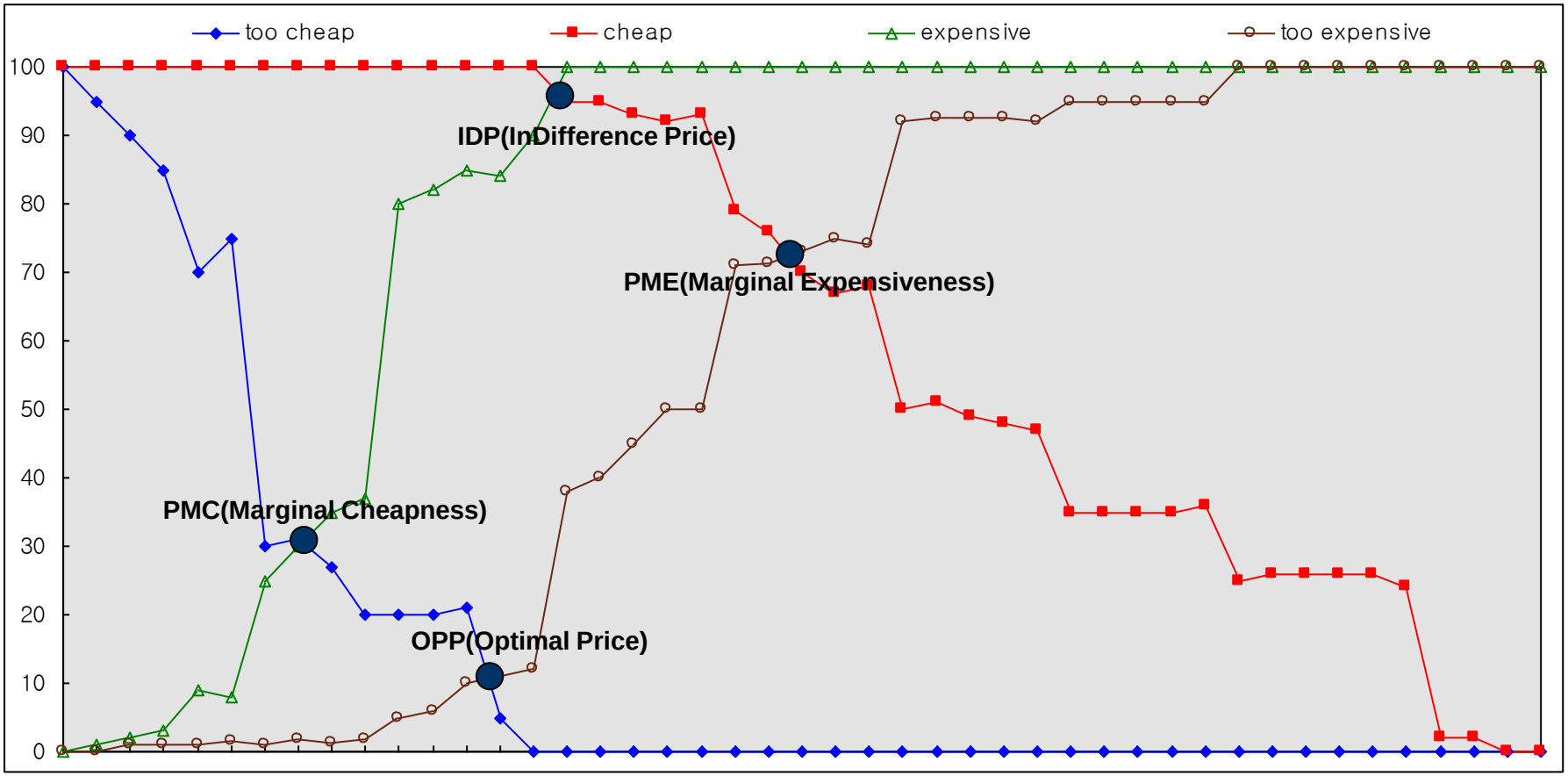
2. Cumulative Frequencies

- Starting From Highest Price (Cheap, Too Cheap),
- Starting From Lowest Price (Expensive, Too Expensive)

Prices	(cheap) (cumulative%)	(expensive) (cumulative %)	(too expensive) (cumulative %)	(too cheap) (cumulative %)
(1) ₩ 1,200	100	0	0	100
(2) ₩ 1,300	100	0	0	98
(3) ₩ 1,400	98	1	0	86
(4) ₩ 1,500	96	3	0	77
(5) ₩ 1,600	85	8	2	34
(6) ₩ 1,700	53	29	3	8
(7) ₩ 1,800	42	36	16	1
(8) ₩ 1,900	8	72	19	0
(9) ₩ 2,000	8	85	49	0
(10) ₩ 2,100	4	97	60	0
(11) ₩ 2,200	2	99	84	0
(12) ₩ 2,300	1	100	92	0
(13) ₩ 2,400	0	100	100	0
(14) ₩ 2,500	0	100	100	0
(15) ₩ 2,600	0	100	100	0

3. Analysis

3. Visualization



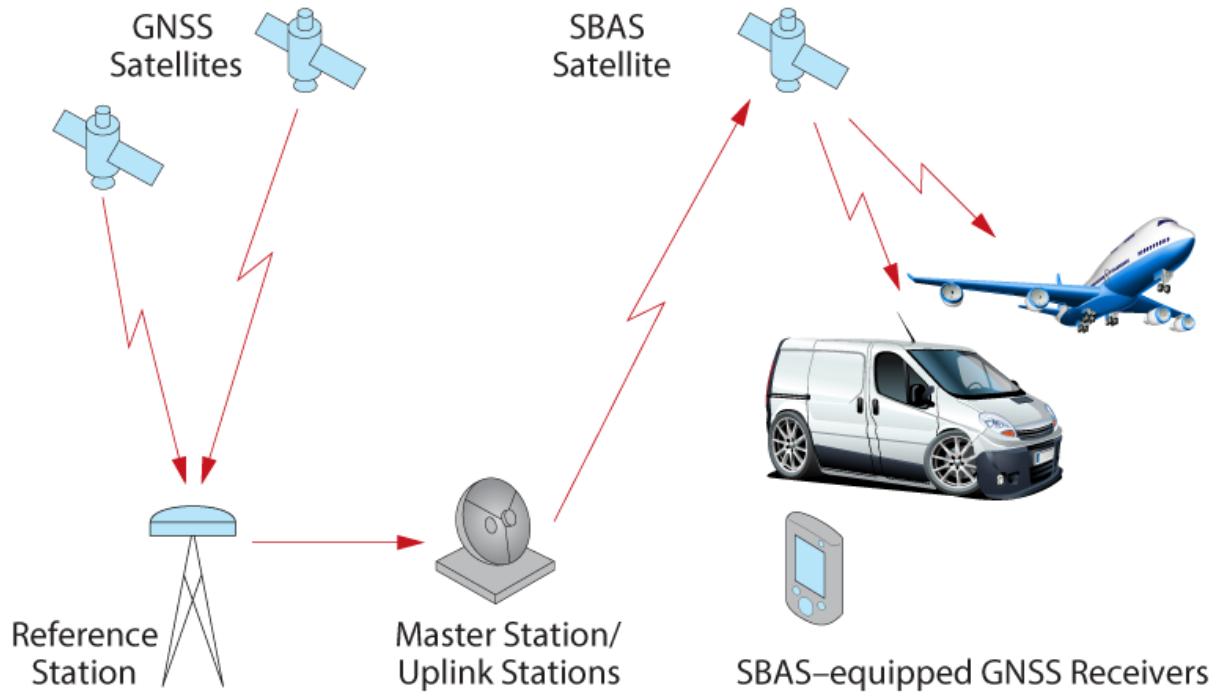
3. Analysis[1]

1. Van Westendorp, P (1976) "NSS-Price Sensitivity Meter (PSM) – A new approach to study consumer perception of price" *Proceedings of the ESOMAR Congress*, 139–167. Online available at the ESOMAR website.↩

4. Terminology

IDP **(Indifference Price Point)**	☞ ***Price which is thought NOT to be cheap nor expensive*** ☞ May refer to "Normal Price" ☞ Meaning : Average price or Market Leader price
OPP **(Optimal Price Point)**	☞ ***High Price point which is thought NOT to be too cheap nor too expensive*** ☞ Least price resistance point to customers ☞ Meaning : Optimal Price Point to Customers
PMC **(Point of Marginal Cheapness)**	☞ ***Marginal Cheapness which is thought to be doubtful quality*** ☞ Meaning : Lowest Price which customers may willingly to pay
PME **(Point of marginal Expensiveness)**	☞ ***Marginal Cheapness which is thought to be non-purchase resistance*** ☞ Meaning : Highest Price which customers may willingly to pay
APR **(Acceptable Price Range)**	☞ ***Price Range between PMC and PME*** ☞ Meaning : Price Range which customers may willingly to pay
Stress **(IDP – OPP)**	☞ ***Degree of Price Resistance*** ☞ Meaning : '+' allows higher price due to lower resistance, '-' forces lower prices due to higher resistance.

Example



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Korean government is considering to deploy Satellite based augmenting service(SBAS) which is capable of offering 1~3m location accuracy.

Q1. "**At what monthly fee** would you consider **the SBA service** to be a good buy for the money?"

Direction of Presentation →

0	100	200	300	400	500	600	800	1,000	1,200	1,400	1,600	1,800	2,000	2,200	2,400	2,600	2,800	3,000

Q2. "**At what monthly fee** would you consider **the SBA service** starting to get expensive, so that it is not out of question, but you would have to give some thought to buying it?"

Direction of Presentation →

0	100	200	300	400	500	600	800	1,000	1,200	1,400	1,600	1,800	2,000	2,200	2,400	2,600	2,800	3,000

Q3. "**At what monthly fee** would you consider **the SBA service** to be so expensive that you would not consider buying it?"

Direction of Presentation →

0	100	200	300	400	500	600	800	1,000	1,200	1,400	1,600	1,800	2,000	2,200	2,400	2,600	2,800	3,000

Q4. "**At what monthly fee** would you consider **the SBA service** to be priced so low that you would feel the quality couldn't be very good ?"

← Direction of Presentation

0	100	200	300	400	500	600	800	1,000	1,200	1,400	1,600	1,800	2,000	2,200	2,400	2,600	2,800	3,000

CVM:
Contingent Valuation Method

Useful tool for learning about preferences of public goods and accepted for policy analysis

1. CVM Introduction

1. CVM Backgrounds

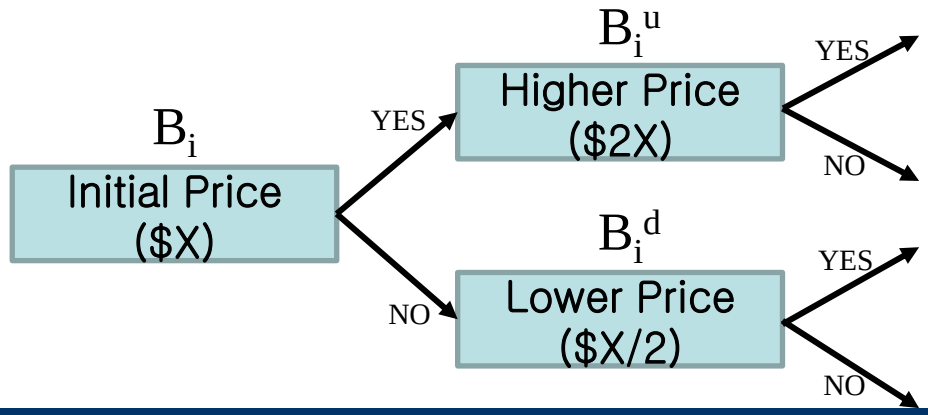
- around for 30 years
- thinking has been influenced by three studies:
  - 1989 Exxon Valdez Oil Spill (Carson et al., 1992)
  - Exxon symposium (Hausman, 1993)
  - Blue Ribbon Panel by NOAA to assess reliability of CV for use in assessing lost passive use values resulting from oil spills (Arrow et al. 1993)

2. CVM Characteristics

- most widely used approach for valuing public goods
- conducted in over 40 counties and valuing clean water, air, wilderness, recreation, endangered species, tropical forests, and many non-environmental health issues
- CVM surveys have been demand driven, but have fallen victim to some poor problems in one way or another
- must have pretesting, good interviewers, large sample size, adequate budget.

1. CVM Analysis

1. CVM Questionnaire



2. CVM Equations

$$\pi^{yy}(B_i, B^u_i) = Prob\{B^u_i \leq WTP_i\} = 1 - F(B^u_i;\theta)$$

$$\pi^{yn}(B_i, B^u_i) = Prob\{B_i \leq WTP_i < B^u_i\} = F(B^u_i;\theta) - F(B_i;\theta)$$

$$\pi^{ny}(B_i, B^d_i) = Prob\{B^d_i \leq WTP_i < B_i\} = F(B_i;\theta) - F(B^d_i;\theta)$$

$$\pi^{nn}(B_i, B^d_i) = Prob\{WTP_i < B^d_i\} = F(B^d_i;\theta)$$

4. CVM Outcomes

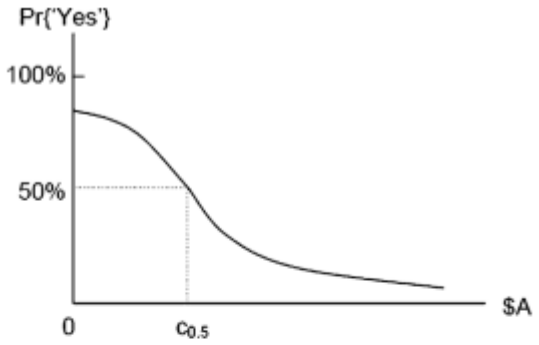
$$\ln L(\theta) = \Sigma^{N}_{i=1} \{ d^{yy}_{i} \ln\pi^{yy}(B_i, B^{u}_{i}) + d^{yn}_{i} \ln\pi^{yn}(B_i, B^{u}_{i}) + d^{ny}_{i} \ln\pi^{ny}(B_i, B^{d}_{i}) + d^{nn}_{i} \ln\pi^{nn}(B_i, B^{d}_{i}) \}$$

→ $\partial \ln L(\theta)/\partial\theta = 0$

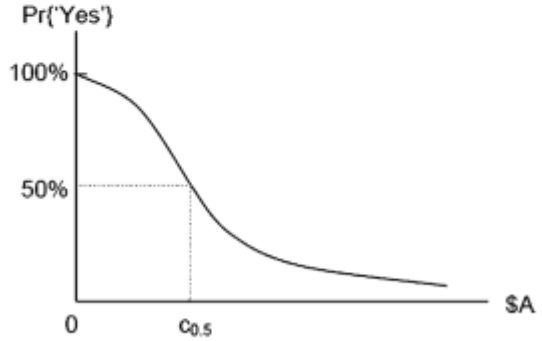
$$E(WTP) = \int_{0}^{WTP_{MAX}} \frac{S(WTP)}{1 - S(WTP_{MAX})} dWTP$$

TSP or LIMDEP s/w
or
Nonparametric Estimation

3. CVM Acceptance Probability Example



(*a*) Logit response model



(*b*) Log-logistic response model

Figure 2. Logit and log-logistic response models.

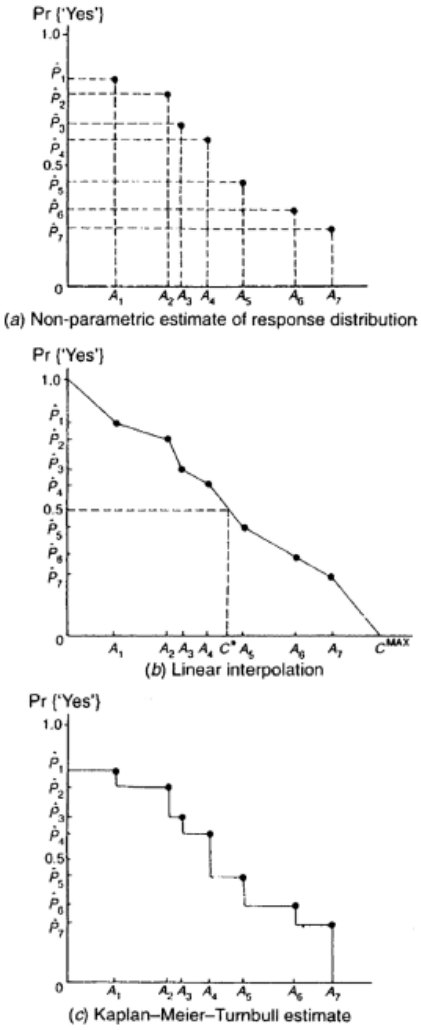
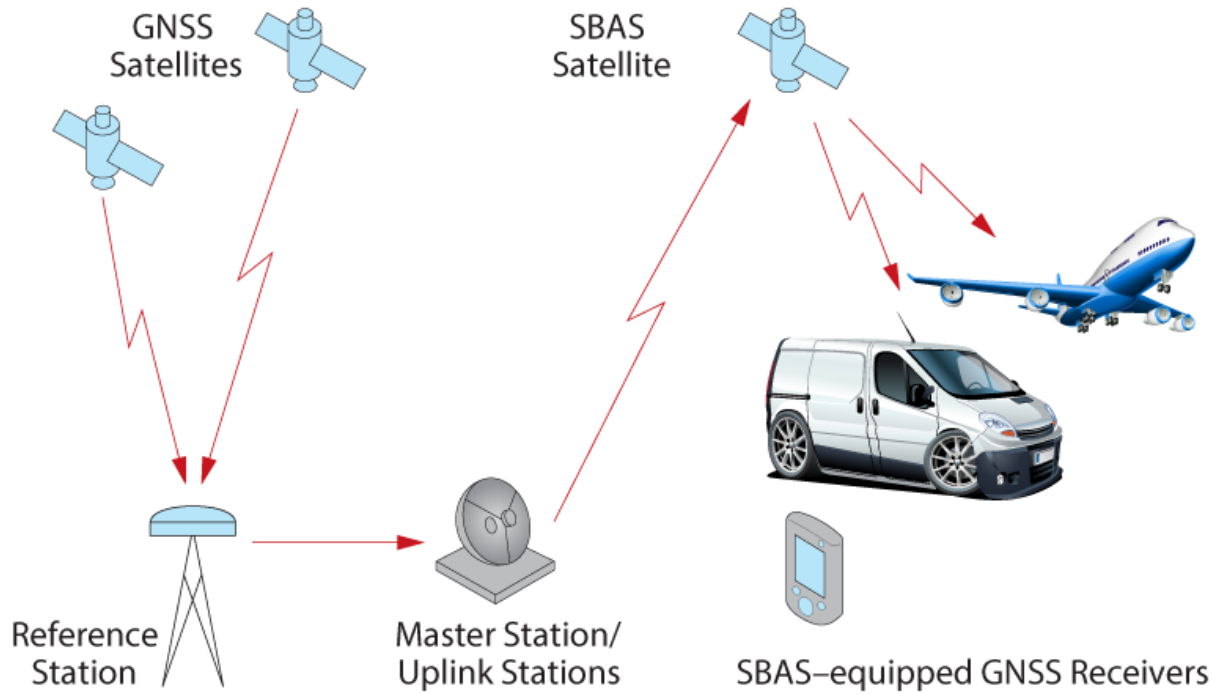


Figure 3. Nonparametric estimation of response model.

Example



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Example

Q. How much would you like to **pay more monthly fee** for upgrading your mobile phone that is capable of providing **the SBAS service ?**
(※ If you don't like to pay more, please check here ( ), and please go to the next question.)

	Base Amount		(1)		(2)	
Amount 1	₩100	① Yes → Go to (1) ② No → Go to (2)	₩200	① Yes ② No	₩50	① Yes ② No
Amount 2	₩500	① Yes → Go to (1) ② No → Go to (2)	₩1,000	① Yes ② No	₩250	① Yes ② No
Amount 3	₩1,000	① Yes → Go to (1) ② No → Go to (2)	₩2,000	① Yes ② No	₩500	① Yes ② No
Amount 4	₩1,500	① Yes → Go to (1) ② No → Go to (2)	₩3,000	① Yes ② No	₩750	① Yes ② No