

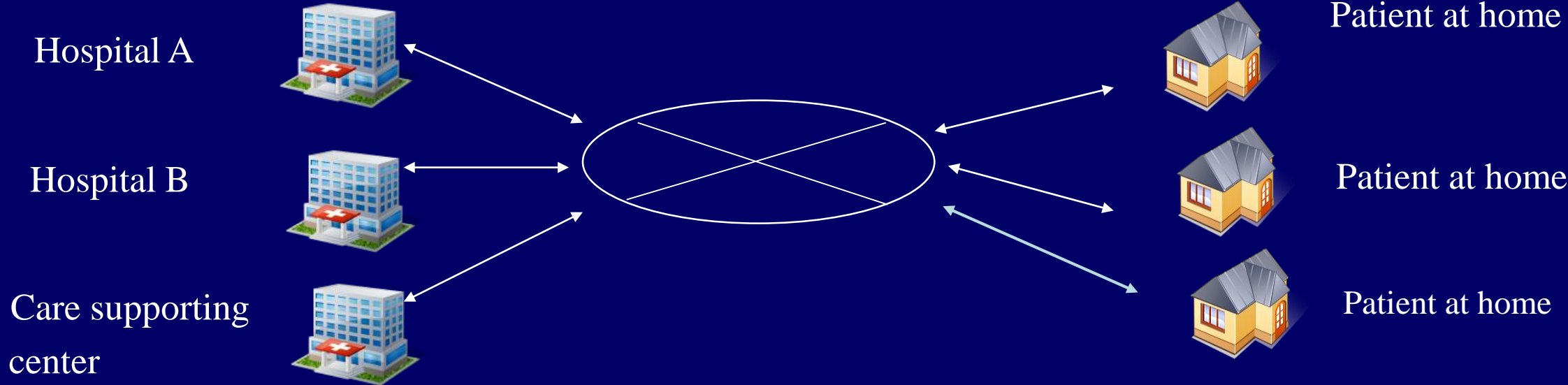
# Willingness to Pay

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# Outline

1. Introduction
2. Benefits of e-Health
3. Measuring WTP I: Telemonitoring
4. Measuring WTP II: Teleradiology
5. Measuring WTP III: Online clinic
6. Conclusion

# e-Health System



**Terminal devices at hospitals**

- PC
- Server

**Network**

- Internet
- Cable modem

**Terminal devices at home**

- Remote sensor
- Tablet
- Smart phones

# Why difficult to measure benefits of e-Health

1. No direct medical effects by e-Health  
e-Health is not aimed to cure diseases
2. Benefits of e-Health contain:
  - Early finding of symptom
  - Prevention of getting worse
  - Stabilizing the condition of diseases
  - Raising health consciousness
  - Privation of treatment stoppage
  - Decreasing anxiety towards health
  - Decreasing medical expenditures

# What are outcomes of e-Health to Measure ?

QoL

Travel costs

Treatment days

Hospital admissions

Medical expenditures

WTP (Willingness to pay) and

WTA (Willingness to accept)

Our main  
methods

# Methodology: CVM

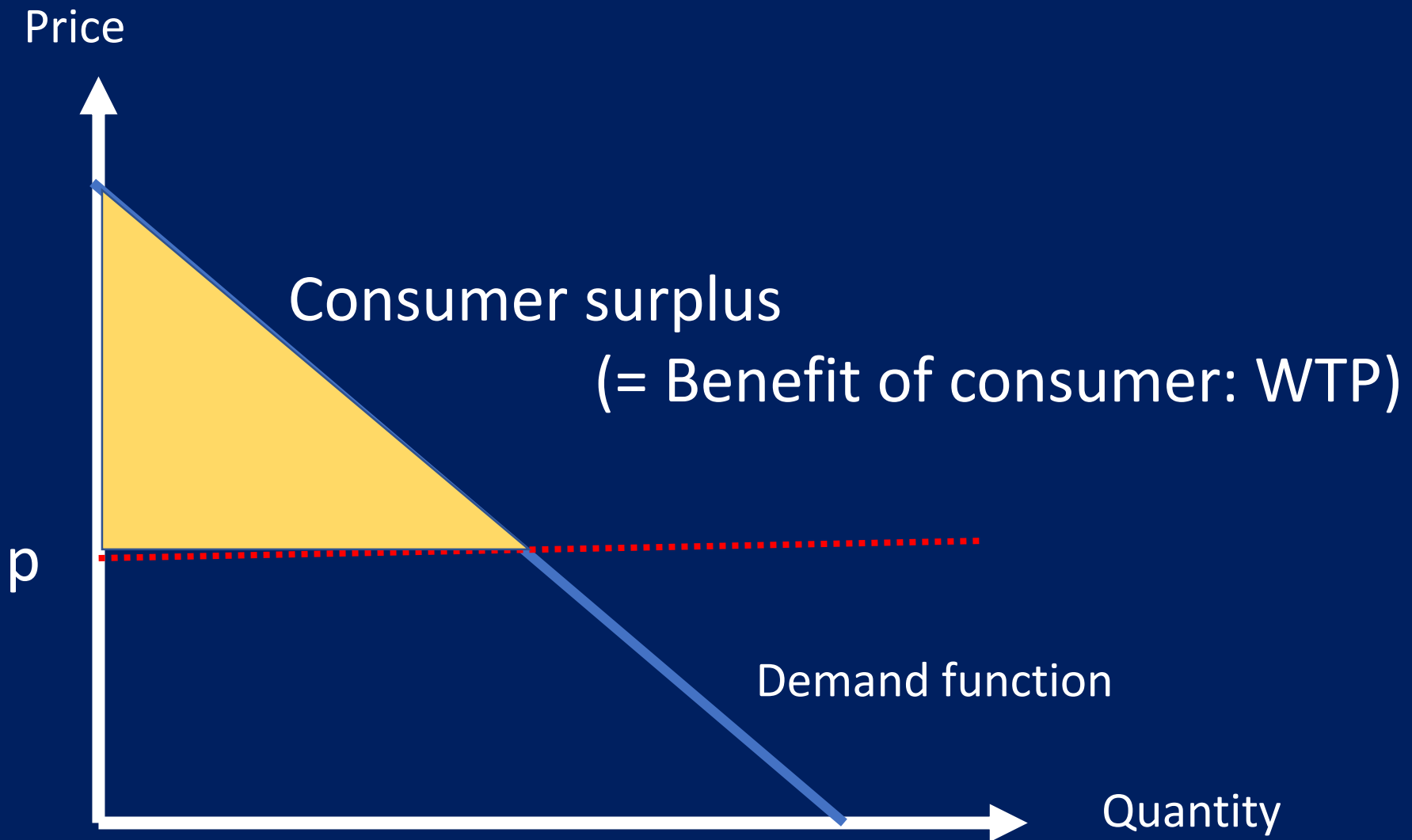
## ➤ CVM (Contingent Valuation Method)

The method of estimating economic values for non-market goods such as public services and environments.

## ➤ WTP (Willingness to Pay)

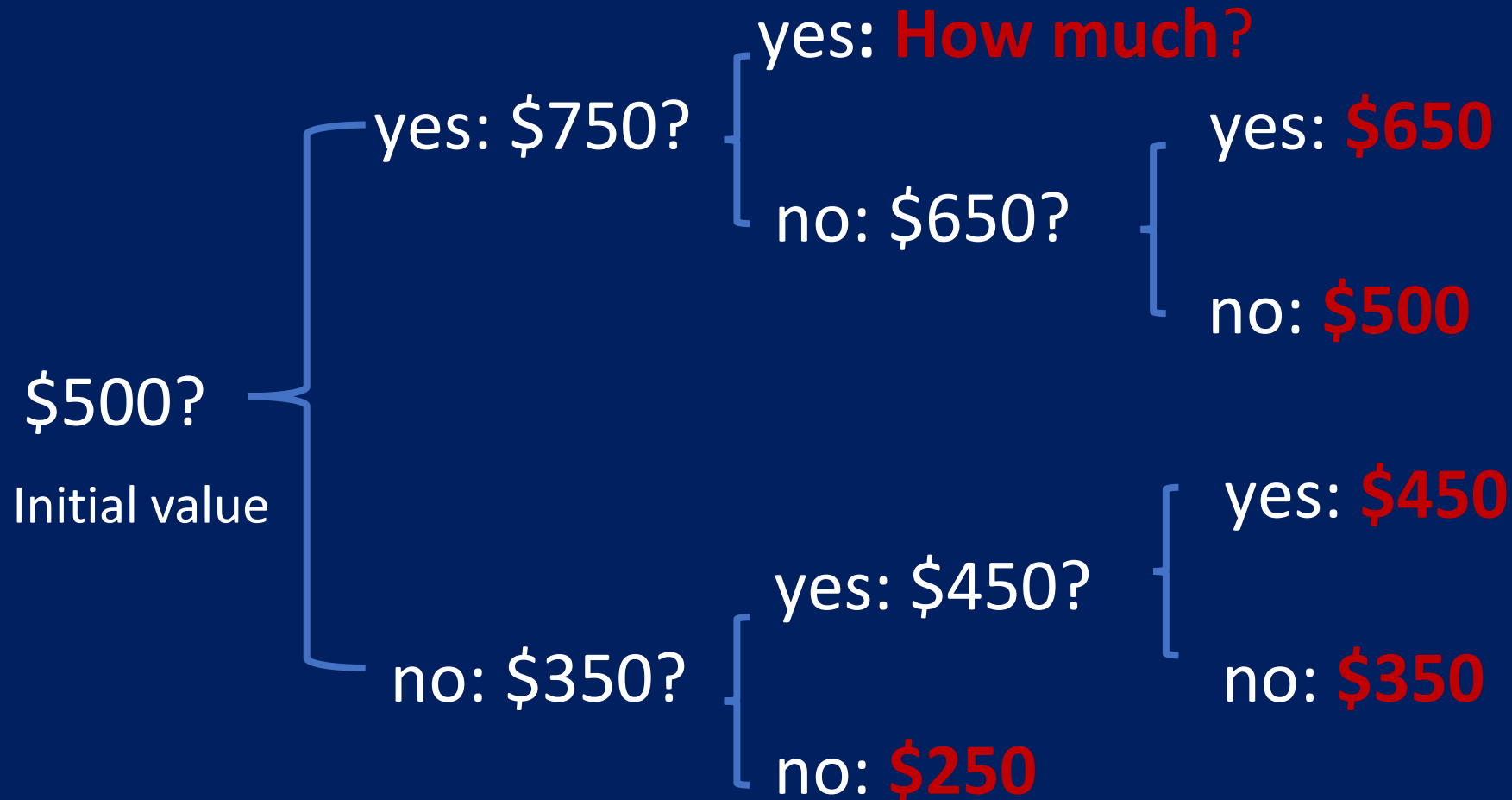
In CVM, WTP is estimated as a benefit. The method involves directly asking people how much they would be willing to pay for using the services.

# How to Measure WTP





# Method to ask WTP: Three stage dichotomous choice



The amounts in red letter are determined values.

# The Scene of Asking WTP



# Summary of WTP from our previous studies I

Evaluation method	Ex-post					Ex-ante
	Kamaishi	Nishiaizu	Katsurao	Sangawa	Izawa	Misumi
No. of users	348	518	926	384	552	--
No. of Devices	211	400	325	225	219	--
Manufacturer	Nasa	Nasa	NEC	Nasa	Nasa	--
Network	CATV	CATV	PSTN (ISDN)	CATV	PSTN	(CATV)
Monthly charges	2,500 yen	none	none	none	none	(none)
WTP	4,519 yen	3,178, yen	1,640 yen	2,955 yen	1,758 yen	2,825 yen
	<b>\$\$45.19</b>	<b>\$31.78</b>	<b>\$16.40</b>	<b>\$29.55</b>	<b>\$17.58</b>	<b>\$28.25</b>

# WTP of Japanese Teleradiology and Telepathology

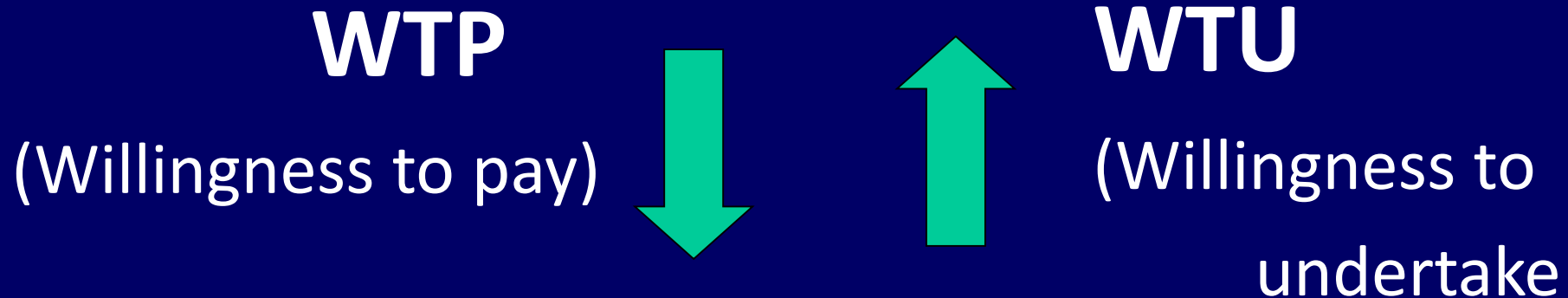
Tsuji, M., S. Miyahara, C. Iizuka, F. Taoka and M. Teshima, "An Economic Evaluation of Japanese Telemedicine: focusing on Telepathology and Teleradiology," *Journal of Telemedicine and Telecare*, Vol. 12, No. 1, 29-31, July, 2006

# Comprehensive Mail Survey

- **February 2005**  
Sent questionnaires to 622 medical institutions  
received 220 valid replies
- **Questionnaires:**
  - Characteristics of institutions
  - Implementation: costs, charges, frequency, etc.
  - Level of satisfaction
  - WTP and WTU**
  - Future plan of implementation

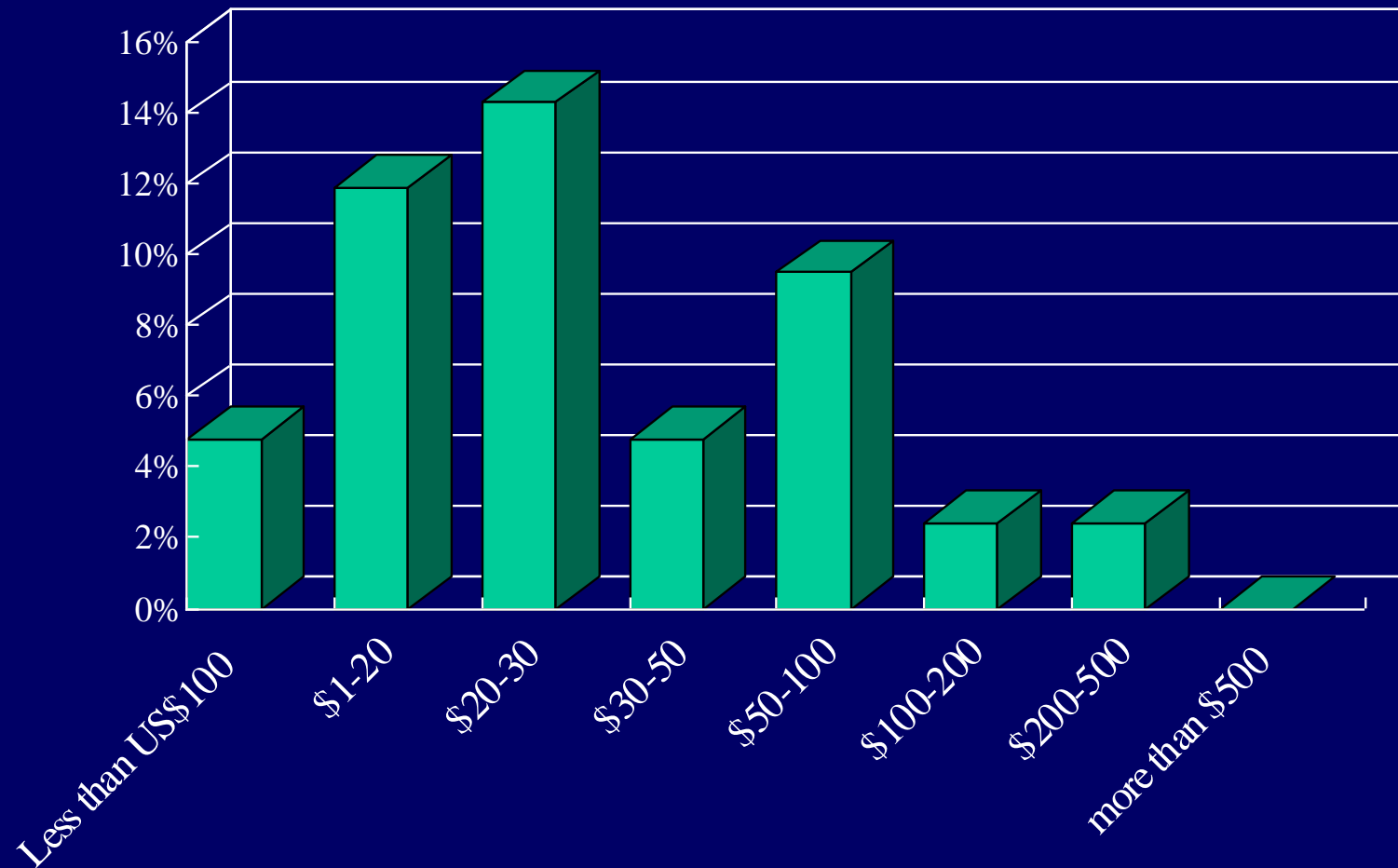
# WTP and WTU of Teleradiology and Telepathology

Requesting medical institution

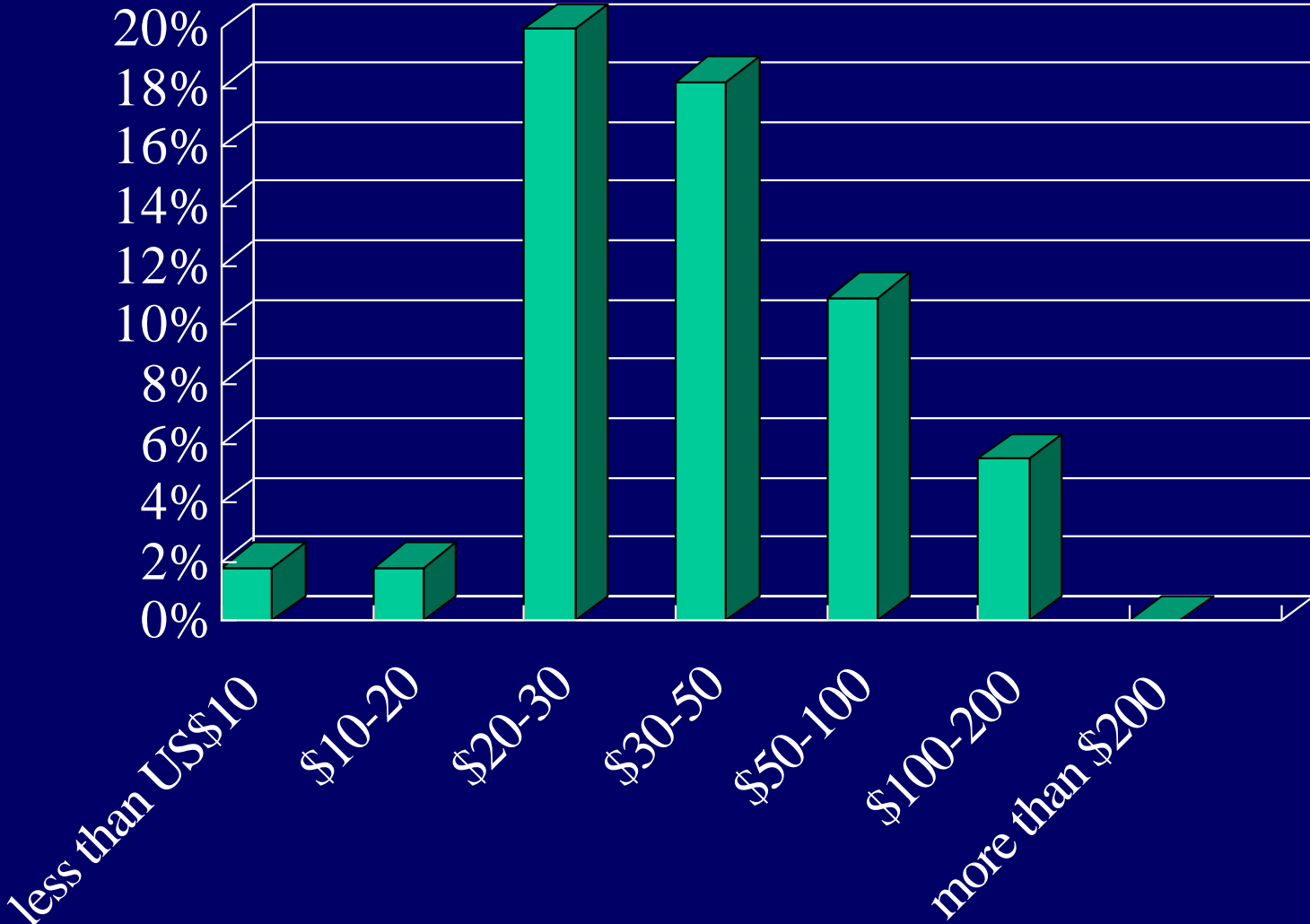


Undertaking medical institution

# Distribution of WTP: Teleradiology



# Distribution of WTU (WTA): Teleradiology





# Estimated WTP and actual charges for services

	Kernel estimates	unit: US\$ Actual payment
<b>Teleraidology</b>	<b>38.75</b>	<b>21.42</b>
<b>Telepathology</b>	<b>79.18</b>	<b>74.42</b>
Teleconference	32.30	17.62
Teleconsultation	36.43	62.50
Surgical advice	85.76	--
Catheter intervention	43.23	--
Telecare with pictures	21.11	--
Telecare with biomedical monitor data	34.44	--

# **Economic Evaluation of Online Clinic: Current Research**

## Definition of online clinic

Making a diagnosis and medical prescribing to a remote patient via the Internet with the help of telecommunications devices such as smart phones, video phones, tablets, SNS, and so on.

# Example of online clinic I: Online diagnosis

Screen seen by doctor



Screen seen by patient at home



# Example of online clinic II: Medical question



# Benefits of online clinic

Saving time and effort of patient, doctors, and care takers

- Prevention of getting worse
- Early finding of symptoms
- Privation of treatment stoppage

**WTP is the most suitable method to evaluate!**

# Conclusion

**Measuring economic benefits of e-Health is difficult, but it is mandatory to do it.**

## Cost Benefit Analysis:

	B/C	B/C after receipt of subsidies	Ministries support
<b>Kamaishi</b>	<b>1.07</b>	<b>1.87</b>	Welfare
<b>Katsurao</b>	<b>0.54</b>	<b>1.42</b>	Welfare, Agriculture
<b>Nishiaizu</b>	<b>0.58</b>	<b>2.31</b>	Welfare, Agriculture
<b>Sangawa</b>	<b>0.61</b>	<b>2.60</b>	Post and telecom, And Agriculture