

## Internet Option in the 2010 Census in Korea

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01 Motivators

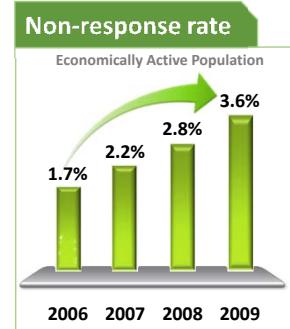
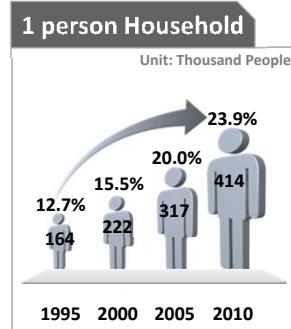
02 Internet Option in 2010

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## 01 Motivators

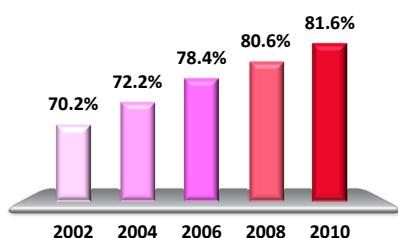
### threats



## 01 Motivators

### opportunities

#### ✓ Internet Penetration rate in Korea



Source : Korea Internet Security Agency (2010)

highest in percentage of individuals using the Internet (2013 figures)

Iceland	96.6%
Norway	95.1%
Netherlands	94.0%
Bahrain	90.0%
U.K.	89.8%
United Arab Emirates	88.0%
Switzerland	86.7%
Japan	86.3%
South Korea	84.8%
U.S.	84.2%
Germany	84.0%
Australia	83.0%

Source : Wall Street Journal (2013)

## 02 Internet Option in the 2010 Census

### outline

#### History

- conducted every 5 yr since 1925
- 2010 Population Census (18<sup>th</sup>)

#### Census Day

- As of 0:00, November 1, 2010

#### Period

- November 1 -15 (15 days)
- ( Internet Option Available : Oct. 22-31, 10 days)

#### Questions

- 50 items (short form: 19 , long form : 31)

## 02 Internet Option in the 2010 Census

### timeline

#### Preparatory Period

Oct. 19-21  
(3 days)

#### Internet Option

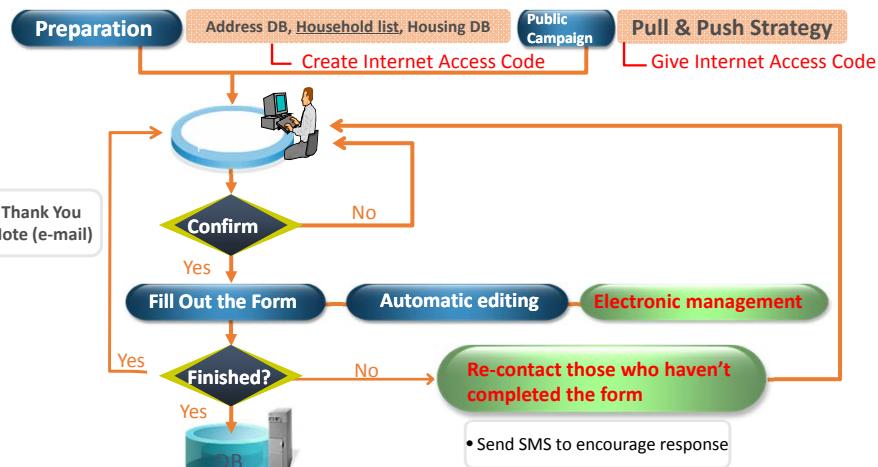
Oct. 22-31  
(10 days)

#### D to D Visits

Nov 1-15  
(15 days)

## 02 Internet Option in the 2010 Census

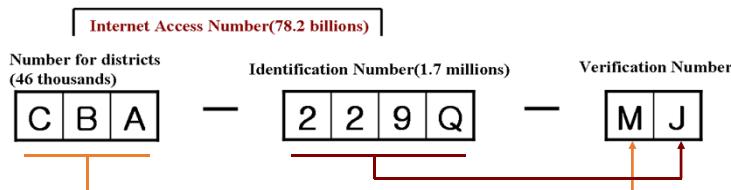
### Work flow



## 02 Internet Option in the 2010 Census

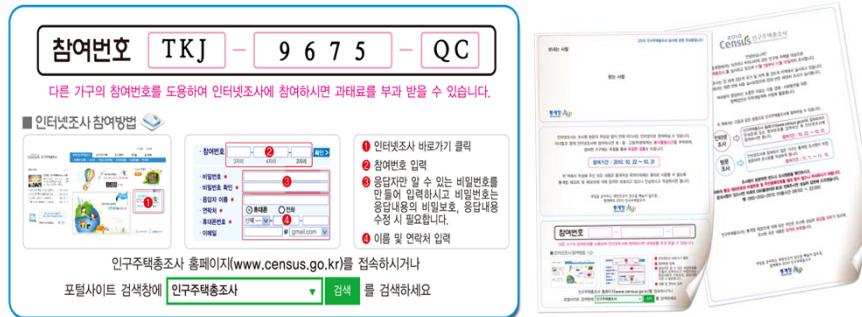
### access code

- ✓ **Creating Internet access code by using 32 alphanumeric combinations**
  - Excluding 1, I, 0 and O for potential confusions due to similarities
  - Administrative districts(3 digits)-Identification number(4 digits)-Verification number (2 digits)



## 02 Internet Option in the 2010 Census

### access code

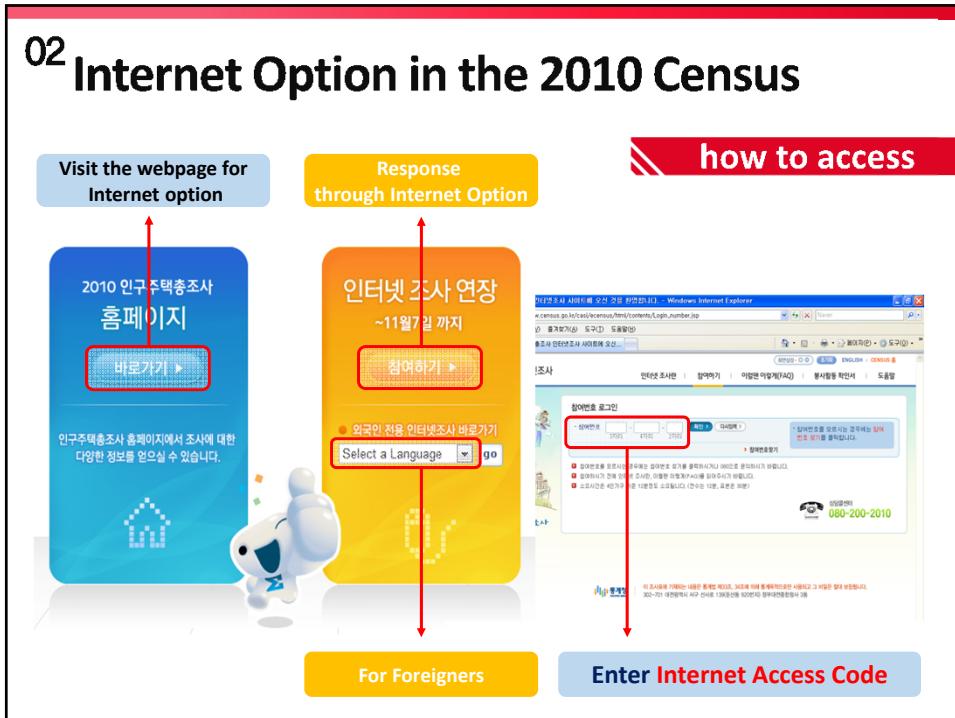


## 02 Internet Option in the 2010 Census

### Webpage



## 02 Internet Option in the 2010 Census



## 02 Internet Option in the 2010 Census

questionnaire Cover

2010 **Census** POPULATION AND HOUSING CENSUS

Cover Members of Household Household Housing

Feel Comfortable taking part in this census! Your personal data will be strictly protected. Please perform an important duty and take part in the Population and Housing Census 2010.

The 2010 Population and Housing Census is carried out in the Republic of Korea as of November 1, 2010 pursuant to the Statistics Act. The Population and Housing Census is the most basic statistical survey conducted to demographically study the population and households and to ascertain the housing situation in Korea. We ask for your full cooperation for completion of the census.

**Census targets and instruction for filling**

This census targets all foreign residents (excluding those with Korean nationality) living in this residence, irrespective of their period of sojourn or whether they are sojourning in Korea legally or illegally. Foreign diplomats, foreign military service personnel stationed in Korea, and their families are not targets of the census.

**Members of Household** How many people are in this household?  persons

**Name, Relationship with householder**

Name	Relationship with householder
Tom	Householder
Jane	Spouse
Tom.J	Son or daughter
Jane.J	Son or daughter

**SAVE**

## 02 Internet Option in the 2010 Census

### questionnaire ..... household members

2010 Census POPULATION AND HOUSING CENSUS				
	Cover	Members of Household	Household	Housing
1. Name	Tom	Jane	Jerry	Petty
2. Sex	<input type="radio"/> Male <input type="radio"/> Female			
3. Date of birth	- Month    Day    Year of birth [ ] [ ] [ ]	- Month    Day    Year of birth [ ] [ ] [ ]	- Month    Day    Year of birth [ ] [ ] [ ]	- Month    Day    Year of birth [ ] [ ] [ ]
4. Relationship with household	<input checked="" type="radio"/> Householder <input type="radio"/> Spouse <input type="radio"/> Son or daughter <input type="radio"/> Son/daughter in law <input type="radio"/> Father/mother <input type="radio"/> Father/mother in law <input type="radio"/> Grandchild/grandchild in law <input type="radio"/> Great Grandchild/great grandchild in law <input type="radio"/> Grandparents <input type="radio"/> Brother/sister or brother/sister in law <input type="radio"/> Nephew/niece or his/her spouse <input type="radio"/> Auntuncle or his/her spouse <input type="radio"/> Other relative <input type="radio"/> Other non-relative(Employee, boarder, etc.)	<input type="radio"/> Householder <input checked="" type="radio"/> Spouse <input type="radio"/> Son or daughter <input type="radio"/> Son/daughter in law <input type="radio"/> Father/mother <input type="radio"/> Father/mother in law <input type="radio"/> Grandchild/grandchild in law <input type="radio"/> Great Grandchild/great grandchild in law <input type="radio"/> Grandparents <input type="radio"/> Brother/sister or brother/sister in law <input type="radio"/> Nephew/niece or his/her spouse <input type="radio"/> Auntuncle or his/her spouse <input type="radio"/> Other relative <input type="radio"/> Other non-relative(Employee, boarder, etc.)	<input type="radio"/> Householder <input checked="" type="radio"/> Spouse <input type="radio"/> Son or daughter <input type="radio"/> Son/daughter in law <input type="radio"/> Father/mother <input type="radio"/> Father/mother in law <input type="radio"/> Grandchild/grandchild in law <input type="radio"/> Great Grandchild/great grandchild in law <input type="radio"/> Grandparents <input type="radio"/> Brother/sister or brother/sister in law <input type="radio"/> Nephew/niece or his/her spouse <input type="radio"/> Auntuncle or his/her spouse <input type="radio"/> Other relative <input type="radio"/> Other non-relative(Employee, boarder, etc.)	<input type="radio"/> Householder <input checked="" type="radio"/> Spouse <input type="radio"/> Son or daughter <input type="radio"/> Son/daughter in law <input type="radio"/> Father/mother <input type="radio"/> Father/mother in law <input type="radio"/> Grandchild/grandchild in law <input type="radio"/> Great Grandchild/great grandchild in law <input type="radio"/> Grandparents <input type="radio"/> Brother/sister or brother/sister in law <input type="radio"/> Nephew/niece or his/her spouse <input type="radio"/> Auntuncle or his/her spouse <input type="radio"/> Other relative <input type="radio"/> Other non-relative(Employee, boarder, etc.)
5. What is the relationship with the head of the family?	<input checked="" type="checkbox"/> Householder is the person who actually represents the household.			

## 02 Internet Option in the 2010 Census

### questionnaire ..... household

2010 Census POPULATION AND HOUSING CENSUS				
	Cover	Members of Household	Household	Housing
10. No. of rooms used	<p><b>Q</b> How many rooms, living rooms, and rooms for meals are used by the household?</p> <p>* A room is a space with walls or doors on all four sides and whose height is at least 2m and area is at least 4m<sup>2</sup>. A space that is used both as a living room and a room for meals is categorized as a living room.</p> <ul style="list-style-type: none"> <li>• Room used to sleep (Bedroom)</li> <li>• Room used for other purposes (dressing room, study, etc.)</li> <li>• Living room (Main floored room)</li> <li>• Room for meals (Dining room with kitchen included)</li> </ul>			
11. Building and floor of the household	<p><b>Q</b> How many floors does the household's building have, and on what floor does the household live?</p> <p>[ ] floors      [ ] floors      [ ] floors</p> <p><input type="radio"/> Below ground level (semi-basement)  <input type="radio"/> Above ground level Floor  <input type="radio"/> Rooftop</p>			
12. Types of residential facilities	<p><b>Q</b> In what form are the household's residential facilities, and how are they used?</p> <p>- Kitchen      [ <input type="radio"/> Modern    <input type="radio"/> Conventional    <input type="radio"/> Not shared with other households    <input type="radio"/> Shared with other households    <input type="radio"/> None ]</p> <p>- Water supply      [ <input type="radio"/> Waterworks    <input type="radio"/> Village waterworks    <input type="radio"/> Private-use waterworks    <input type="radio"/> None ]</p>			

## 02 Internet Option in the 2010 Census

### questionnaire // housing

2010 CENSUS POPULATION AND HOUSING CENSUS

Cover Members of Household Household **Housing**

**15. Type of residence**

**What type of residence is it?**

In the case of a building that has both residential space and business space, if the total residential space is the same or greater than the business space, then choose "Detached house used for both residence and business," from among the choices under Detached house. If the business space is greater than the residential space, choose "Housing in a non-residential building."

Detached house  General detached house  
 Apartment  Multi-family house  
 Row house  Detached house used for both residence and business  
 Apartment unit in a private house  
 Housing in a non-residential building (shopping arcade, factory, inn, etc.)  
 Officetel (office with a bedroom)  
 Room of a lodging facility, including a hotel or inn  
 Dormitory and special welfare institution  
 Shack, vinyl greenhouse  
 Other [ ]

**16. Gross residential floor area**

**What is the housing unit's gross residential floor area (building area) in m<sup>2</sup>?**

Please indicate the area that is used for residential purposes and round to the nearest whole number.

[ ] m<sup>2</sup>

## 02 Internet Option in the 2010 Census

### Input & automatic editing //

✓ For checking logic,  
**edit specifications(88 for short form, 227 for long form) were used.**

2010 CENSUS POPULATION AND HOUSING CENSUS

Cover **Members of Household** Household Housing

1. Name	Tom	Jane	Jerry
2. Sex	<input type="radio"/> Male <input type="radio"/> Female	<input type="radio"/> Male <input type="radio"/> Female	<input type="radio"/> Male <input type="radio"/> Female
3. Date of birth	<b>Warning</b>  An error in the relationship between the head of household and his spouse <input type="button"/> Confirm		
	Month	Day	Year of birth
4. Relationship with household	<input type="radio"/> Householder <input type="radio"/> Spouse <input type="radio"/> Son or daughter <input type="radio"/> Son/daughter in law <input type="radio"/> Father/mother	<input type="radio"/> Householder <input checked="" type="radio"/> Spouse <input type="radio"/> Son or daughter <input type="radio"/> Son/daughter in law <input type="radio"/> Father/mother	<input type="radio"/> Householder <input type="radio"/> Spouse <input checked="" type="radio"/> Son or daughter <input type="radio"/> Son/daughter in law <input type="radio"/> Father/mother
What is the relationship with the head of the family?  Householder is the person who actually represents the household.			

## 02 Internet Option in the 2010 Census

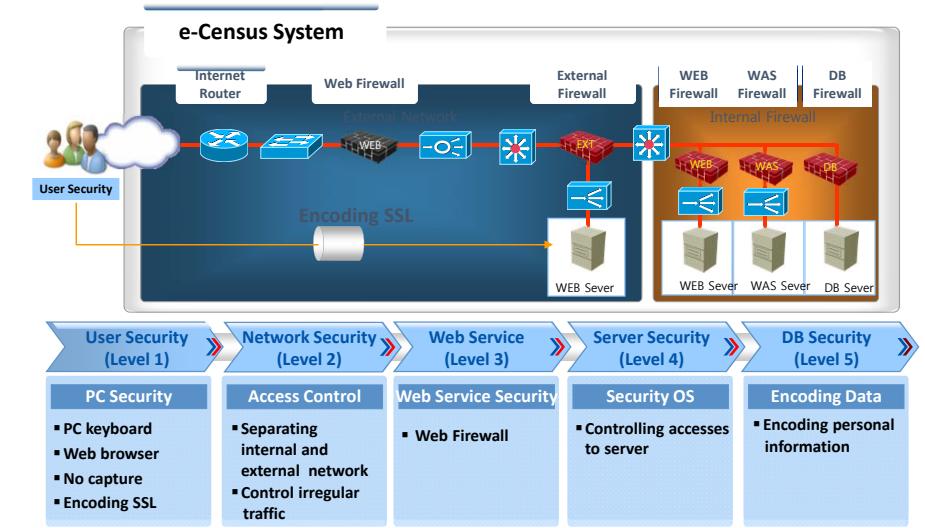
e-census management system

- ✓ The management system automatically manages the input process and report the status.

선택 NO. 신청번호 시도 시군구 읍면동 문화1동 기간 2007-08-31 ~ 2009-02-09 조사구번호 전체 조사표업적 전체 가치/가구번호 전체 성명 조회 예상완료 일련번호 조사표 조사일자 입력여부										
검색 결과										
선택	NO.	신청번호	시도	시군구	읍면동	문화1동	주소번호	법정동	면동	가구번호
<input type="checkbox"/>	1	2008171	광주광역시	부구	문화1동	053	전 수	053	001	2008-10-28 21:41
<input type="checkbox"/>	2	2008164	광주광역시	부구	문화1동	002	전 수	005	002	2008-10-28 00:40
<input type="checkbox"/>	3	2008154	광주광역시	부구	문화1동	002	전 수			
<input type="checkbox"/>	4	2008153	광주광역시	부구	문화1동	002	전 수	013	001	2008-10-27 21:05
<input type="checkbox"/>	5	2008137	광주광역시	부구	문화1동	067	전 수	001	001	2008-10-25 17:31
<input type="checkbox"/>	6	2008136	광주광역시	부구	문화1동	050	전 수	019	001	2008-10-25 16:45
<input type="checkbox"/>	7	2008133	광주광역시	부구	문화1동	031	전 수	040	001	2008-10-25 12:50
<input type="checkbox"/>	8	2008130	광주광역시	부구	문화1동	055	전 수	053	001	2008-10-24 22:23
<input type="checkbox"/>	9	2008128	광주광역시	부구	문화1동	049	전 수	005	001	2008-10-24 22:14
<input type="checkbox"/>	10	2008122	광주광역시	부구	문화1동	021	전 수	054	001	2008-10-24 08:11
<input type="checkbox"/>	11	2008117	광주광역시	부구	문화1동	012	전 수	017	005	2008-10-23 20:14
<input type="checkbox"/>	12	2008103	광주광역시	부구	문화1동	001	전 수	002	001	2008-10-22 23:27
<input type="checkbox"/>	13	2008098	광주광역시	부구	문화1동	004	전 수	004	009	2008-10-22 13:15
<input type="checkbox"/>	14	2008093	광주광역시	부구	문화1동	019	전 수			
<input type="checkbox"/>	15	2008087	광주광역시	부구	문화1동	079	전 수	005	001	2008-10-21 18:23
<input type="checkbox"/>	16	2008084	광주광역시	부구	문화1동	037	전 수	013	001	2008-10-21 13:52
<input type="checkbox"/>	17	2008083	광주광역시	부구	문화1동	038	전 수	014	001	2008-10-21 13:44
<input type="checkbox"/>	18	2008078	광주광역시	부구	문화1동	015	전 수	005	004	2008-10-21 07:22
<input type="checkbox"/>	19	2008074	광주광역시	부구	문화1동	106	전 수	042	001	2008-10-20 22:40
<input type="checkbox"/>	20	2008067	광주광역시	부구	문화1동	087	전 수	003	001	2008-10-20 18:59

## 02 Internet Option in the 2010 Census

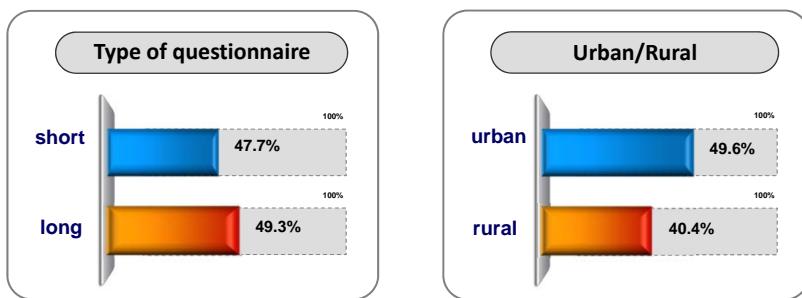
## ensure security



## 03 Results in the 2010 Census

### Internet uptake rate

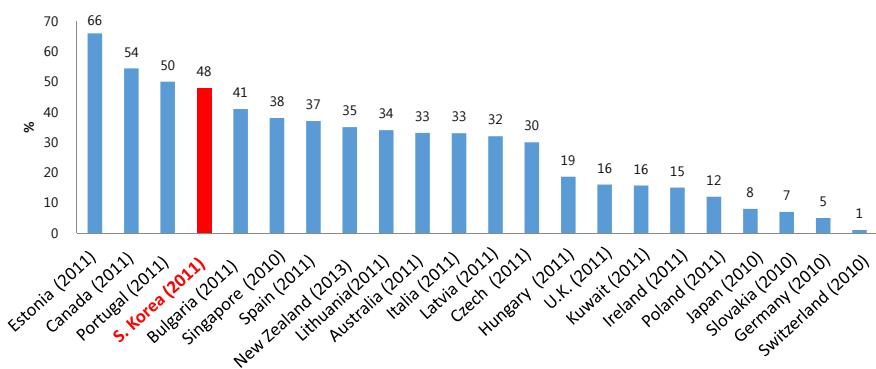
✓ Overall Internet uptake rate : **47.9%**



Category	Target	Participated	Uptake Rate
2005 Census	15,890	141	0.9
2010 Census	17,470	8,360	47.9

## 03 Results in the 2010 Census

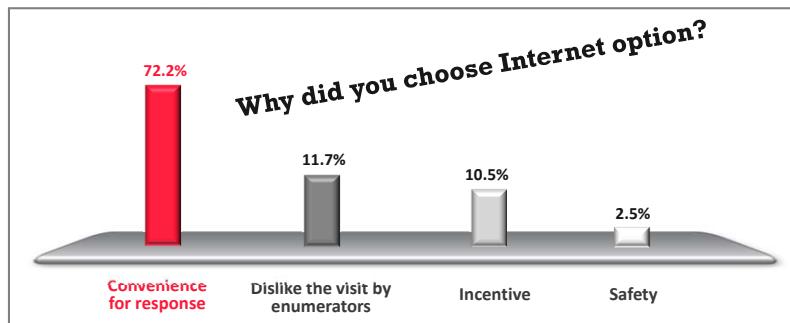
### Internet uptake rate



## 03 Results in the 2010 Census

### achievement of Internet option

- ✓ Reduce the census cost : **\$17.7M**
  - 10,000 fewer enumerators : \$3.9M saved
  - shorter enumeration period(19 days ▶ 16 days) : \$10.3M
  - data processing cost saved : \$3.5M



## 03 Results in the 2010 Census

### data quality

- ✓ Internet option shows lower omission and duplication rates.

	Internet	Interview
Net omission rate	0.06	0.80
Omission rate	0.20	1.24
Duplication rate	0.14	0.44

## 03 Results in the 2010 Census

### data quality //

- ✓ The logic check functions of the Internet option worked effectively to secure accurate response.
- ✓ No. of edit specifications : Short form(88) , Long form(227)

No. of mean error	Internet	Interview
Short form	0.08	1.83
Long form	1.27	3.56

## 03 Results in the 2010 Census

### success factors //



81.6% Internet penetration rate



User-friendly questionnaire



Stable e-Census System



Campaign for Internet Option



Pull & Push strategy  
- incentives / Internet option first

## 03 Results in the 2010 Census

### success factors //

#### Pull

- Incentives
  - Hand out gifts by drawings
  - Give students two hour credit for volunteer work
- Publicity Campaign
  - Campaign for Internet survey

#### Push

- Internet first



## 04 Internet Option in 2015 Census

### targets for upgrading Internet questionnaire //

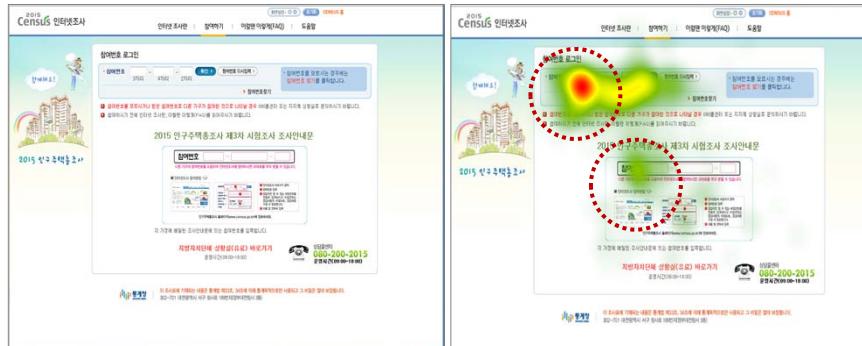
*Source : The evaluation of the Internet Questionnaire for 2015 Census,  
Youngshil Park, Hyeonjeong Park, Hyejin Kim, Jinwoo Bae,  
Deokho Kim, Statistical Research Institute (2014)*

- ✓ To design user-friendly questionnaire
  - eye tracking experiments
- ✓ To alleviate mode effect by designing questionnaire similar to paper mode
  - redesigning questionnaire pages from matrix form to topic based

## 04 Internet Option in 2015 Census

### results on eye tracking experiments

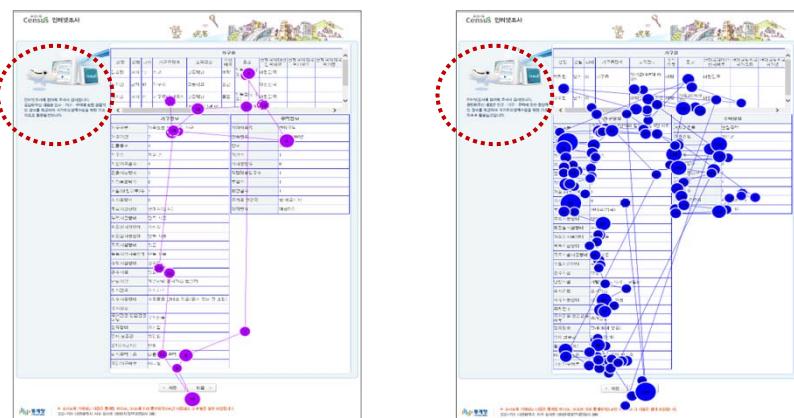
#### ✓ Heat Map



## 04 Internet Option in 2015 Census

### Results on eye tracking experiments

#### ✓ Gaze Plot



## 04 Internet Option in 2015 Census

### mode effect

4. 이 가구에서 사용하고 있는 방, 거실, 식사용 방은 각각 몇 개 입니까?

5. 이 가구의 주거시설은 어떤 형태이며, 어떻게 사용하고 있습니까?

23. 이 분의 혼인상태는 어떤 혼인상태인가?

세는 나이 16세 이상 가구원에 관한 질문입니다.

세는 나이 16세 이상 가구원의 혼인 상태에 관한 질문입니다.

## 04 Internet Option in 2015 Census

### redesigning questionnaire page

#### ✓ How to read the questionnaire

1. 이 가구에서 살고 있는 분의 성별은?

2. 남자니까요? 여자니까요?

3. 실제 생년월일은 양력 또는 음력으로 언제입니까?

4. 이 분은 가구주와 어떤 관계입니까?

Left to right?

Up to down?

Mixed?

## 04 Internet Option in 2015 Census

### Strategies for increasing uptake rate in 2015 //

- ✓ **To design user-friendly questionnaire**
  - reflecting the results of eye tracking experiments
  - transform to topic-based



- ✓ **To maximize success factors in 2010 census**
  - pull strategy - incentives
  - push strategy – Internet option first



THANK YOU  
감사합니다