

People's Information Behaviors at East Japan Great Earthquake A survey report

~ What worked and not worked ~

We listened to 3001 people in Tohoku Region

March 16, 2012



Information Support *Pro bono* Platform

<http://www.ispp.jp>

Information Behavior Survey conducted in July 2011

Survey Objective:

Obtain base data on how people could get, disseminate and utilize information they needed, or could NOT.

What were the factors behind?

Analyze data and provide outputs that help propose new ICT measures for disaster mitigation, develop new services/applications and systems.

Area surveyed:

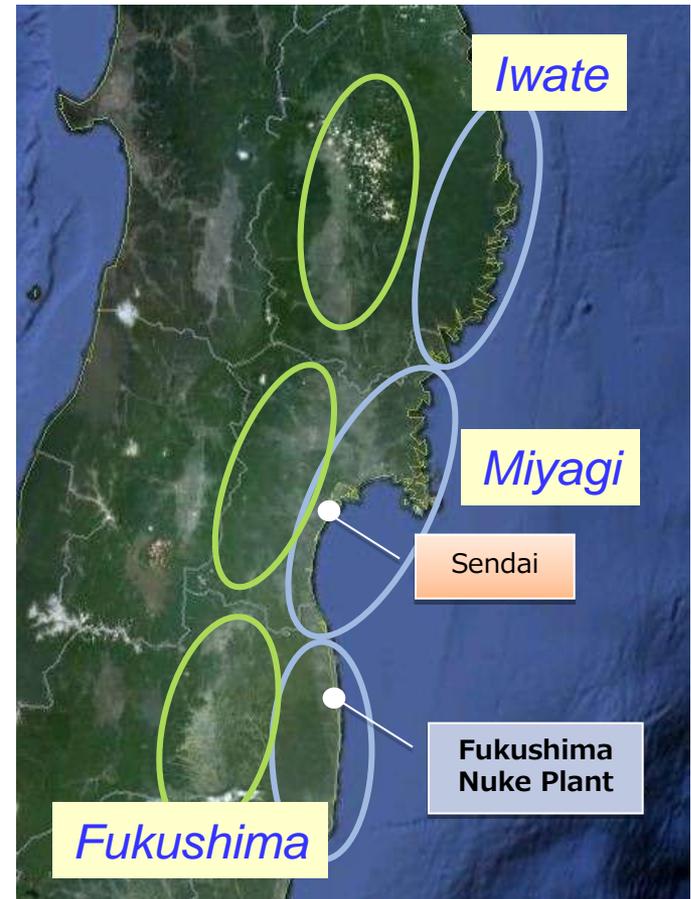
Tohoku Region:

Iwate, Miyagi, Fukushima prefectures

Both Coast and Inland areas

Subject:

Citizens residing in these prefectures



Outline of Survey

- **Subject:**

Citizens in Iwate, Miyagi and Fukushima Prefectures

- **Survey Methods:**

1) Field Interview (186) 2) Internet Questionnaire (2,815)

- **Total Sample:** 1) + 2) = **3,001**

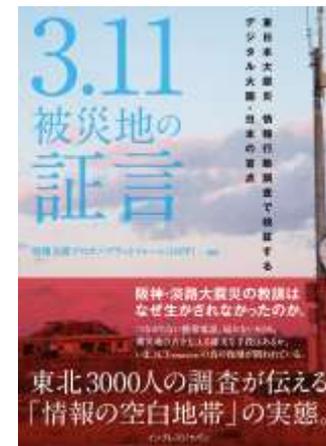
- **Survey Questions:**

- 3.11 right-after quake to 3 Months aft, with specific locale
- Information needed, Usable Tools, Useful Information Sources, Survival Confirmation, Internet connection at Shelters, Nuclear Power Station related information (in Fukushima) and others

- **Conducted in July 2011**

- **Full Report published in Sep 2011**

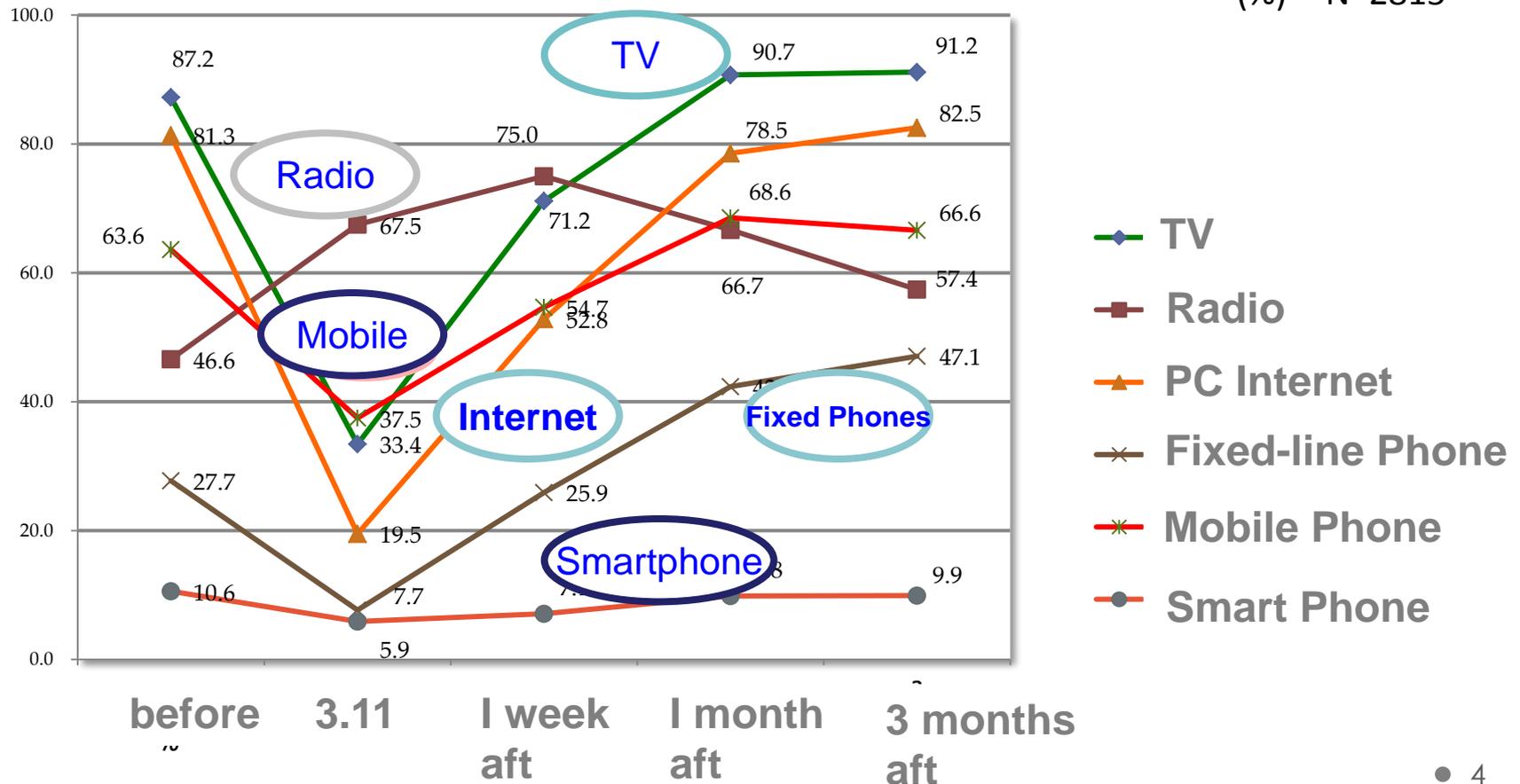
- **A Book published on Mar 5 2012**



Available information tools

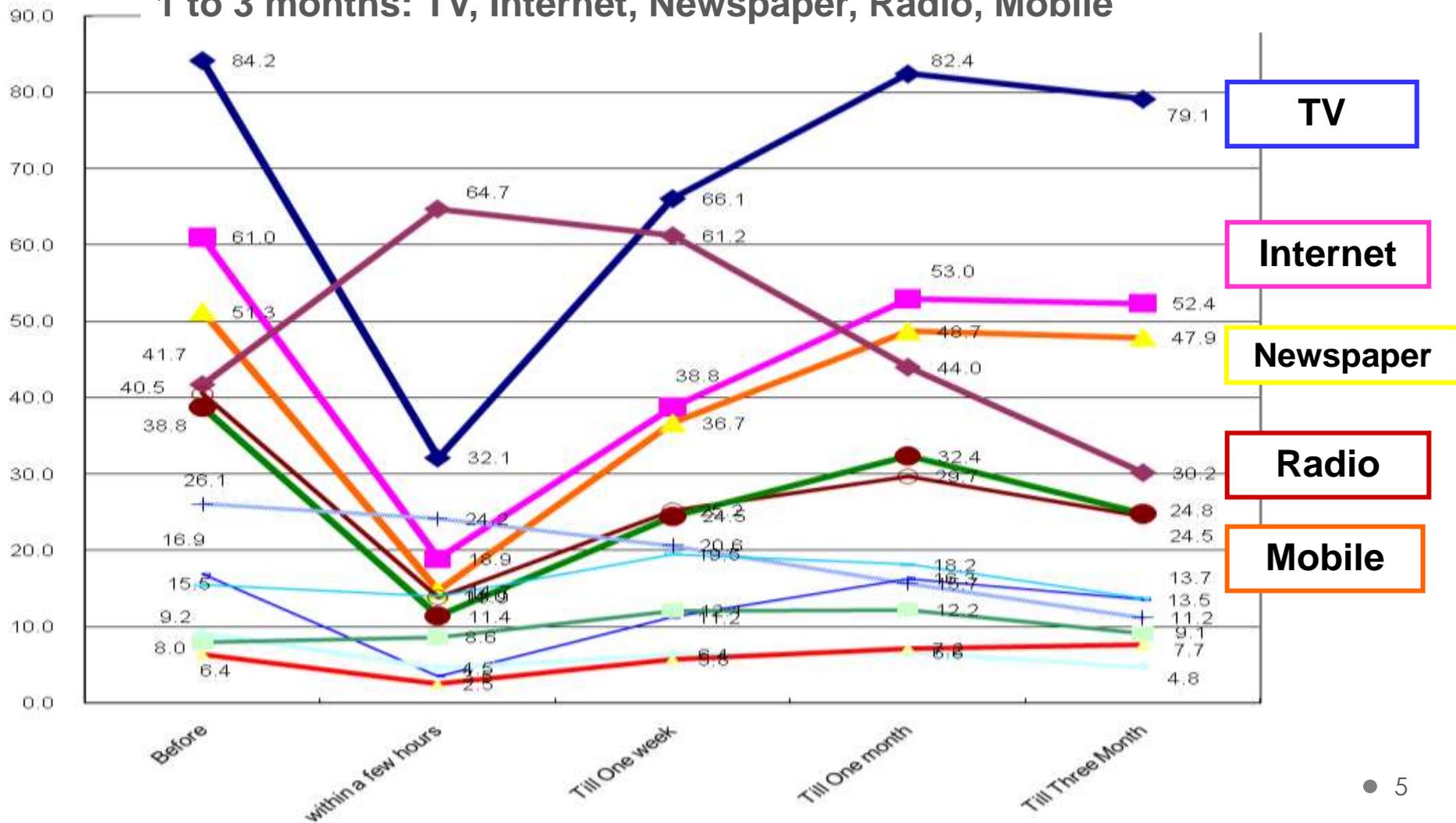
- Right after : **Radio: 65%, Mobile: 47%, TV:30%, Smartphone: 9.7%**
- 1 week: Radio, TV, Mobile 1 month: TV, Mobile, PC recovered
- 3 months: Fixed phone went up

(%) N=2815

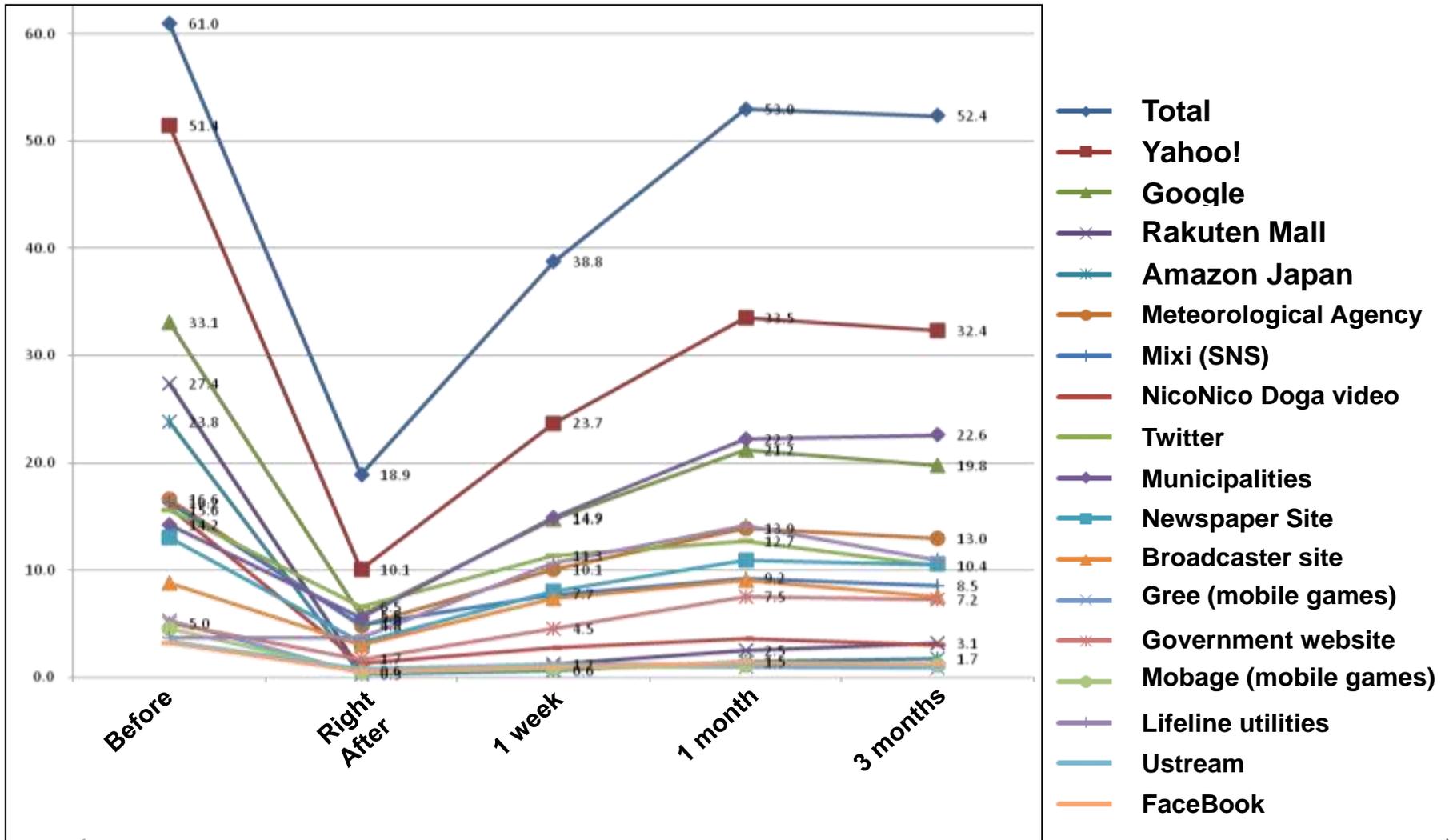


Useful Information Sources

Right after: Radio(64.7), TV(32.1), One-seg broadcast, Word of Mouth
 1 week: Radio, TV, WoM, Mobile, Newspaper
 1 to 3 months: TV, Internet, Newspaper, Radio, Mobile



Useful Internet Services (%) N=2815



Useful Internet Services

- Total:N = 1717→ 532→ 1091→ 1491→ 1474 (N=2,815)
Before : 61%→ 3.11:19%→ 1-wk:39% → 1-mo:53% → 3-mo:52%
- 3.11
Yahoo!(10%) · twitter(6%) · Google(6%) · Municipalities(6%)
- Overall use of Internet went down significantly right after the quake
- Major portal sites, Municipalities sharing disaster management info ranked high
- twitter drew many users thanks to ease of sending info
 - 1-week: Yahoo! Municipalities, Google, **twitter**
 - 1-month: Yahoo! Municipalities, Google, NMA, **twitter**
 - 3-months: Yahoo! Municipalities, Google, Public utilities, Newspaper, **twitter**
- twitter and mixi (SNS) went up chronologically
- E-commerce and Entertainment remained very low

Many relied on Mobile phones

- First action after securing themselves were confirming the survival of Family and Friends
- Mobile phones were primary means of communication. While many replied *“Mobile were useful”*, field interview revealed that many expressed significant frustrations, too

iSPP tried to find the truth. Here are some examples:

*“Mobile phones were out of connection, only E-mail could be sent if lucky. My sister contacted me using Disaster BBS on mobile, but **it was so hard to use and thus took too much time.**”*

*“Mobile phones were out of connection and thus could not find my children's safety status **that prompted strong concerns**”*

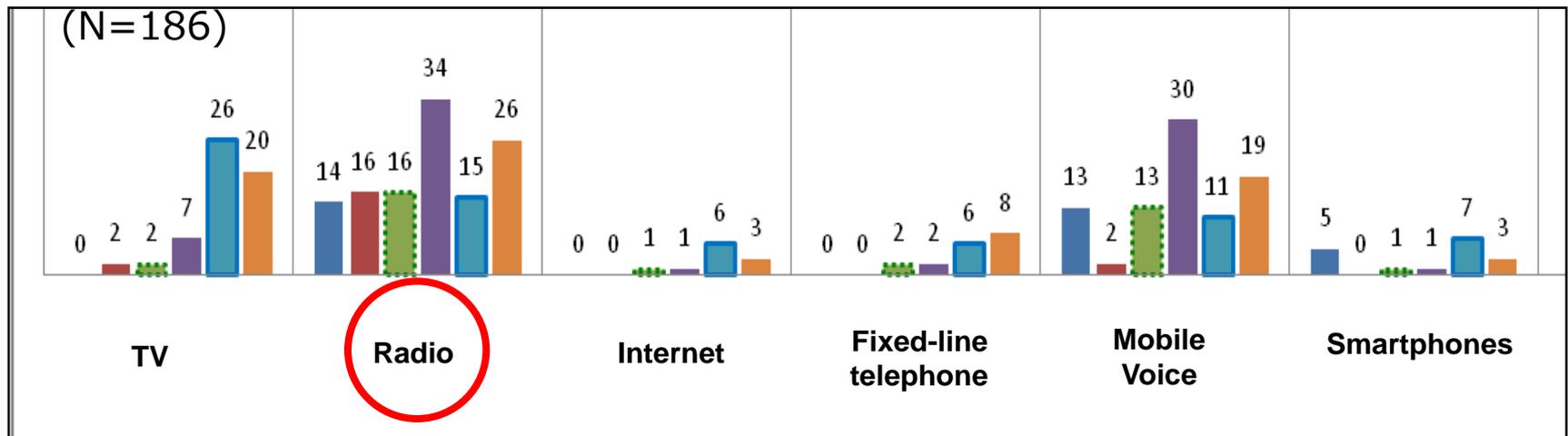
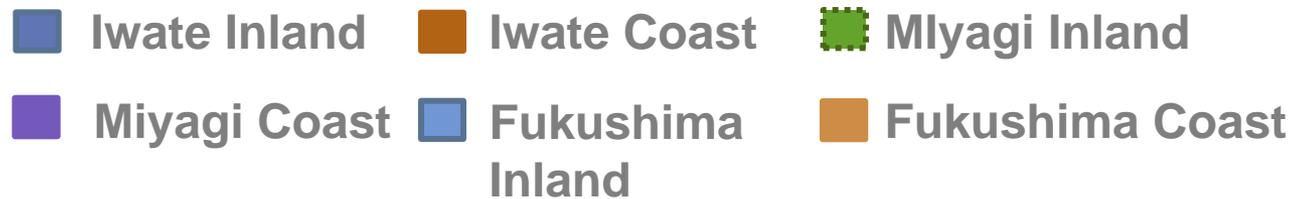
*“**It was so frustrating** because I could not use mobile phones to find the situation of my family members.”*

*“I could not contact my family since **mobile phones went off immediately**”*

*“Mobile phones were **so useless!**”*

Available Tools, per area

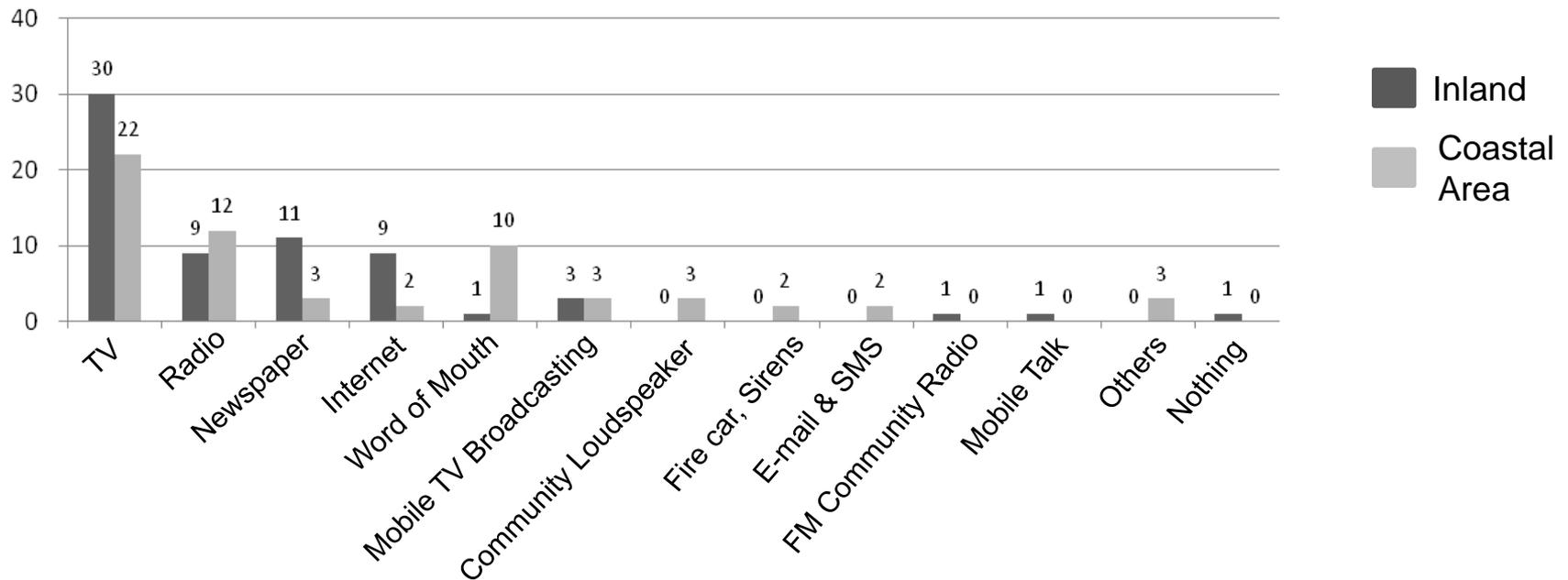
- *Iwate & Miyagi* Coastal Areas became “Info Vacuum”
- Whole of *Iwate*: no PC, fixed lines usable
 - Only Radio due to power loss & communication destruction
 - Coastal Area: TV (2), Mobile (2) (N=28)



Information sources that told about Nuke Power Plant Accident

TV, Radio, Newspapers, Internet, Word of Mouth
Difference between Inland and Coastal Areas

- Internet: Inland: 9, Coastal Area: 2
 - Word of Mouth: Inland: 1 Coastal Area: 10
- N = 63**



From the pro bono works of iSPP

Voices of the Devastated people

*Was the use of ICT effective in
devastated areas?*

The situation and testimonies
(right after quake till 3 month after)

Real Situation in Devastated Areas

- **Mobile is out, consumed power and could not re-charge eventually**
 - It was not easy to connect mobile phones not only coastal areas, but inland urban areas also. People were relatively calm as it could be predicted
 - We could use One-seg mobile TV and Internet to disseminate and receive information, but these application consume much power thus preventing from longer use.
- **People used Internet in certain Shelters**
 - In some Shelters where municipalities did not supply Internet connection, people accessed Internet using mobile devices provided by Mobile carriers.
 - Yet the number of access terminals were limited so that people were using in some Shelters.
 - There was difference in Shelters where use of Internet was well-managed and not. Some preferred no Internet to cause any problems
- **Some people could not use Fixed lines**
 - People could not make a call (but receive calls) with phones requiring power supply.

Some could not *trust* the information

- **Speculation or sensational information**

- Repeated Tsunami visual news offering high impact gave stress to victims
- People needed local information that support their life, while mass media only provide information from Tokyo, far from real needs. We do not need critics in distance
- Different news stations provided different information; people could not trust media. They tried to make their own selection of information

- **Could we trust SNS or Word of Mouth? Not quite**

- Many wanted information, but few dispatched them
- Information from local people via SNS or Word of mouth were not always true; some people relied on WoM and evacuated to areas where higher radiation actually existed
- Many people did not know SNS anyway, they needed radio

- **SNS sometimes worked in in-land areas not hit by Tsunami**

- People asked to relay messages to acquaintances in Tokyo or Osaka using SNS since they could not connect directly to families inside devastated areas
- You cannot ask “Are you alive?” directly, and SNS provided info from survivors
- People asked to gather and select information via E-mail to friends outside who had good Internet connection

iSPP worked as pro bono

Voices from Municipalities in charge of supporting citizens

Situation in devastated areas

Were these unavoidable or not?

(since right after quake till 3 months)

Voices from Local Governments:

- **Little information to support citizens**
 - No media was available (Iwate Coast)
 - No TV, mobile connection, no information isolated shelters
- **No internet connection in Shelters made support work more difficult**
 - Prefecture Government told us to refer to documents on the Web, but there was no Internet in Shelters!
 - No Internet or Printers in many Shelters
 - Little communication made inferior services to citizens
 - Some Cities in Iwate and Miyagi pref. had few direct phone lines with citizens that made work far less efficient
- **Complaints not anticipated to Web pages**
 - PDF is hard to read since large file size meant too slow download
 - Linked site had traffic concentration causing delays

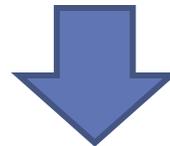
Disaster and Internet

- Vast drop was found on the use of Internet right after the quake, recovered to 2/3 in 1 week, almost full in 1 month

What kind of Information did Citizens tried to get from Internet now recovered?



Most wanted Confirmation of Survival of Family, information on evacuation and lifelines



Many citizens checked with Municipality homepages (unlike before)

Yet many municipalities could not provide information proactively

Were these situation inevitable? (or Who is responsible?)

- Many municipality websites were not accessible nor renewable:
 - Facilities (Server Racks) fallen down by Earthquake
 - Tsunami and Nuke Accident made recovery impossible
 - Long power blackout (for several days or more)
 - System restarted with emergency power, but Internet connection was down
 - Only 12-hour of fuel kept in 72-hour container for emergency power supply
 - Servers were in remote places thus they could not renew content with no stable connection
 - TV news providing URLs caused too much traffic making websites inaccessible
 - Narrow bandwidth became bottle neck at linked sites
 - “PR section is in charge of Web content, not us” – avoiding unconfirmed messages as excuse of not trying

Source: iSPP Survey

How much did citizens try to obtain information from Municipality Websites?

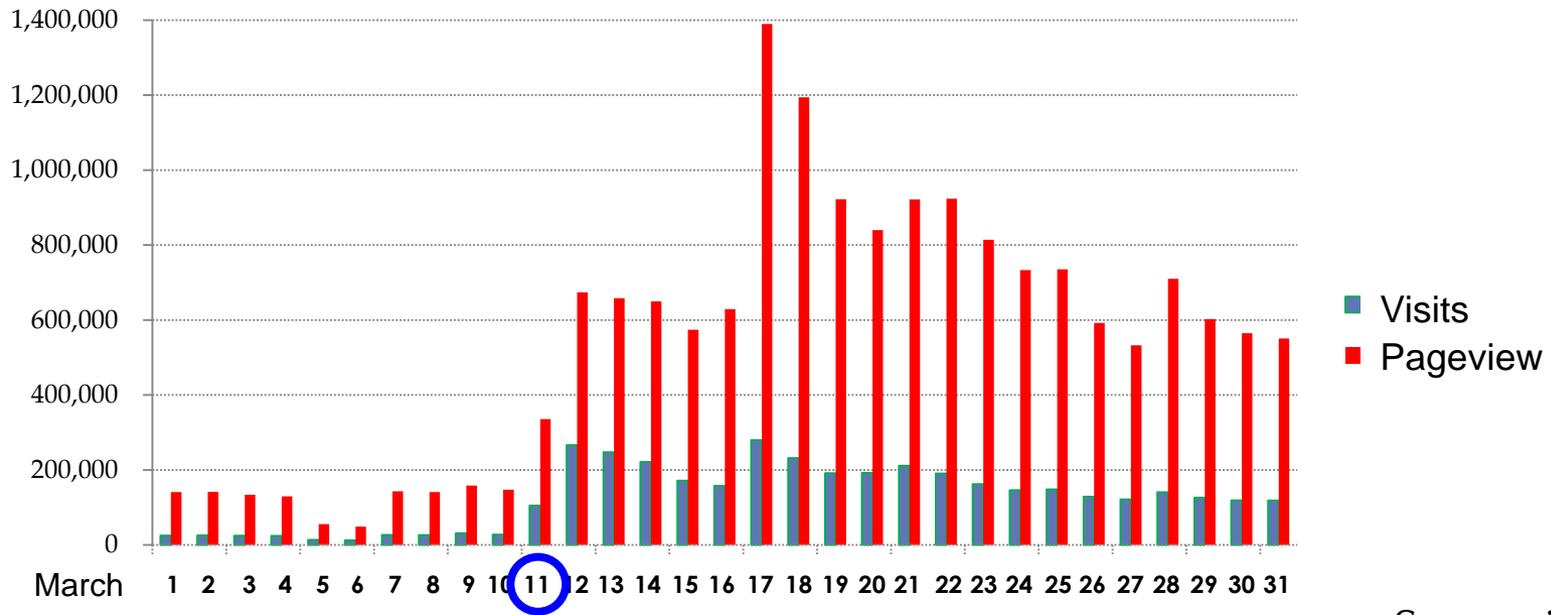
SaaS or Municipality Cloud systems would become resilient and makes it possible to proactively provide information from local governments. Robust ICT equipment with redundancy will make disaster recovery smooth and fast

The website of Miyagi prefecture local government worked, well prepared with BCP plan and exercises in anticipation of power cut

Here follows is the access statistics during/post disaster period from Miyagi Prefecture

Access record of Miyagi Pref. Website

Daily page views



Source: iSPP

- 1.3 Million Pageview on Mar 17 – 10 times more than regular situation
- National stats showed peak of 30 times on Mar 13, however in heavy-hit areas of Tohoku, people had little access to Internet then
- After power recovery, Police website with information on victims received sharp surge of access

Some Lessons & Suggestions From iSPP's experience

Lessons learned

- **Power loss is major problem**
 - **72h autonomous power supply much needed**
 - We heard many such voices – need electricity for 3 days (at least)
 - Disaster management equipment need natural/renewable energy
 - If no battery is available, power generation w/natural energy needed
- **More Satellite phones to local governments**
 - Insufficient number made it difficult to communicate within devastated area
- **Cope with high expectation/frustration to mobile phones**
 - Insufficient connection caused by massive traffic, loss of power made it impossible to charge batteries
 - It will accelerate social anxiety when mobile access is denied

Lessons from info support works

- **Technologies used were getting obsolete**
 - 171 Disaster BBS
 - Designed to provide survival confirmation services via mobile, but mobile connection itself was not available. We need new system that is simple, easy to use by senior citizens, and quick to connect
 - Local Government System to support devastated people
 - Need more versatility to address variant formats by local governments, such as customization of forms
 - Dependency on specific vendors or Operating Systems
 - Large vendors offer insufficient manpower during large-scale disaster.
 - More realistic recovery plan must be pre-arranged
- **Plan & execute “Exercise” for information systems**
 - Build local government information system well-prepared for disasters
 - Weak part against disasters would become bottle-neck. The system must assume disasters to happen. Build disaster recovery system that is also useful in regular situation

Suggestions from info support works

- **Strengthen Local government Information System since most relief works for victims done by them (in Japan)**
 - Build one-stop Crisis Management system that links “Disaster management” and “Information System” organizations
 - Establish information support network among local governments
 - Information Support Network established by Sendai City and Miyagi Prefecture set precedence for coordination and collaboration among local government Info Systems
- **Information plays critical role during disaster**
 - Establish Info Systems at national crisis management organizations
 - Design comprehensive information network and allow roaming for communication and information contents
 - Don't consider Telephone, TV, Radio and Internet as separate entities, but rather as one integrated ICT network, push innovation such as arrange roaming of information during disaster, increase radio power of broadcast stations.
- **Strengthen “Information Support”**
 - Content provision should go hand-in-hand with infrastructure

Suggestions from info support works (cont'd)

- **Regular collaboration between government, NPOs and Private Sector**
 - Maintain the relationship emerged between government, NPO, private sector and devastated people
 - Devastated municipalities received huge support from other local governments, Non-profit organizations and private businesses and collaboration network emerged.
 - However, these were ad hoc and took time to become functional. We need collaboration set in place before the disaster with sufficient exercise in advance.

What do we expect from ICT?

as a citizen living in the devastated area

Enhance ICT functions

- **Communication infrastructure that do not cause network congestion**
 - IP Telephony (VoIP · VoWLAN · Wi-Fi voice terminal) should be implemented shortly
 - Build more robust communication infrastructure
 - Provide evacuation application/content that avoid chaos
 - Information that support self-decision without confusion. Provide direction/distance to shelters, indicate hazard areas during evacuation
 - Share communication infrastructure by different operators during disaster
 - Overcome service gap among carriers, share critical network
 - Share information content, avoid duplication via different channels
 - Avoid overlap of TV/Radio program content. Use Internet to provide information from TV, Newspaper and Radio stations
 - Prepare Easy-to-use application which can be used by senior citizens
 - Expand Use of SNS/ICT that worked to Senior citizens

Enhance ICT functions

- **ICT for rescue and evacuation in first place**
 - Support local government to introduce ICT for disaster management
 - Recognize Volunteers who have ICT Skills via certification system
 - Implement Volunteer certification system based on experience and expertise so that local government could smoothly accept them during disaster
 - Quasi-zenith Satellites to cover East Asia to share Tsunami information promptly and accurately
 - Establish mesh-shape advanced disaster communication system that link Prime Minister's Office and Local government directly
 - Share information on specific disaster situation from local government to the head of national gov with little delay

Finally,
Imagine what do you trust?

If Tsunami hit you after Earthquake
with Seismic scale of 6+

and then you have no information
whatsoever.

Thank you.