College of Public Health and Human Sciences

Assessment of Disaster Preparedness among Households in Corvallis, Oregon

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OPHA Annual Meeting
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Background

- Disasters are a public health issue
- Household preparedness is vital to a community's resilience after a disaster
- Preparedness assessments are important to:
  - Understand the needs of the community
  - Evaluate programs to increase preparedness

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Critical Service	Zone	Estimated Time to Restore Service
Electricity	Valley	1 to 3 months
Electricity	Coast	3 to 6 months
Police and fire stations	Valley	2 to 4 months
Drinking water and sewer	Valley	1 month to 1 year
Drinking water and sewer	Coast	1 to 3 years
Top-priority highways (partial restoration)	Valley	6 to 12 months
Healthcare facilities	Valley	18 months
Healthcare facilities	Coast	3 years

[1]The Oregon Resilience Plan, 2013

Community Assessment for Public Health Emergency Response (CASPER)

- **Rapid needs assessment first developed by CDC in 2001, 2nd edition in 2012[2]**
- **Specific set of tools designed to provide quick, inexpensive, accurate, and reliable household-based info about communities affected by disasters**
- **Also applied to non-emergency situations of the disaster management cycle**

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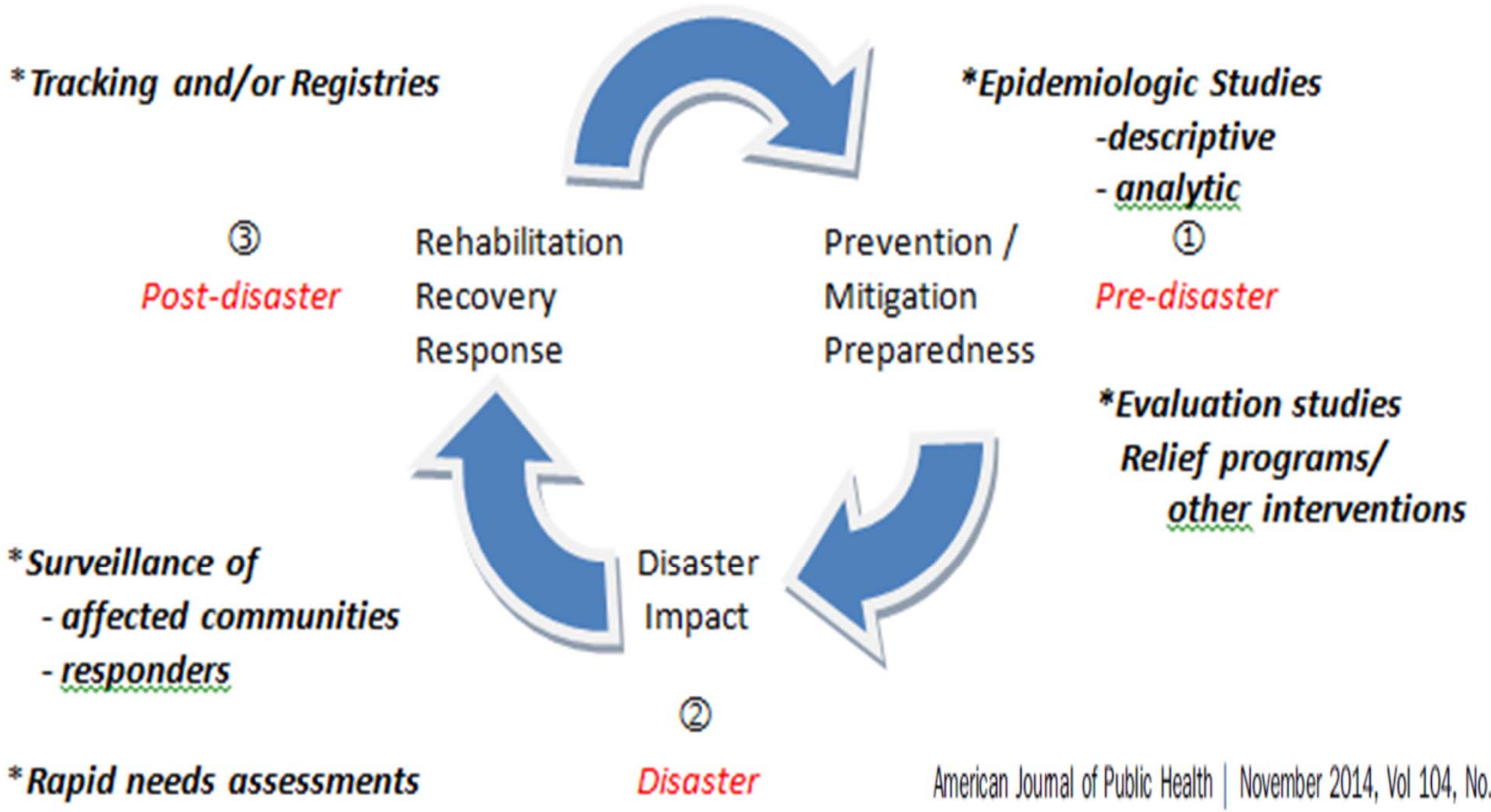
Disaster Epidemiology Actions and the Disaster Management Cycle[3]



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2-Stage Cluster Sampling Method

- **Stage 1: select clusters using US Census data**
  - **30 clusters (i.e. census blocks) with probability proportional to size (# housing units)**
- **Stage 2: select 7 households within each cluster using systematic sampling**
  - **Identify the number of housing units in each cluster**
  - **Calculate sampling interval *k* = # HUs/7**
  - **With random start (e.g. NW corner) proceed to k^{th} house**

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CDC CASPER Toolkit, 2nd Ed
Google

Instrument

- Developed using CDC templates and previous CASPERs (e.g. Washington County, OR)

- Data collected included:
  - Household characteristics
  - Presence of preparedness items (e.g. food, water, flashlight, radio, generator, etc.)
  - Emergency plans
  - Communication methods

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Data Collection

- **Interviewers were students in OSU graduate-level Disaster Epidemiology class paired with volunteers (undergraduate students, graduate students, friends, family)**
- **Interviewers obtained informed consent, administered 5-10 minute interview, maintained data collection log**
- **Revisited houses with no answer later in the day**
- **All houses contacted received preparedness information**

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Data Entry and Analyses

- Students entered data from completed interviews into Epi Info
- Response rates calculated (completion, cooperation, and contact)
- Weighted frequencies, projected number of households, bivariate analyses (e.g. food supply by housing type) calculated
- Epi Info

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Response Rates

Rate	%
Completion rate	30.5 (64/210)
Cooperation rate	48.5 (64/132)
Contact rate	27.7 (64/231)

Completion rate =	$\frac{\text{Number of completed Interviews}}{\text{Number of interviews goal (usually 210)}}$
Cooperation rate =	$\frac{\text{Number of completed interviews}}{\text{All HUs where contact was } \textit{made} \text{ (including completed interviews, incomplete interviews, and refusals)}}$
Contact rate =	$\frac{\text{Number of completed interviews}}{\text{Number of HUs where contact was } \textit{attempted} \text{ (including completed interviews, incomplete interviews, refusals, and non-respondents)}}$

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Household Characteristics

Characteristics	Weighted % (95% CI)
Housing type	
Single family	50.3 (30.8, 69.9)
Multiple unit	49.7 (30.1, 69.3)
Ownership	
Own	35.6 (18.0, 53.2)
Rent	63.5 (46.1, 81.0)
Perceived preparedness level	
Well prepared	15.8 (4.2, 27.4)
Somewhat prepared	43.7 (27.8, 59.6)
Not prepared at all	36.3 (21.9, 50.7)
Don’t know	4.2 (0, 9.1)

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Household Characteristics

Characteristics	Weighted % (95% CI)
Non-English speaking member	20.3 (6.5, 34.1)
First aid training	47.5 (30.8, 64.1)
CPR training	47.5 (31.0, 62.7)
Member needing outside medical assistance	3.9 (0, 8.5)
Pet(s)	46.7 (30.1, 63.3)

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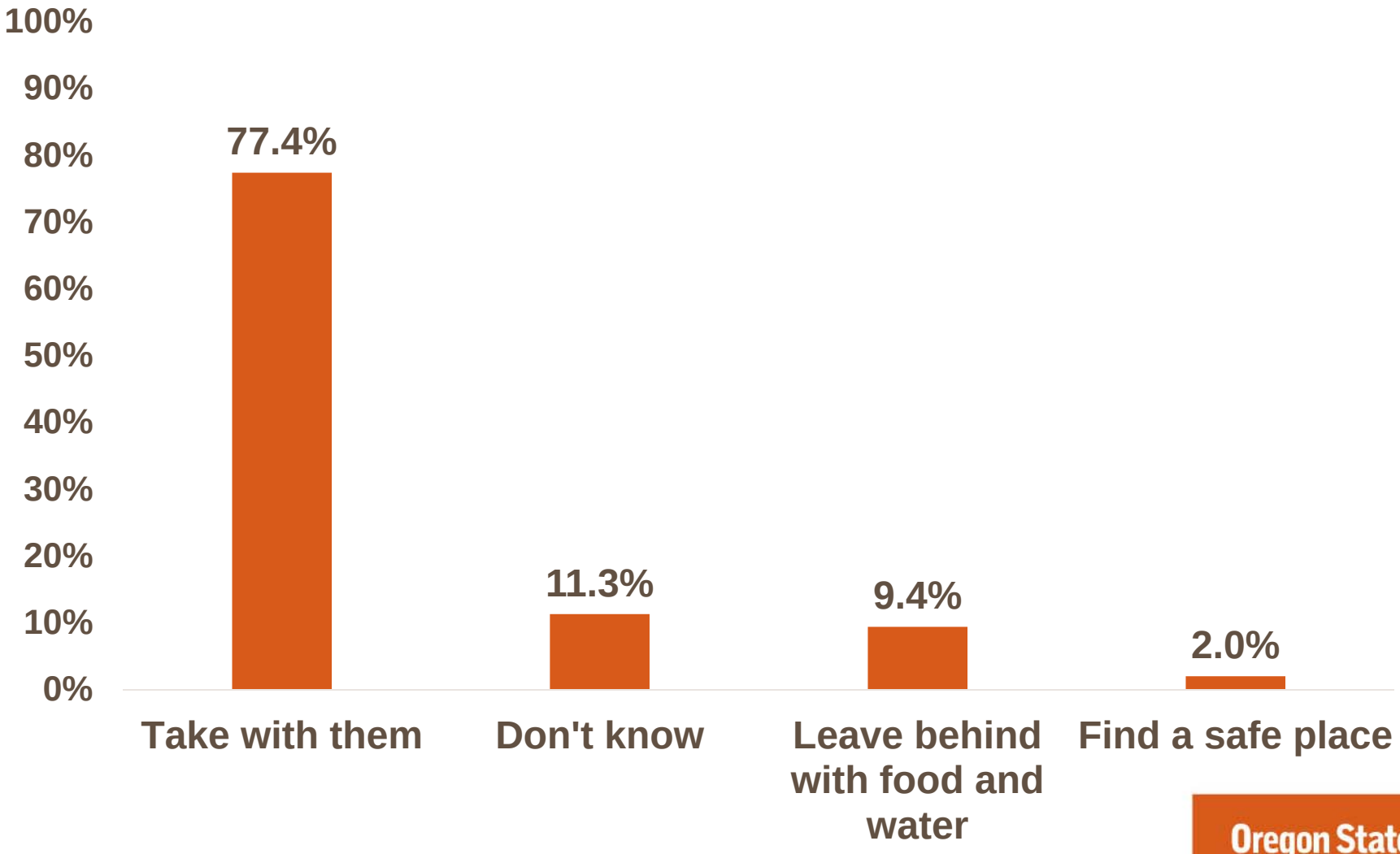
Plans for Pets if Evacuated



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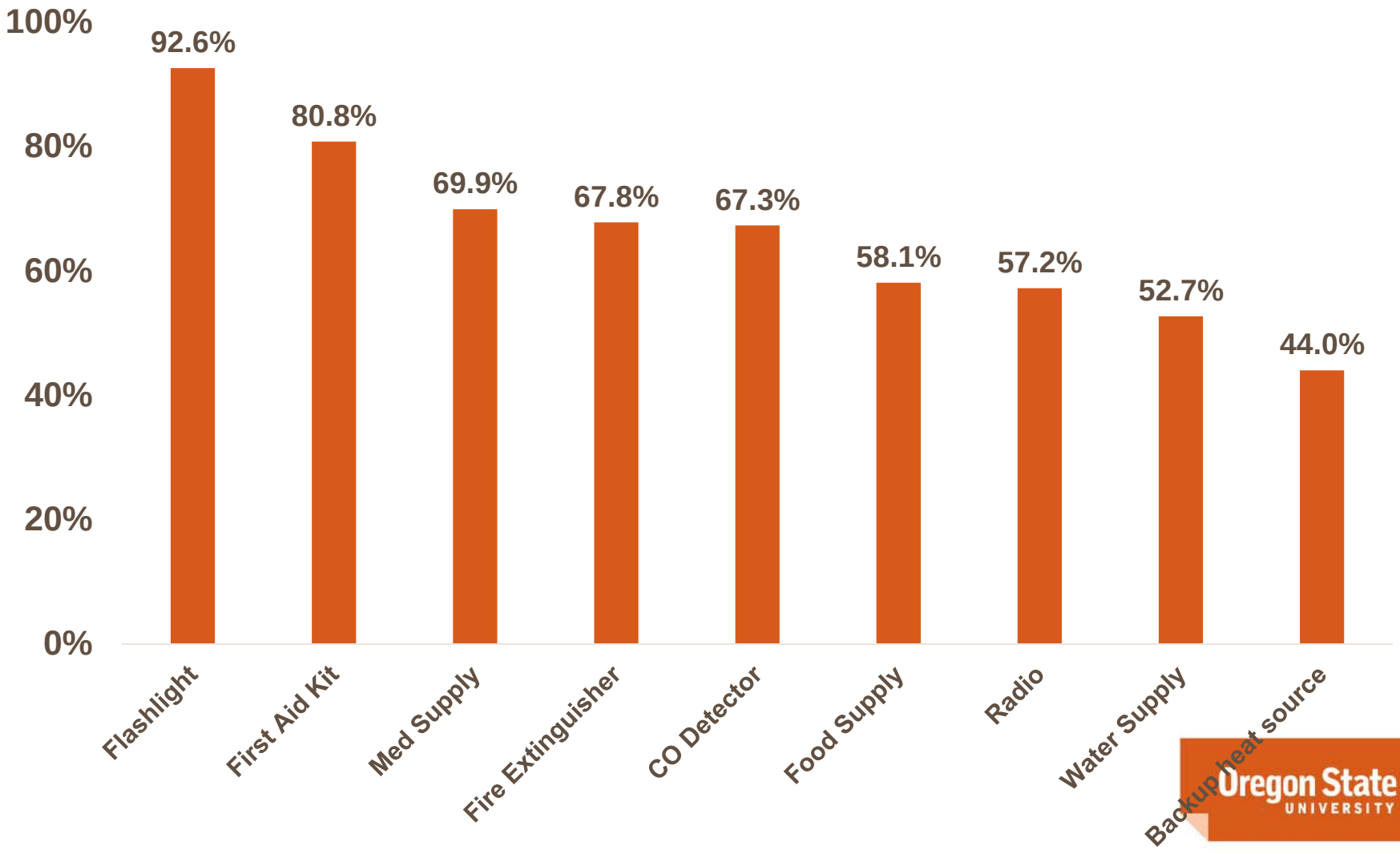
Preparedness Items



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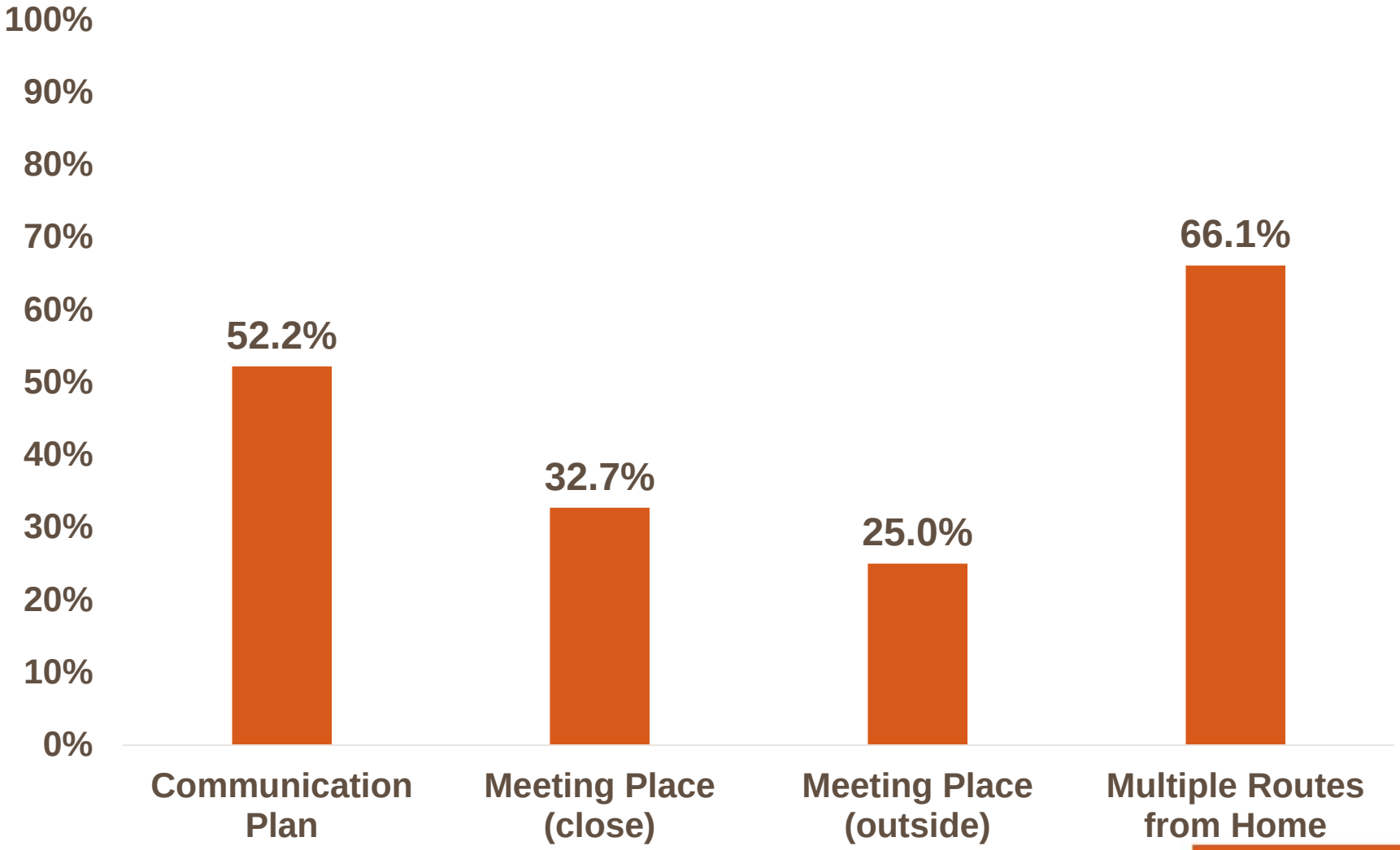
Emergency Plans



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Preferred Communication Methods

Method	Weighted % (95% CI)
With friends and family	
Mobile phone	86.1 (75.6, 96.6)
Landline phone	7.9 (0, 16.6)
From authorities	
Social media	34.2 (17.4, 51.0)
Radio	27.1 (15.5, 38.7)
Websites	13.3 (3.6, 23.0)
Other	9.7 (0.2, 19.2)
Neighbors	7.7 (1.5, 13.9)
Television	7.1 (1.4, 12.7)

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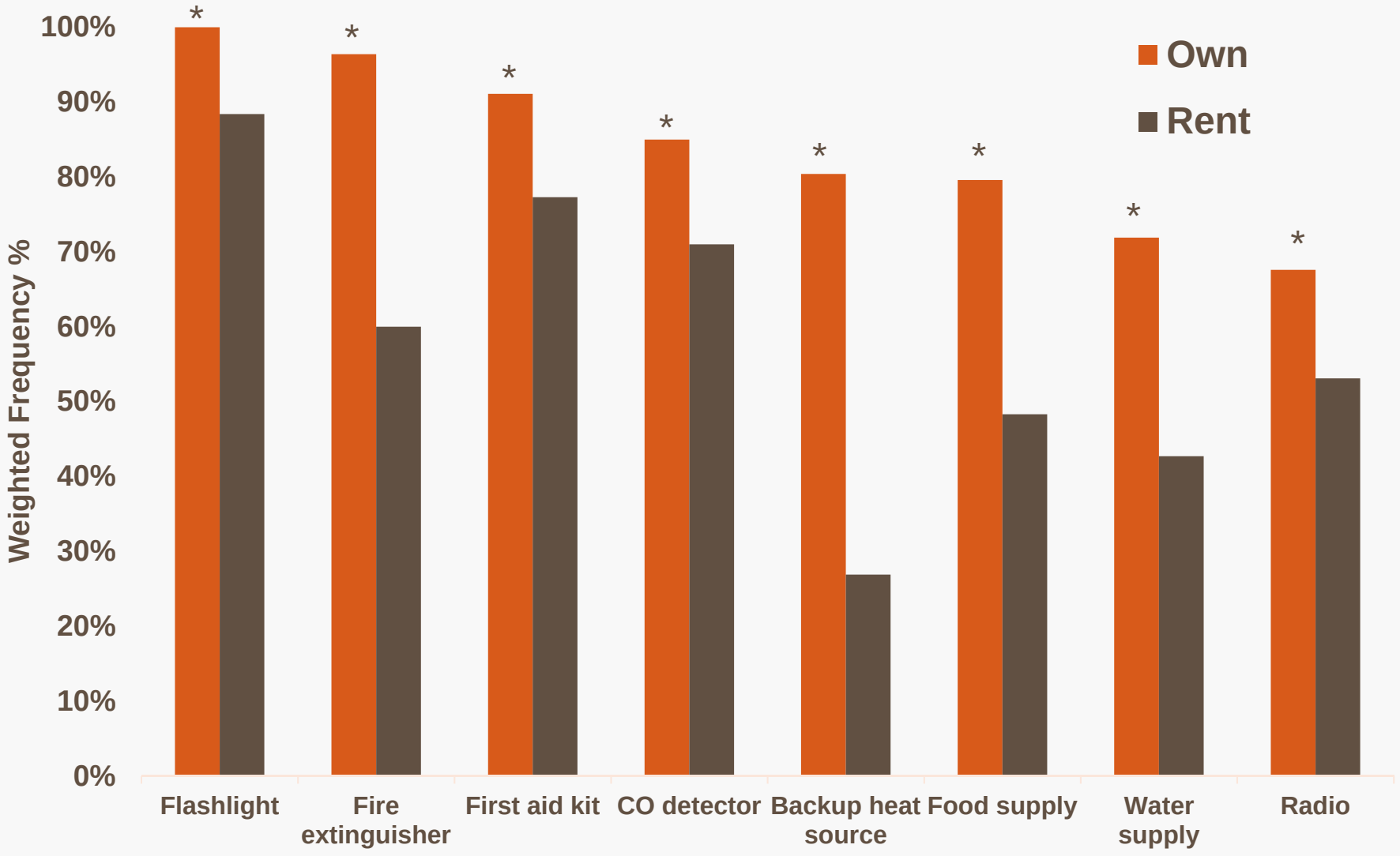
Preparedness Items by Home Ownership



* p<0.05

Conclusions

- Nearly 60% of households felt well-prepared (15.8%) or somewhat prepared (43.7%)
- Less than 60% had supplies of food or water or a communications plan respectively
- Households renting the home were less prepared than households owning the home

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Conclusions

- **Social media and radio were preferred methods to receive info from authorities**
- **Few (44%) had backup heat source when power is out (large disparity by ownership status)**
- **Most households would take pets with them if forced to evacuate**

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Limitations

- Low response rates
  - Single day of data collection
  - Generalizability
- Respondent represented the entire household
- Recall bias

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Recommendations

- **Need to increase preparedness among all Corvallis households, particular among those renting**
  - **Work with property management companies? Schools? Other partners?**
  - **September is national preparedness month**

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Table 12: Primary Reasons Cited as Barriers to Preparedness*

	Primary Reason			Not A Reason At All		
	2007	+/-	2009	2007	+/-	2009
I think that emergency responders, such as fire, police or emergency personnel will help me	37%	- 8%%	29%	28%	5%	33%
I just have not had the time	24%	2% %	26%	48%	-2%	46%
I do not know what I am supposed to do	27%	-3%	24%	43%	0%	43%
It costs too much	17%	1%	18%	63%	-5%	58%
I do not think that it will make a difference	17%	-1%	16%	57%	2%	59%
I do not want to think about it	19%	-2%	17%	56%	1%	57%
I do not think I would be able to	13%	0%	13%	70%	-2%	68%

[4]FEMA. 2009 Citizen Corps National Survey, August 2009 (Revised Dec 2009)

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Recommendations

- Need to increase preparedness among all Corvallis households, particular among those renting
  - Work with property management companies? Schools? Other partners?
  - September is national preparedness month
- Utilize social media to disseminate information during and after a disaster
- Need to account for pets in evacuation centers
- Warming centers may be needed if disaster occurs during winter

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Acknowledgements

- H552 Disaster Epidemiology students
- Volunteers
- Participants

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References

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2. Centers for Disease Control and Prevention (CDC). Community Assessment for Public Health Emergency Response (CASPER) Toolkit: Second edition. Atlanta (GA): CDC; 2012. Available https://www.cdc.gov/nceh/hsb/disaster/casper/.
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4. Federal Emergency Management Agency. 2009 Citizen Corps National Survey, August 2009 (Revised Dec 2009). Available at: https://s3-us-gov-west-1.amazonaws.com/dam-production/uploads/20130726-1859-25045-2081/2009_citizen_corps_national_survey_findings___full_report.pdf

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