

# Predicting Patient Preferences for Risk Presentation: Insight from HINTS 2007

Christy Ledford

Department of Communication  
George Mason University



## PROBLEM

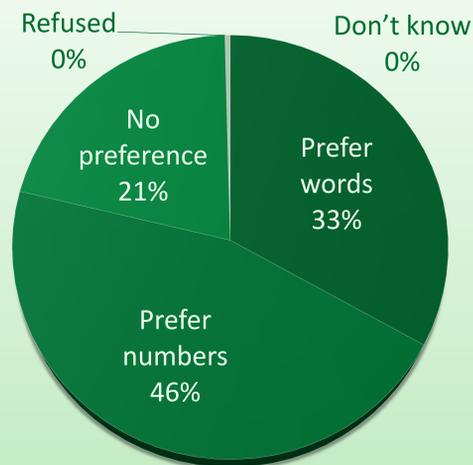
Patients encounter risk throughout their lives: behavioral risk, disease risk, treatment risk. Research shows that the method of risk presentation affects risk perception, decision making, and the resulting health behaviors<sup>1</sup>. While some studies recommend presenting information numerically to increase patient understanding, others establish that varied math literacy levels present a barrier for such a recommendation. Considering this divergence, patient-centered risk presentation recommends that patients receive risk information in their preferred format to facilitate participation in healthcare decisions.

For the healthcare provider or health campaign designer, tailoring toward audience preferences of risk presentation can mean the difference between the patient who understands and processes the risk and the patient who ignores or rejects risk information.

The 2007 Health Information National Trends Survey included items that identify these preferences.

<sup>1</sup>Young, S., & Oppenheimer, D.M. (2009). Effect of communication strategy on personal risk perception and treatment adherence intentions. *Psychology, Health, & Medicine*, 14 (4), 430-442.

People can talk about the chance of something happening using either words, like "it rarely happens" or numbers, like "there's a 5% chance." When people tell you the chance of something happening do you prefer they use words or numbers?



## RESEARCH QUESTION

What demographic and attitudinal variables distinguish individuals who prefer risk presented with numbers, with words, or with no preference?

## METHODS

A direct discriminant analysis was performed using six demographic variables and two attitudinal variables as predictors of membership in three groups. Predictors were age, ethnicity, household income, gender, health status, comfort with numerical health information, and ease of understanding medical statistics. Groups were people who prefer words (WORDS), who prefer numbers (NUMBERS), and who indicate no preference (NOPREF).

## RESULTS

From the valid 2,972 cases included in analysis, two discriminant functions were calculated, accounting for 94.2% and 5.8%, respectively, of the between-group variance.

The first discriminant function maximally separated WORDS from other groups. The structure matrix of correlations suggested that the best predictors for distinguishing WORDS are education, comfort with numbers, income, and ease of understanding. WORDS reported lower levels of education, comfort, income, and ease. (See tables at right for mean group differences.)

The second discriminant function discriminated NOPREF from other groups by age. NOPREF (mean=59.94) were older than the other groups (WORDS mean=58.36, NUMBERS mean = 52.90).

		What is your (combined) annual household income?					Total
		Less than \$20,000	\$20,000 to \$35,000	\$35,000 to \$50,000	\$50,000 to \$75,000	\$75,000 or more	
When people tell you the chance of something happening do you prefer they use words or numbers?	Prefer words	325	310	171	212	252	1270
	Prefer numbers	148	193	185	308	677	1511
	No preference	50	61	47	62	80	300
Total		523	564	403	582	1009	3081

		What is the highest level of school you completed?					Total
		Less than High School	High School Graduate	Some College	Bachelor's Degree	Post-Baccalaureate Degree	
When people tell you the chance of something happening do you prefer they use words or numbers?	Prefer words	255	546	428	253	70	1552
	Prefer numbers	79	332	493	548	344	1796
	No preference	31	98	120	92	47	388
Total		365	976	1041	893	461	3736

		In general, how easy or hard do you find it to understand medical statistics? Would you say ...				Total
		Very easy	Easy	Hard	Very hard	
When people tell you the chance of something happening do you prefer they use words or numbers?	Prefer words	122	602	639	182	1545
	Prefer numbers	288	973	433	88	1782
	No preference	68	189	78	38	373
Total		478	1764	1150	308	3700

		In general, I feel uncomfortable with health information that has a lot of numbers and statistics.				Total
		Strongly agree	Somewhat agree	Somewhat disagree	Strongly disagree	
When people tell you the chance of something happening do you prefer they use words or numbers?	Prefer words	328	776	312	137	1553
	Prefer numbers	110	688	584	418	1800
	No preference	42	140	97	93	372
Total		480	1604	993	648	3725

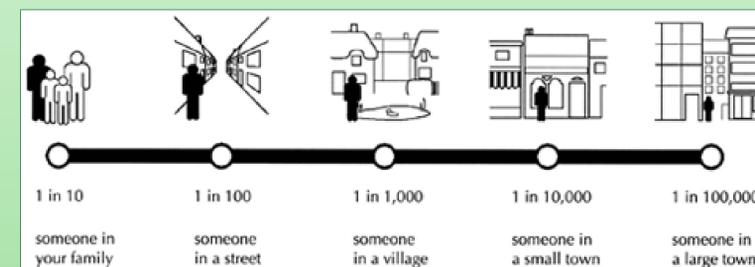
## DISCUSSION

As healthcare providers and communicators disseminate risk messages, they should consider the variables found here to discriminate among groups who express preferences for numerical or word-descriptive presentation.

While individual-level assessment is most advised in dyadic communication, when tailoring messages to groups with low income or education levels, risk may better be interpreted through literary devices such as metaphor and narrative. Also of value here are the variables that did not indicate a significant difference – gender, ethnicity, and health status.

A second application is for older adults, who in their indication of no preference, may best be reached with redundancy that includes words and numbers.

A multi-modal presentation similar to the one pictured below would address the preferences of all audience members.



<http://www.rcoa.ac.uk/index.asp?PageID=837>

Very common  
1 in 10 or 10%

Common  
1 in 100 or 1%

Uncommon  
1 in 1,000 or .1%

Rare  
1 in 10,000 or .01%

Very rare  
1 in 100,000 or .001%