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# Consumer Demand for Health Information on the Internet

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# The Internet is an important source of health information

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- 40% of Internet users report using the Internet to look for advice or information about health or health care in 2001 (Baker et. al. 2002).
- 42% of individuals who looked for health information from a source other than a physician used the Internet (Tu and Hargraves 2003).

## Demand for consumer health information (Arrow 1963)

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- Knowledge about health and medical care differs across consumers based on differences in the costs and benefits of obtaining information.
- Consumers have difficulty valuing health information.

# The effects of consumer information (or knowledge) on healthcare markets

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- Individuals who are more informed about health use more health care (Kenkel 1990; Kenkel 1994; Hsieh and Lin 1997; Goldman and Lakdawalla 2001).
- Increased search by consumers lowers the level of and decreases the variation in health care prices (Pauly and Satterthwaite 1981; Sorenson 2000, Pauly et. al. 2002).
- Do physicians “induce demand” for their services?

# Determinants of demand for health information

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- Are consumers who face higher cost sharing more likely to search for low cost providers (Marquis 1985)?
- The distribution of free health care information increases demand for self-care resources and reduces demand for information from a physician (Wagner et. al. 2001).
  - Poor health status and presence of children in the household positively associated with use of self care information.
  - Travel time to usual source of care positively associated with use of self care information
  - Insurance status had no effect

# Theoretical Framework

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- Demand for health information is derived from demand for health.
- Consumers seek information to improve their knowledge about the production of health.
- Knowledge allows them to choose among different inputs into the production of health.

# Sources of Information

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- Consumers may obtain health information through both physician and non-physician sources, including the Internet.
- Information from the Internet may either substitute or complement information from providers.

# Study Hypotheses

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- Demand for health information on the Internet depends on the costs and benefits to consumers of obtaining the information
  - People with greater health needs will be more likely to use the Internet for health information
  - Consumers facing high costs to access providers in traditional settings will be more likely to use the Internet for health information

# Data Source

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- Survey of randomly selected members of a U.S. survey research panel on their use of the Internet for health and healthcare.
- All survey respondents have Internet access
  - Panel created from a national sample of individuals based on random-digit dialing
  - Households that agree to participate receive free Internet access via WebTV, in return for filling out periodic surveys administered via the Internet

# Data Source

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- Total sample of 12,878 drawn from panel
- Survey administered in December 2001 and January 2002
- Response Rates
  - Panel Acceptance Rate: 41%
  - Panel Attrition Rate: 14%
  - Survey Completion Rate: 69.4%
- Study Sample: 6,574 adults < 65 years old

# Dependent Variables

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| Variable  | N    | %    |
|---|------|------|
| <i>Use of the Internet within the past year to search for health Information</i>    |      |      |
| Ever  | 6535 | 0.34 |
| Frequently (Every 2-3 months +)   | 6535 | 0.13 |
| <i>Use of the Internet or E-mail ever within the last year to communicate with:</i> |      |      |
| A Doctor or other Health Care provider  | 6504 | 0.06 |
| A Family Member or Friend about Health or Healthcare                                | 6504 | 0.23 |
| Other People who Have Health Conditions or Concerns Like Mine                       | 6493 | 0.11 |

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# Study Variables

|   |  |
|---|--|
| Health Needs                                | Indicator of the presence of at least one of five self reported chronic conditions :<br>(high blood pressure or hypertension; diabetes; cancer; heart attack, CHD, angina heart failure or other heart problems; and depression) |
| Price of health information from physicians | Travel time to usual source of care:<br>(less than 15 minutes, 15-29 minutes, or $\geq 30$ minutes each way)   |
|   | Health Insurance Status:<br>(Uninsured, any private, public or other insurance)  |

# Empirical Model

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$$Y_i = \alpha + \beta_1 H_i + \beta_2 P_i^S + X_i \delta + \varepsilon_i$$

$$Y_i = \alpha + \beta_1 H_i + \beta_2 P_i^S + \beta_3 H_i * P_i^S + X_i \delta + \varepsilon_i$$

where  $i$  indexes individuals

$Y$  is a binary indicator of information seeking using the Internet

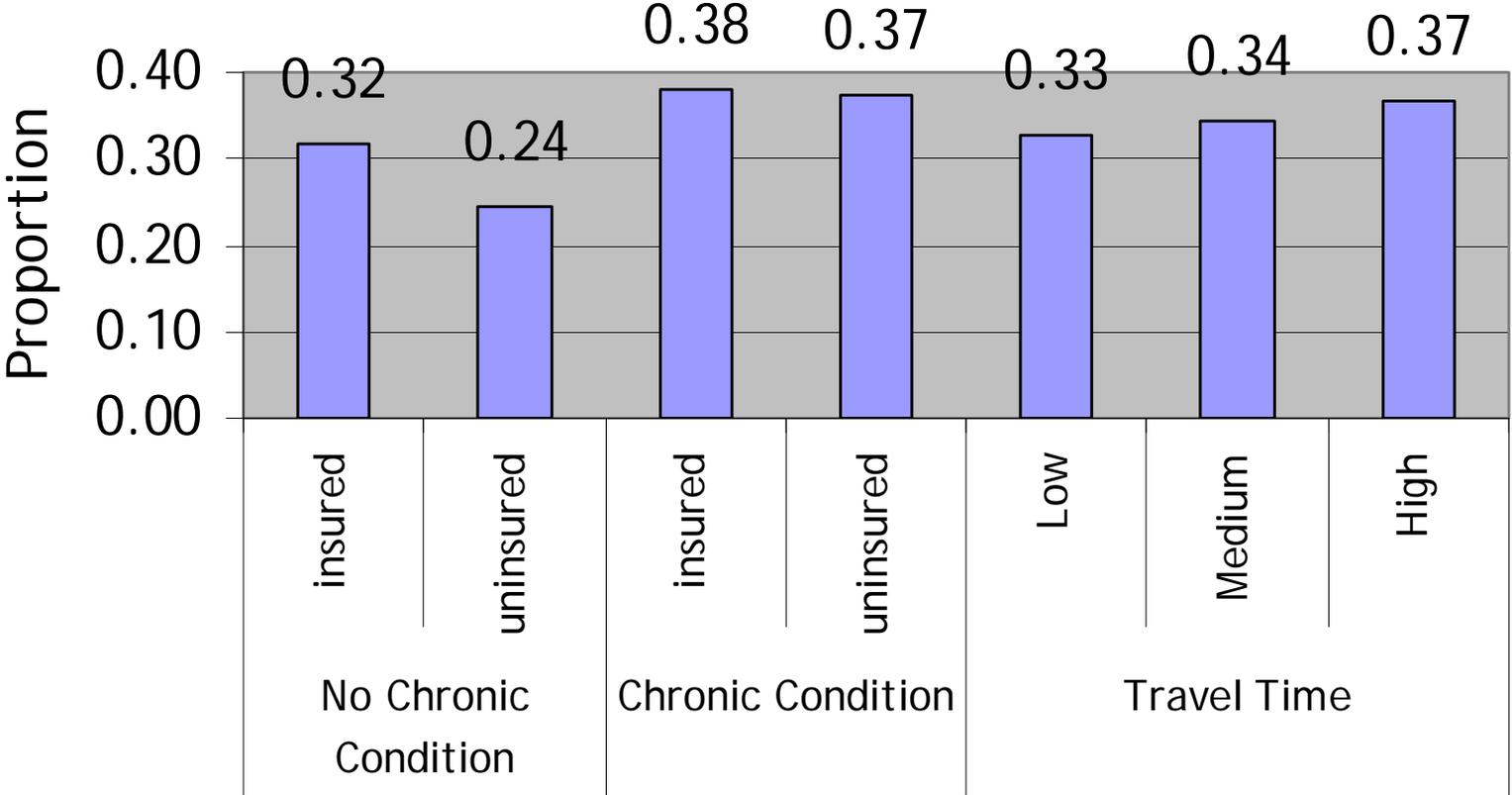
$H$  is health needs

$P^S$  is the price of alternative sources of information

$X$  is a vector of individual characteristics that affect use of internet for health information (age, sex, income, education, previous use of internet, rural)

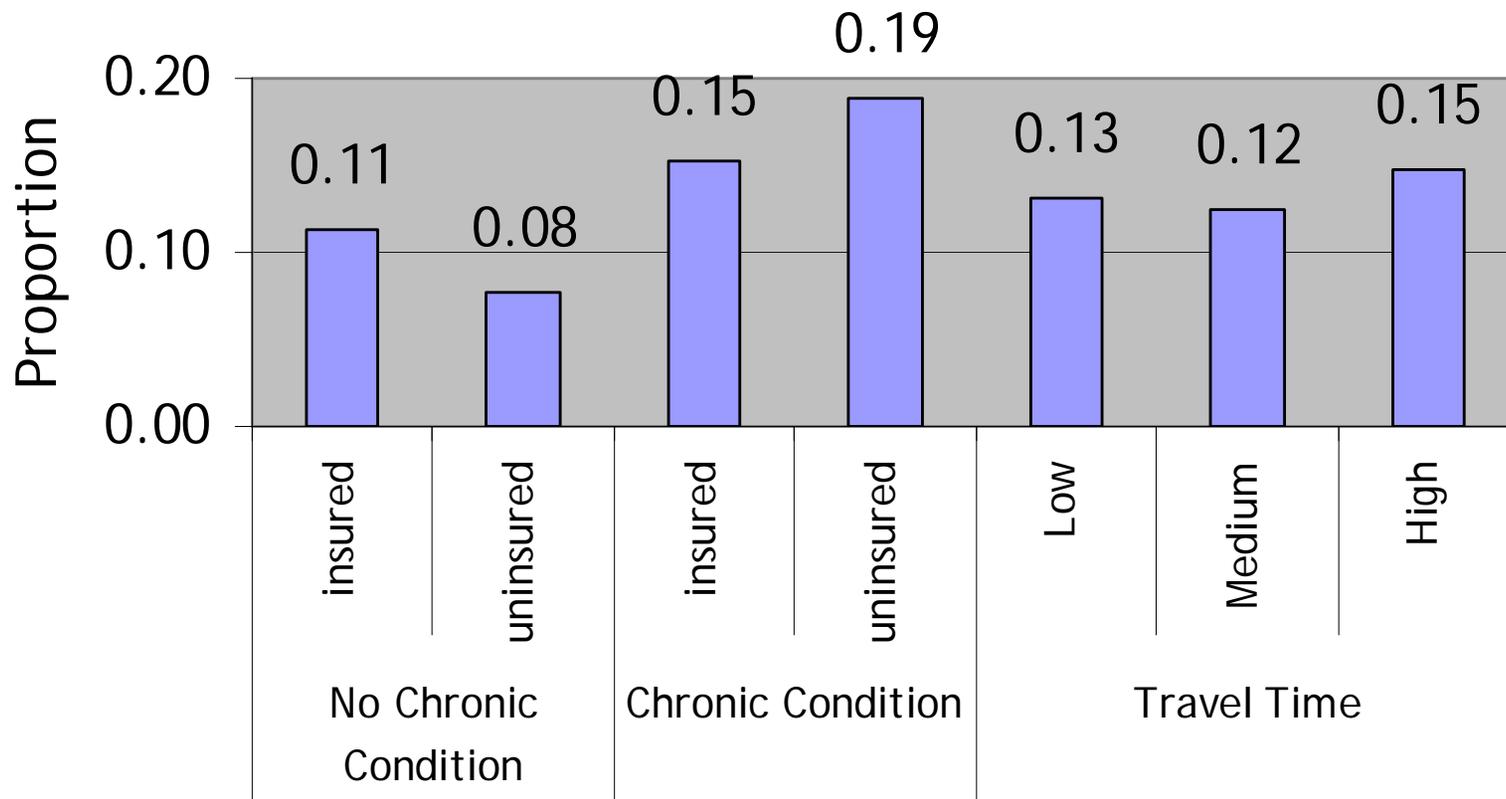
# Results - Ever Search for Information

## Ever Search for Health Information on the Internet



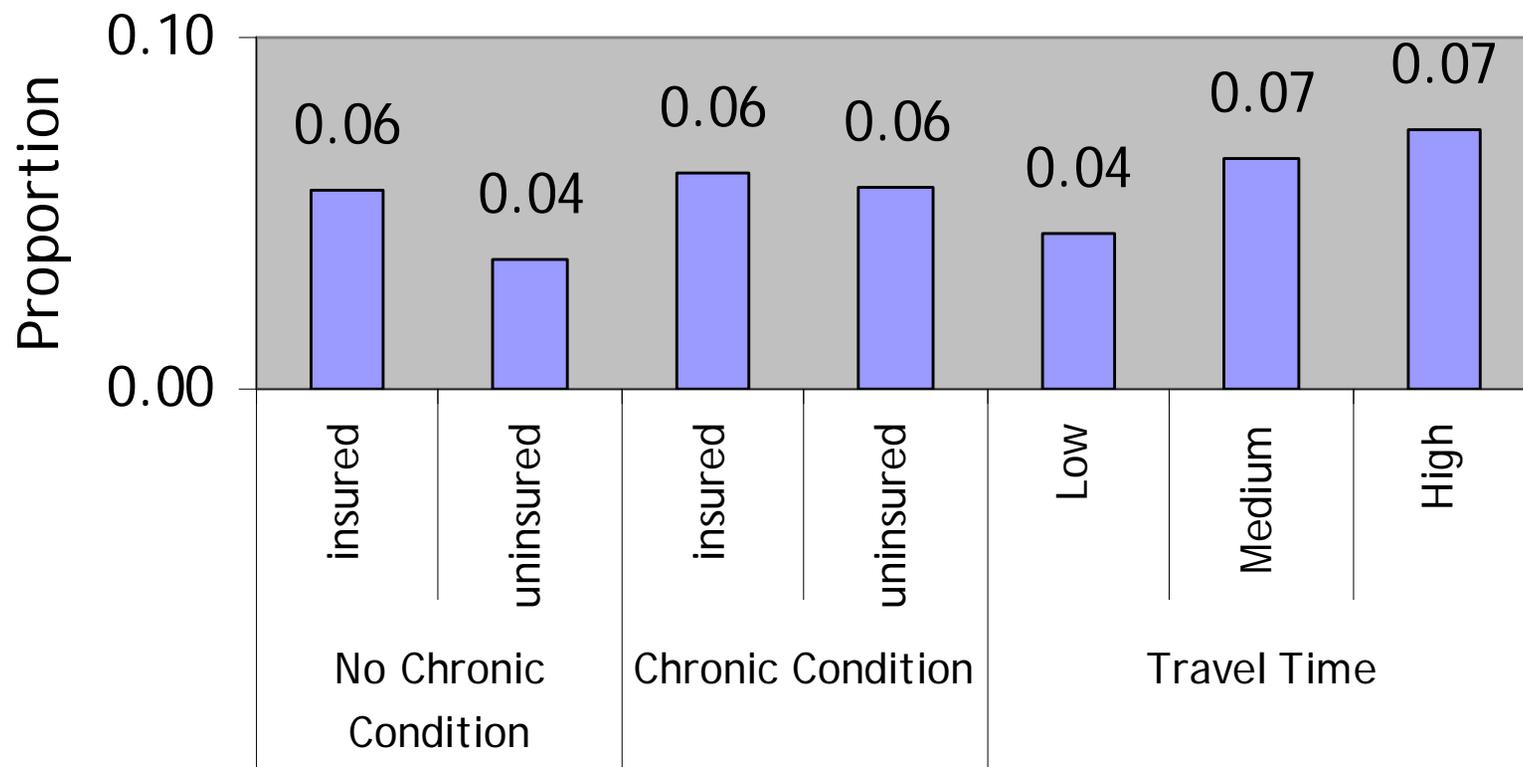
# Results - Frequently Search for Information

Frequently Search for Health Information on the Internet



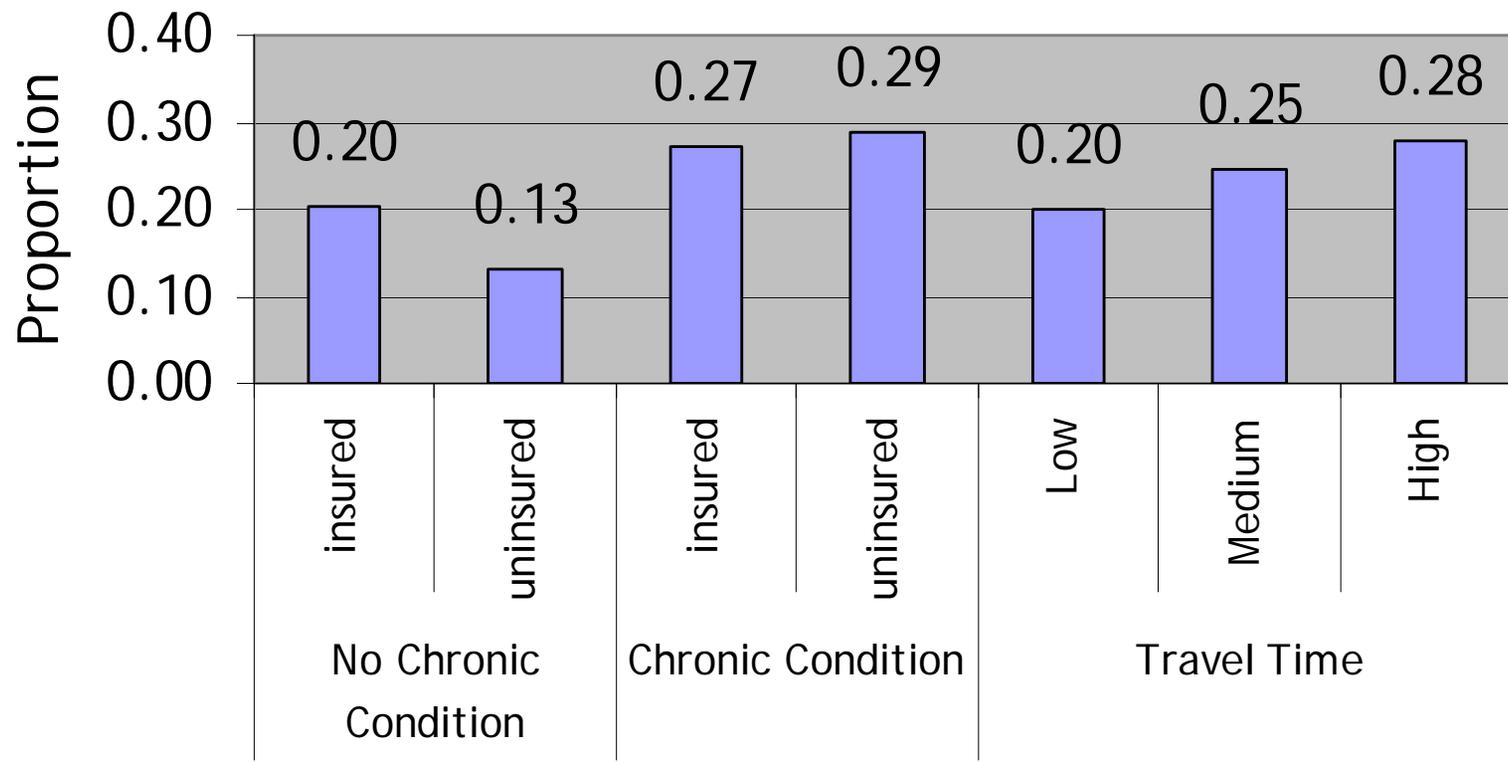
# Results - Communication

Use the Internet or E-mail to Communicate with Healthcare Providers



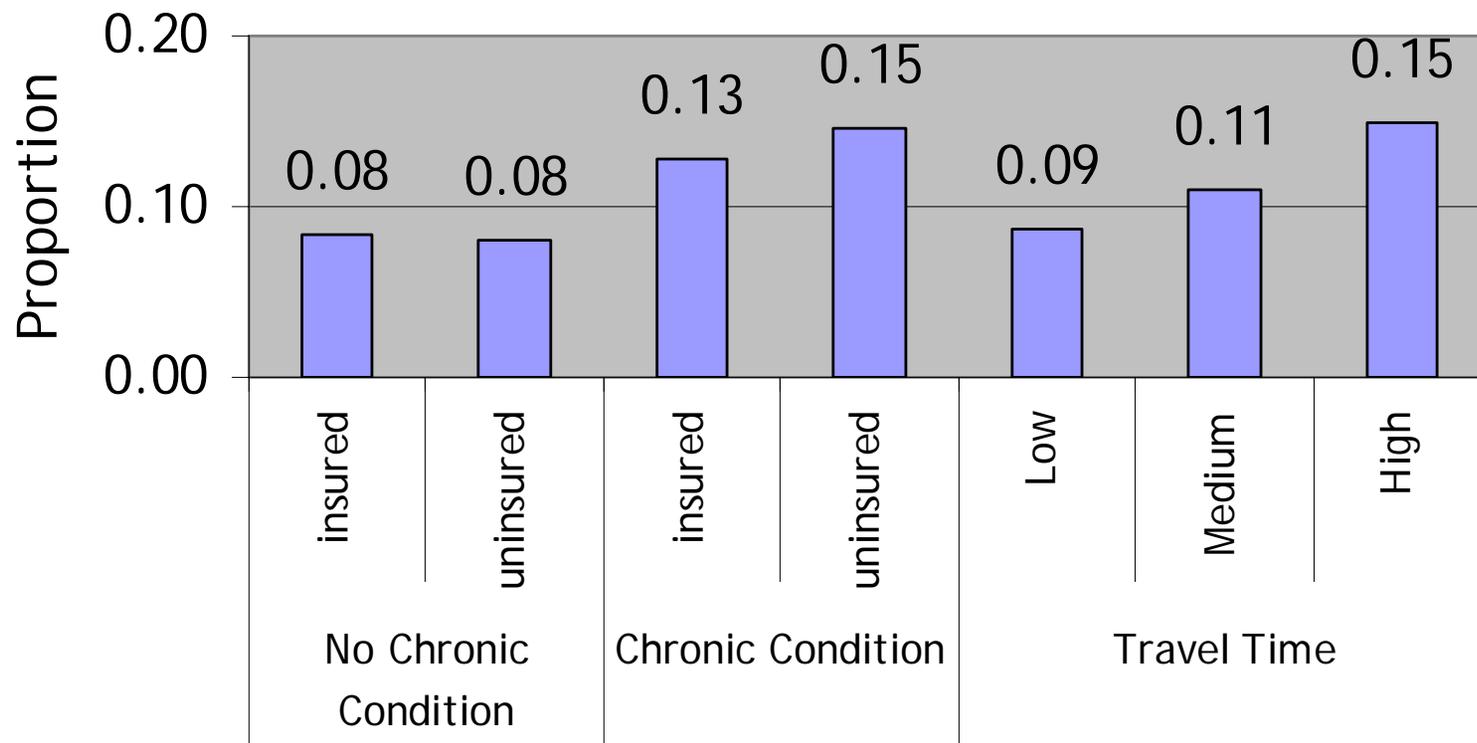
# Results - Communication

Use the Internet or E-mail to Communicate with Family Member or Friend ...



# Results - Communication

Use the Internet or E-mail to Communicate with Other People with Health Conditions...



# Results - Type of Use

## No Chronic Condition

|                        | Symptoms | Prevention | Providers | Lifestyle |
|------------------------|----------|------------|-----------|-----------|
| Uninsured              | 0.23**   | 0.01       | -0.04**   | -0.04     |
| Public                 | -0.02    | 0.04       | 0.00      | 0.12      |
| Travel time<br>(15-29) | 0.03     | 0.01       | 0.02      | -0.03     |
| Travel time<br>(30+)   | 0.10     | 0.04       | -0.01     | -0.08     |

Multinomial logistic regression - marginal probabilities shown

Other types of information is the reference group

# Results - Type of Use

## Chronic Condition

|                     | Symptoms or Condition | Prevention | Providers | Lifestyle |
|---------------------|-----------------------|------------|-----------|-----------|
| Uninsured           | 0.17**                | 0.03       | -0.01**   | -0.07     |
| Public              | -0.13*                | 0.06       | 0.00      | -0.09*    |
| Travel time (15-29) | -0.06                 | 0.01       | 0.02*     | 0.09*     |
| Travel time (30+)   | -0.26***              | 0.05       | 0.02      | 0.01      |

Multinomial logistic regression - marginal probabilities shown

Other types of information is the reference group

# Conclusions

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- Those who potentially benefit most from health information are likely to turn to the Internet
  - Individuals in poor health more likely to use the Internet
- Individuals facing a higher price to obtain information from physicians in traditional settings are more likely to turn to the Internet.
  - Uninsured with chronic conditions were the most likely to turn to the Internet for health information
  - Those with longer travels time to providers are more likely to use the Internet for communication about health and health care

# Implications

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- Economic models of demand for information can provide insight into the likely users of consumer health information.
- Higher prices to access health care providers in traditional settings may lead people to seek more self-care information.
- Tools to evaluate and monitor the quality of health information on the Internet and to steer individuals to high quality sources would be beneficial to vulnerable populations.