

Willingness to pay for melanoma risk reduction

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Thank you!

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Background

- Melanoma runs in families
 - Skin/hair/eye color, tendency to freckle/burn, dysplastic nevi
 - Environment (UV radiation)
- Modifying sun exposure may reduce risk
 - Sunscreen, protective clothing, sun avoidance, sunburn avoidance in childhood
- Understanding the importance of risk reduction to people at risk can help guide intervention

What is “willingness to pay”?

- Type of cost-benefit analysis; also called contingent valuation
- Measures strength of preference for a “good” (e.g. risk reduction) without a market
 - Preferences expressed in dollars
 - We make decisions about WTP all the time
- Survey: hypothetical scenario, participants indicate WTP for a change in health

Willingness to pay is controversial

- Theoretically appealing, except:
 - Value on human life/illness
 - Dependent on income
- Bias
 - Response (please interviewer)
 - Implied value (anchoring)
 - Sampling (nonresponse)
 - Scenario (symbolic response)

The scenario

“From birth until death, men have a 1 in 53 chance of getting melanoma, and women have a 1 in 78 chance of getting melanoma.” (high/med/low?)

“Now assume that it is possible to reduce the risk of getting melanoma, and that you would have to pay money each month to reduce your risk to zero. Insurance would not cover this cost to you. Considering your income and other expenses,

Would you pay [randomize] <\$10/20/30/40/50> per month?

[if NO] would you pay <\$5/10/15/20/25>?

[if YES] would you pay <\$30/40/50/60/100> ?

[if YES] How much would you be willing to pay [open]?”

Objectives and analysis

- Assess preferences for reducing melanoma risk
 - Calculate WTP: midpoint or open-ended answer
 - Analysis of case-relative pairs
 - Predictors: Linear regression using $\log(\text{WTP})$ as dependent variable
- Compare willingness to pay with sun protection behavior and costs of sun protection products
 - Correlations: Sun behaviors with WTP?
 - Post-hoc estimate of cost of sun protection
 - Consistent with reported WTP?

Study population

- Family pairs: one melanoma survivor and one of their first degree relatives (FDR)
- Suntalk: melanoma family communication intervention
 - D. Bowen, Principal Investigator NIH/NCI (CA107430).
 - Randomized trial: web-based intervention to improve sun protection and screening behaviors in families
- Sample: Northwest Cancer Genetics Network (CGN), Washington state Cancer Surveillance System (CSS)

Demographics

<i>n=626</i>	<i>Case (%)</i>	<i>Relative (%)</i>	<i>P</i>
College graduate or more	62.5	56.2	0.11
Female	55.9	63.6	0.05
Married/living as married	80.8	71.9	0.008
Age (Mean±SD)	56.1±12.3	51.3±15.6	<0.001
Income <\$30k	3.8	12.8	<0.001
\$31k-\$50k	12.5	17.9	
\$51k-\$70k	27.2	17.6	
\$71k-\$99k	17.9	19.5	
\$100k or more	30.0	24.3	

Risk perception

	<i>Case (%)</i>	<i>Relative (%)</i>	<i>P</i>
Risk in scenario is “high”	56.5	48.5	0.14
Compared to others my risk is “higher than average”	74.4	51.1	<0.001
Thought of chances of getting melanoma in past month “often/a lot”	20.1	6.1	<0.001
Prevention programs more effective than treatment	93.4	91.5	0.38
Prevention programs more costly than treatment	8.6	8.8	0.95

Sun protection

	<i>Case (%)</i>	<i>Relative (%)</i>	<i>P</i>
Last 7 days:			
Wore long-sleeve shirt	85.3	81.8	NS
Wore pants	94.6	95.8	NS
Used SPF15	64.9	45.4	<0.001
Wore any hat	65.2	47.9	<0.001
Wore wide-brim hat	32.9	24.3	0.017
Wore sunglasses	73.2	75.4	NS
Stayed in shade	72.5	66.8	NS
Avoided hottest sun	45.4	46.3	NS
Protect self from sun consistently	72.8	55.0	<0.001
Protect self from sun consistently (last 12 months)	88.0	84.9	NS
Use SPF15+ consistently	65.7	47.6	<0.001
Use SPF15+ consistently (last 12 months)	89.6	86.6	NS

WTP estimates (per month)

Response rate 89%

	<i>Case</i>	<i>Relative</i>	<i>P</i>
Willingness to pay (2006USD)	\$51 ± 2.8	\$34 ± 2.5	<0.001
Minimum, maximum	\$2.50, \$1000	\$2.50, \$1000	
Median	\$50	\$37.5	
Adjusted for income	\$51	\$35	
Median difference between pairs	\$16.3		

Predictors of WTP

	β	P
Cases only		
Melanoma worry	1.46	<0.001
General health excellent (ref)	0.75	0.001
Income	1.19	0.01
Constant	34.0	
Relatives only		
Prevention (ref) more effective	0.55	<0.001
Melanoma worry	1.24	0.04
Risk in WTP scenario is high (ref)	0.84	0.05
Constant	47.9	

NS: Marital status, gender, education, perceived risk, prevention costliness, age, income (relatives only), risk in scenario (cases only)

Combined model: being a case remained a significant predictor:
 $\beta=0.082$, $p=0.04$

Is WTP correlated with sun protection behavior?

- Overall poorly correlated
- Cases:
 - 7 days SPF $r=0.12$, $p=0.06$
 - 7 days sunglasses $r=0.16$, $p=0.01$
- Relatives (trends only):
 - 7 days stay in shade $r=0.10$, $p=0.10$
 - 7 days avoid hottest sun $r=1.10$, $p=0.11$

Direct cost of sun protection

- Sunscreen
 - \$3-\$6 per ounce, 1.5oz-12oz per month
- Sun hat
 - \$0.42-\$10 per month, one per year
- Sunglasses
 - \$0.83-\$6.25 per month, one per year
- Long pants/shirt (other uses)
- Sun avoidance (indirect costs)
- Total \$5-\$94 per month
 - Consistent with WTP estimates (\$51, \$34)

Limitations

- Potential bias
- Relatively high-income sample, no community group
- No acceptance question ($WTP=0$)
- No personal cancer history
- Seasonality

Conclusions

- Our study indicates preference for melanoma risk reduction
 - But may highlight inconvenience of sun protection
- Survivors and relatives may have different processes for estimating WTP
- Implications for intervention
 - Melanoma worry
 - Survivorship needs
 - Education on prevention effectiveness

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