

Conflict of Interest Statement

- This study was funded by GRAIL, LLC, a subsidiary of Illumina, Inc.

GRAIL

Patient Preferences for Attributes of a Multi-cancer Early Detection Test: A Discrete Choice Experiment (DCE) Quantitative Pilot Study

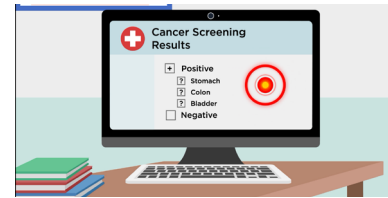
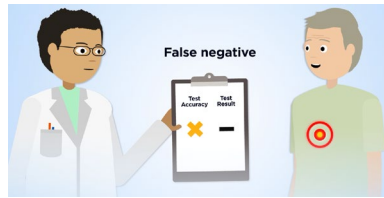
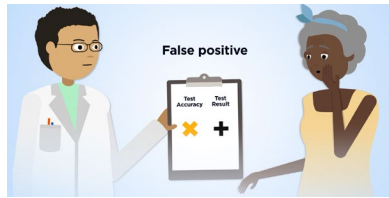
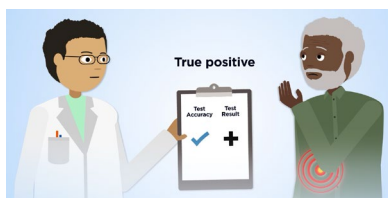
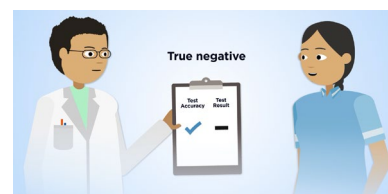
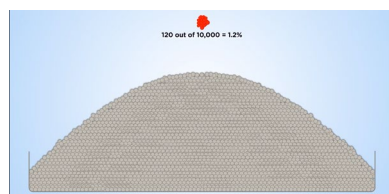
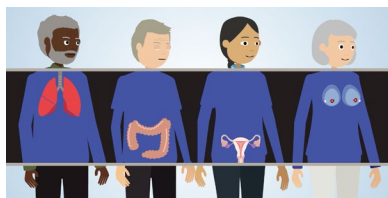
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Background

- Early cancer detection and intervention can significantly improve patient outcomes and reduce mortality rates.
 - However, the number of cancers for which recommended screening procedures exist is limited (e.g., breast, lung, colorectal, and cervical).
- Emerging blood-based multi-cancer early detection (MCED) tests can detect a variety of cancer types across stages with a range of sensitivity, specificity, and ability to provide a predicted cancer signal origin.^{1,2}
- However, little is known about patients' preferences for MCED tests.



Study Objective

- This study aimed to quantify preferences for attributes of blood-based MCEd tests among the US general population aged 50 to 80 years.
- The results presented here are those from a quantitative pilot study that was conducted to test a discrete choice experiment (DCE) survey prior to launch of data collection in the full sample.

Methods



Study Population

- US adults aged 50 to 80 years recruited via online panels
- Not currently receiving treatment for cancer



Survey Development

- Developed with input from clinicians, patient advocacy group, and the FDA
- Pilot tested among n=10 US adults in qualitative cognitive debriefing interviews



Cross-Sectional Quantitative Pilot Web-Survey

This survey consisted of the following sections:

1. Introduction to the attributes and levels included in the DCE
 - 3-minute scientific animation describing cancer screening tests and their possible outcomes
 - Textual and graphical explanation of each attribute (including assessments of participants' understanding of each)
2. Eight DCE choice tasks, a direct comparison task (including a profile of GRAIL's emerging MCED test¹ versus no screening), and internal validity tests
3. Questions about participants' experience with and perceptions of cancer screening
4. Sociodemographic and clinical questionnaires (including assessment of health literacy and numeracy)

Assume in a population of 10,000 people aged 50–80 years, 120 of these people have cancer. All 10,000 take Screening A and B. Which of these options do you prefer?

Example Choice Task

Not an attribute, but added for clarity

Always shown to participants in this order

Either the first or last attribute shown (randomized)

	Screening A	Screening B	No Screening
Number of people screened	10,000 people	10,000 people	
Test says the person may have cancer, but they do NOT have cancer <i>(false positives)</i>	500 people incorrectly told they have cancer	500 people incorrectly told they have cancer	
Detection of cancer cases <i>(true positives and false negatives)</i>	<p>120 people with cancer:</p> <p>56 cancer cases detected 56 cancer cases missed 8 not screened for</p> <p><i>(detects 50% of cancer cases tested for)</i></p>	<p>120 people with cancer:</p> <p>21 cancer cases detected 4 cancers missed 95 not screened for</p> <p><i>(detects 84% of cancer cases tested for)</i></p>	
Cancer type unknown	11% unknown cancer type	0% unknown cancer type	
Number of cancers tested for	20 types of cancer	1 type of cancer	

I would choose not to get screened
(You would not find out any information about whether you have cancer or not)

Opt out

Please make your choice:

Statistical Analysis

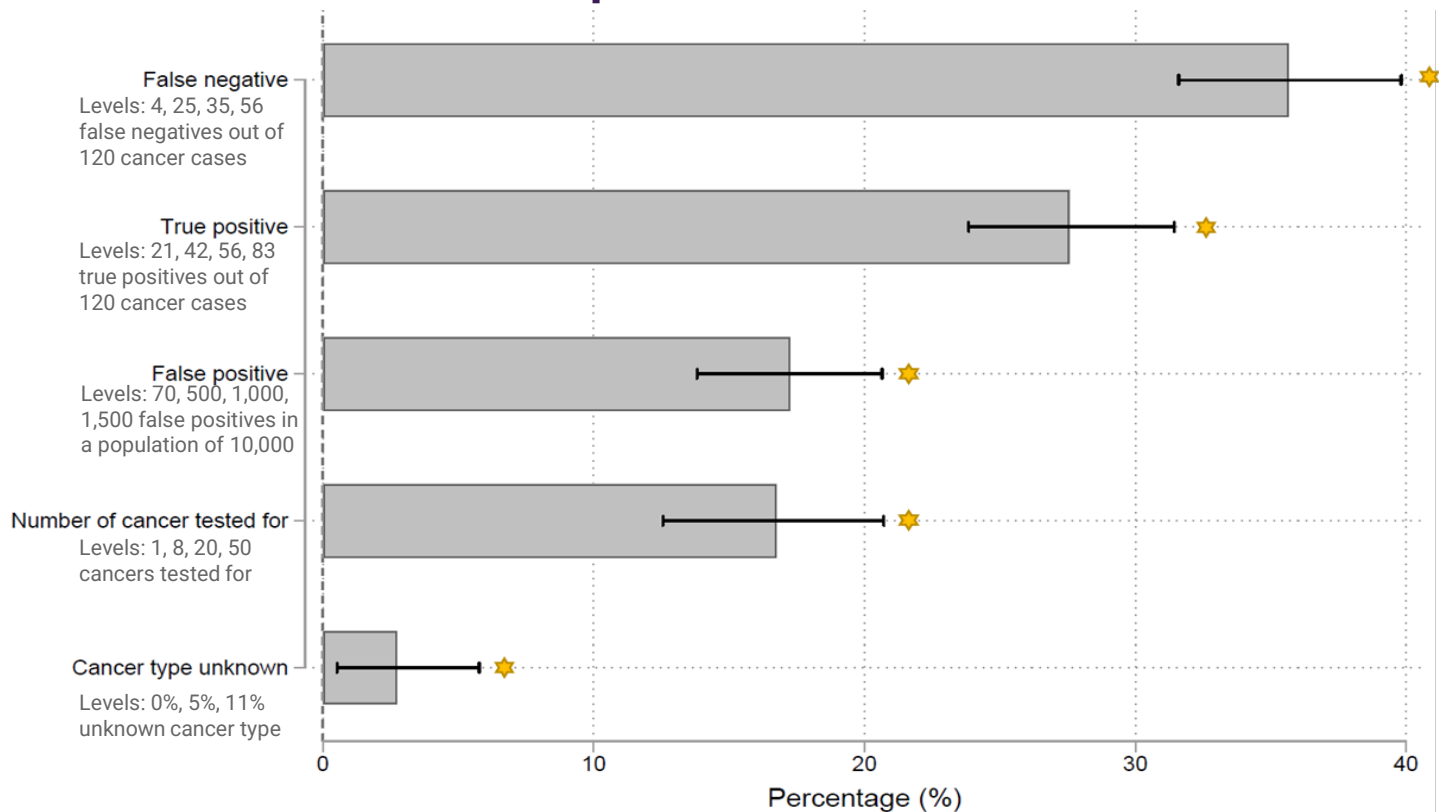
- Descriptive statistics were used to characterize the sample based on sociodemographic, clinical characteristics, and validity measures.
- DCE data were analyzed using an error-component multinomial logit (EC-MNL).
- Relative attribute importance (RAI) was calculated to measure the importance of an attribute relative to all other attributes conditional on the range of levels of that attribute.

Results: Sample Characteristics

- 303 participants completed the web-based quantitative pilot survey.

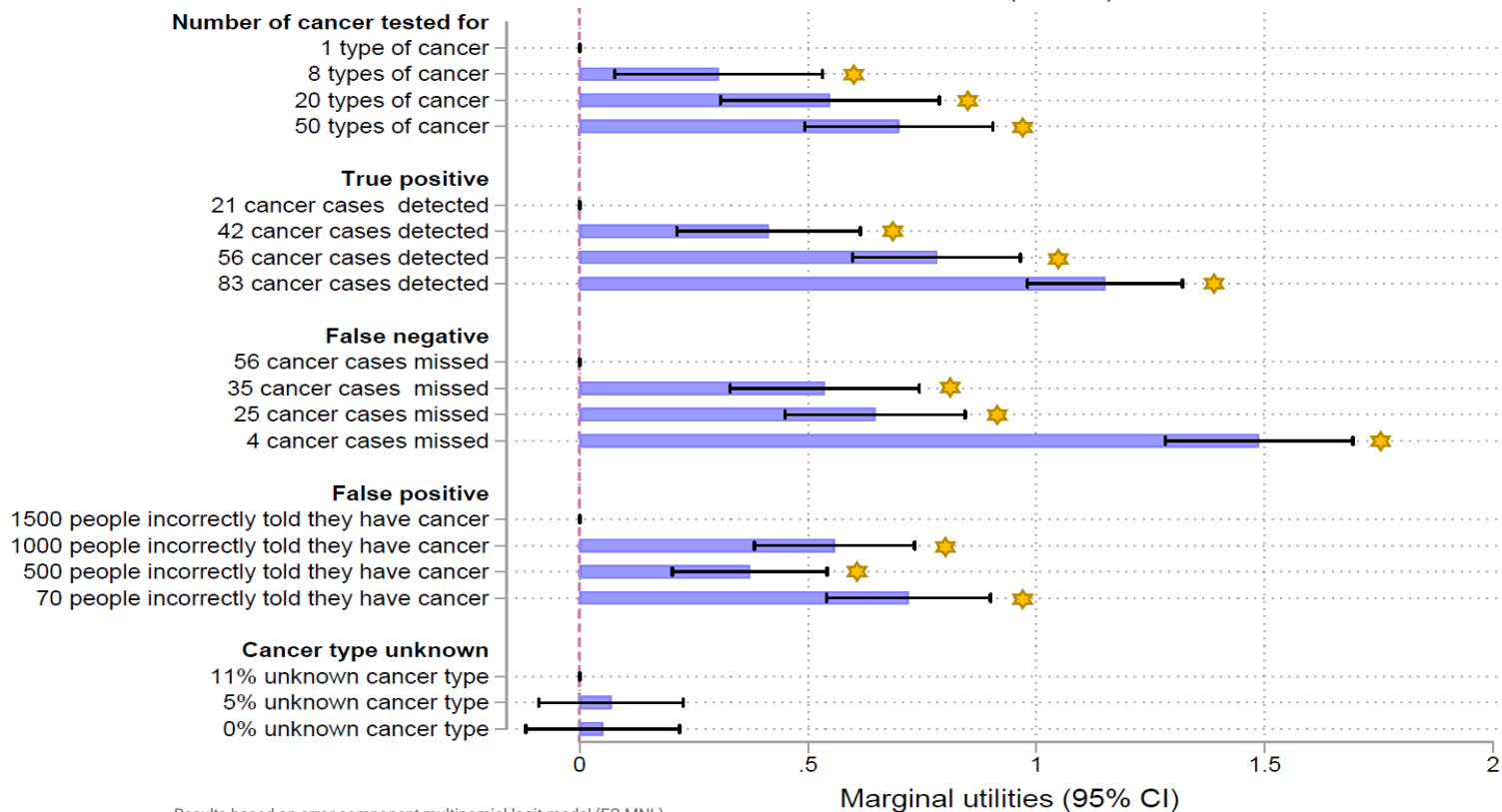
Variable	N (%)
Age , Mean (SD) [Range]	68.2 (6.4) [50-80]
Female	115 (38.0)
Race (White)	292 (96.4)
Ethnicity (Hispanic)	10 (3.3)
Education	
High school or less	64 (21.1)
Associate degree, technical, trade school, bachelor's degree	153 (50.5)
Graduate degree (MA, MS, MBA, PHD, JD, MD)	83 (27.4)
Other	3 (1.0)
Household Income	
Less than \$44,999	66 (21.8)
\$45,000 to \$74,999	80 (26.4)
\$75,000 to \$99,999	53 (17.5)
\$100,000 or more	92 (30.4)
Prefer not to answer	12 (4.0)
Ever received any type of cancer screening?	252 (83.2%)

Results: Relative Importance of MCED Attributes



Results: Preferences for Levels of MCED Attributes

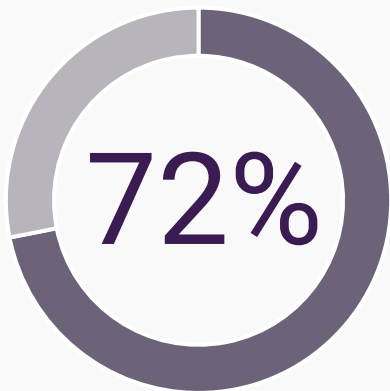
Overall (N=303)



Results based on error-component multinomial logit model (EC-MNL)

★ = p < 0.05


Results: Proportion of Participants Opting for MCED Screening



■ MCED Screening ■ No Screening

72% of participants indicated that they would prefer a screening alternative representing GRAIL's emerging MCED test over no screening.

Assume in a population of 10,000 people aged 50-80 years, 120 of these people have cancer. All 10,000 take screening test A. Which of the two options do you prefer?

	Screening A	No Screening
Number of people screened	10,000 people	
Test says the person may have cancer, but they do NOT have cancer <i>(false positives)</i>	70 people incorrectly told they have cancer *	
Detection of cancer cases <i>(true positives and false negatives)</i>	120 people with cancer:  42 cancer cases detected 35 cancer cases missed 43 not screened for (detects 55% of cancer cases tested for) **	I would choose not to get screened <i>(You would not find out any information about whether you have cancer or not)</i>
Cancer type unknown	11% unknown cancer type	
Number of cancers tested for	50 types of cancer	
	Please make your choice: <input type="checkbox"/>	<input type="checkbox"/>

*Reflects 99.3% specificity

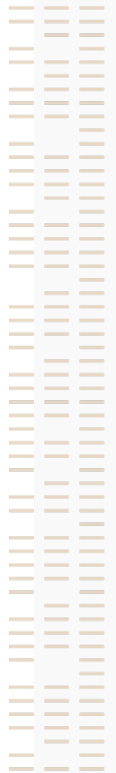
**Reflects 55% sensitivity

Conclusions

- Participants' preferences were strongly driven by the desire for a screening test that minimized false negatives and maximized true positives, with these two attributes comprising 63.3% of the RAI.
 - This result suggests that patients are most concerned with accurately identifying existing cancer cases.
 - False positive results and number of types of cancer tested for also impacted preferences.
 - The relatively large confidence intervals around the relative attribute importance and part-worth utilities indicates that preferences for MCED tests are likely to be heterogeneous. This heterogeneity will be further explored in the larger full sample (n=1,700).
- When given the choice between GRAIL's emerging MCED test over no screening, the majority of participants preferred taking the MCED test.
- Results indicate that incorporating an MCED test to current standard of care is a viable approach to cancer screening.

Thank you

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