

# A randomized study of cash cards versus checks as clinician survey incentives

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## Research article

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## Abstract

Background Evidence is needed regarding effective incentive strategies to increase clinician survey response rates. Within a larger clinical trial of population-based *BRCA1/2* mutation screening, we conducted a randomized controlled study comparing the use of upfront cash cards requiring email activation versus checks as clinician survey incentives.

Methods We mailed paper surveys to 500 primary care providers (PCPs) in New York, Boston, Los Angeles and Philadelphia who were nominated by study participants to disclose *BRCA1/2* mutation results obtained through the study. The first 303 clinicians were randomized to receive the \$50 incentive as a cash card (N = 155) or check (N = 148). We compared response rates by incentive type, adjusting for PCP characteristics and study site.

Results In unadjusted analyses, PCPs who received checks versus cash cards were more likely to respond to the survey (54.1% versus 41.9%, p = 0.046); this remained true when we adjusted for provider characteristics (OR for checks 1.61, 95% CI 1.01, 2.59). No other clinician characteristics had a statistically significant association with response rates in adjusted analyses. When we included an interaction term for incentive type and city, the favorable impact of checks on response rates was evident only in Los Angeles and Philadelphia.

Conclusions An upfront cash card incentive requiring email activation may be less effective in eliciting clinician responses than up-front checks. However, the benefit of checks for clinician response rates may depend on clinicians' geographic location.

## Background

Surveying health care providers is an important means of obtaining information about medical practices and clinician knowledge and attitudes. However, clinician survey response rates in the United States have decreased gradually over time.<sup>1–3</sup> A 2013 meta-analysis described an approximately 20% decline in response rates over the preceding two decades.<sup>2</sup> The decline in response rates is thought to reflect increasing demands on clinicians' time that limit participation in research activities.<sup>4</sup> Since low response rates can compromise study findings' internal and external validity<sup>5</sup> and increase research costs, strategies to maximize clinician survey response rates are sorely needed.

The timing, type, and amount of monetary incentives provided to survey recipients are known to influence response rates.<sup>6</sup> A randomized study demonstrated higher clinician survey response rates with \$50 versus \$20 check incentives.<sup>6</sup> Timing of the incentive also impacts the likelihood of response, with upfront unconditional cash incentives yielding superior response rates compared with conditional cash incentives paid only after providers respond to the survey<sup>7,8</sup> or lottery-based incentives.<sup>9</sup> Although cash cards and gift cards are increasingly used in survey research, little is known about their impact on clinician survey response rates. Cash cards have several potential advantages over cash or checks. Cash

cards are increasingly used in day-to-day life, as people seek alternatives to cash or paper checks. In contrast to cash and similar to checks, some cash cards can be reclaimed by investigators if they are not used, although such cash cards require that unique cards or codes be assigned in advance to a specific survey recipient (i.e. registered).<sup>10</sup> Because checks and registered cash cards can be tracked more easily than cash, they may be preferable to cash or non-registered cash cards for institutional accounting. Registered cash cards have the additional benefits of being logically more feasible and efficient than checks, which must be generated individually for each clinician surveyed. Use of registered cash cards (hereafter called “cash cards”) for incentives have yielded adequate response rates in some studies.<sup>11,12</sup> However, the impact of cash card incentives compared with other types of financial incentives on clinician survey response rates is not known.

We conducted a randomized controlled trial of upfront cash card versus check survey incentives to assess their impact on primary care provider (PCP) survey response rates. The BRCA Founder OutReach (BFOR) study is a clinical trial being conducted in New York, Boston, Philadelphia and Los Angeles examining the implementation of a digital platform and no-cost *BRCA1/2* founder mutation testing for individuals of Ashkenazi Jewish descent.<sup>13</sup> Study participants elect to receive *BRCA1/2* results from their PCP or a study-affiliated specialist. We surveyed PCPs elected by their patients to disclose results to determine PCPs’ knowledge, attitudes and experience with *BRCA1/2* testing and their willingness to disclose their patient’s results. In this substudy of survey incentives, we randomized PCPs to receive an upfront check versus upfront cash card incentives.

## Methods

### Survey

We surveyed the first 125 PCPs from each city who were elected by a BFOR participant to share his or her *BRCA1/2* results. The survey gathered general demographic and practice information, assessment of *BRCA1/2* mutation knowledge, PCPs’ opinions on incorporating genetic testing into their existing practices, and willingness to disclose the results of their patients’ testing obtained through the BFOR study. We mailed paper surveys, although we also provided PCPs the option to participate via the Internet. Each survey mailing included a personalized cover letter, a \$50 incentive, a four-page survey designed to be completed in less than 10 minutes, and a pre-paid return envelope. First and second reminders were sent via mail roughly three and six weeks, respectively, after the initial mailing. These reminders contained personalized letters, a second copy of the survey, and a pre-paid return envelope.

### Randomization and study sample

As PCPs were nominated by patients, they immediately became eligible for the survey study and were assigned by research staff to receive \$50 cash card or \$50 check incentives using an alternating 1:1 allocation strategy stratified by city. The cash cards were reloadable debit cards that required activation by the study managers before use. PCPs who wished to activate the cash cards had to email a study

manager with their card number and specifically request card activation. In June 2018, in an effort to increase response rates, we sent out a limited number of third reminders to 42 PCPs. The third reminder included a personalized letter, third copy of the survey, pre-paid return envelope, and a second incentive equivalent to the first. After this point, third reminders were discontinued due to staffing limitations. All 42 third reminders went to PCPs who had received cash cards (providing them with a second cash card), because the third reminder initiative was terminated before any third-reminder checks were issued for PCPs who had initially received checks. Our target sample size for the PCP survey study was 500, based on anticipated differences in PCPs' willingness to disclose their patients' *BRCA1/2* results. After June 2018, due to overall response rates below our target of 50% and early findings demonstrating that checks yielded higher response rates, the randomized study of incentives was stopped and all further survey mailings to newly enrolled PCPs included checks. This analysis includes the 303 PCPs enrolled in the randomized portion of the study between December 2017 and June 2018. Among these, 155 were assigned to receive their incentive in the form of a cash card and 148 were assigned to receive a check.

## Outcome and PCP characteristics

Our pre-specified primary outcome was response to the survey. Our primary independent variable was receipt of a cash card versus check. Covariates were clinician city, specialty and gender; these were the demographic and practice data that were available for both responding and non-responding PCPs.

## Analysis

We used univariate Chi-square tests to examine response rates according to whether PCPs received checks or cash cards and according to gender, city and specialty. Because more female PCPs were randomized to checks than males, we used multivariate logistic regression to adjust analyses for demographic characteristics. We also conducted stratified analyses of the impact of checks versus cash cards according to demographic characteristics, and we noted that the impact of checks versus cash cards appeared to vary by city. To explore this further, we incorporated interaction terms into our model.

This study adhered to CONSORT guidelines.

## Results

Characteristics of surveyed PCPs are included in Table 1. Characteristics of PCPs who received checks versus cash cards did not differ by city, provider type, or specialty ( $p = 0.33$ ,  $p = 0.23$ , and  $0.09$ , respectively); however, a higher proportion of PCPs receiving checks were female (61.5% of check recipients versus 51.0% of cash card recipients;  $p = 0.03$ ) (Table 1).

Table 1

Characteristics of primary care providers who received checks versus cash card incentives

	Received check (n = 148)	Received cash card (n = 155) N (%)	p-value*
	N (%)		
<b>City</b>			0.33
Boston	47 (31.8%)	49 (31.6%)	
New York	44 (29.7%)	43 (27.7%)	
Los Angeles	33 (22.3%)	35 (22.6%)	
Philadelphia	24 (16.2%)	28 (18.1%)	
<b>Gender</b>			0.03
Male	57 (38.5%)	76 (49.0%)	
Female	91 (61.5%)	79 (51.0%)	
<b>Provider type</b>			0.23
Physician	145 (98.0%)	148 (95.5%)	
Advanced practice provider <sup>†</sup>	3 (2.0%)	7 (4.5%)	
<b>Specialty</b>			0.09
Internal Medicine (n = 207)	97 (65.5%)	110 (71.0%)	
Obstetrics & Gynecology (n = 48)	31 (21.0%)	17 (11.0%)	
Family Medicine (n = 44)	19 (12.8%)	25 (16.1%)	
Other (n = 4) <sup>++</sup>	1 (0.7%)	3 (1.9%)	

\*Pearson's chi-square tests

<sup>†</sup>includes 9 nurse practitioners and one nurse midwife

<sup>++</sup>Includes 3 surgeons and 1 radiation oncologist who were identified by patients as their primary care provider

Overall, 145 PCPs (47.9%) of PCPs responded to the survey. Factors associated with survey response in unadjusted and adjusted analyses are shown in Table 2. In unadjusted analyses, survey response rates were higher among check recipients than cash card recipients (54.1% versus 41.9%, p = 0.046) and among women providers compared to men (53.5% versus 40.6%, p = 0.04). Advanced practice providers were more likely to respond than physicians (80.0% versus 46.8%, p = 0.04), although there were only 10 advanced practice providers surveyed. Response rates varied somewhat by city, with the highest response

rates among providers from Boston (55.2%) and Philadelphia (48.1%), but differences across cities were not significant. Of the 42 PCPs who received third reminder letters with cash cards re-sent, only 4 (9.5%) responded to the survey. After adjustment for city, gender, provider type and specialty, PCPs receiving checks were more likely to respond to surveys than those receiving cash cards (OR 1.61 (95% CI 1.01, 2.59),  $p = 0.047$ ; Table 2). No other provider characteristics were significantly associated with likelihood of response in the adjusted analyses.

Table 2  
Unadjusted and adjusted response rates based on provider characteristics

Characteristic	N	N(%) responded	Unadjusted p-value*	Adjusted OR (95% CI)**	Adjusted p-value**
Incentive			<b>0.046</b>		
Cash card	155	65 (41.9%)		<i>Ref</i>	
Check	148	80 (54.1%)		1.61 (1.01, 2.59)	<b>0.047</b>
Gender			<b>0.04</b>		
Male	133	54 (40.6%)		<i>Ref</i>	
Female	170	91 (53.5%)		1.37 (0.84, 2.25)	0.20
City			0.33		
Boston	96	53 (55.2%)		<i>Ref</i>	
New York	87	37 (42.5%)		0.62 (0.34, 1.15)	0.13
Los Angeles	68	30 (44.1%)		0.64 (0.33, 1.24)	0.19
Philadelphia	52	25 (48.1%)		0.73 (0.36, 1.46)	0.37
Provider type			<b>0.04</b>		
Physician	293	137 (46.8%)		<i>Ref</i>	
Advanced practice provider***	10	9 (80.0)		4.80 (0.94, 24.39)	0.06
Specialty			0.65		
Internal Medicine	207	96 (46.4)		1.24 (0.62, 2.50)	0.54
Obstetrics & Gynecology	48	27 (56.3)		1.67 (0.69, 4.05)	0.26
Family Medicine	44	20 (45.5)		<i>Ref</i>	
Other	4	2 (50.0)		1.55 (0.19, 12.58)	0.68

\*Chi-square tests

\*\*multivariable logistic regression

Table 3 shows response rates among PCPs receiving checks versus cash cards stratified by city, and the results of the multivariable logistic regression model that included interaction terms for city and incentive type. The impact of incentive type on response rate varied notably by city ( $p = 0.02$  using the Wald Chi Square test). In Boston and New York, the relationship between incentive type and survey response was

not statistically significant. In Los Angeles and Philadelphia, checks were associated with statistically higher likelihood of survey response. In Los Angeles, 63.6% of those receiving checks responded to the survey versus 25.7% of those receiving cash cards (OR 4.73, 95% CI 1.64, 13.50), and in Philadelphia, 62.5% of those receiving checks responded versus 35.7% of those receiving cash cards (OR 3.61 (95% CI 1.11, 11.72)).

Table 3  
Impact of providers' city on the association between incentive type and likelihood of survey response

City	Survey responses among those receiving checks	Survey responses among those receiving cash cards	Adjusted OR for survey response with check versus cash card incentive (95% CI)*
Boston	53.2%	57.1%	0.74 (0.33, 1.69)
New York	43.2%	41.9%	1.07 (0.44, 2.58)
Los Angeles	63.6%	25.7%	<b>4.73 (1.65, 13.50)</b>
Philadelphia	62.5%	35.7%	<b>3.61 (1.11, 11.72)</b>

\*Using logistic regression with interaction terms for city and incentive type; ORs are adjusted for provider gender, type and specialty. Measure of effect modification by city: p = 0.02 using Wald Chi-square test.

## Discussion

In an era of declining health care provider survey response rates, understanding the most successful and cost-effective strategies to optimize response rates is important for maximizing the validity of provider survey studies. Evidence about the effectiveness of cash cards for clinician surveys is very limited. In this randomized study, the overall PCP response rate was less than our goal of at least 50%, underscoring the persistent challenge of eliciting provider responses. However, among PCPs receiving checks, the overall response rate was 54.1%, versus 41.9% among those receiving cash cards. The impact of check incentives persisted when we adjusted for provider characteristics, suggesting that an upfront cash card incentive requiring email activation may be less effective in eliciting provider responses than up-front checks. However, the benefit of checks appears to be regionally specific: checks were associated with increased response rates in Los Angeles and Philadelphia, but not in Boston and New York.

There are several potential explanations for our findings. PCPs may be more familiar with checks and feel that they are more straightforward to deposit and thus use. The need to email a study manager to activate the cash card may have also limited enthusiasm for this type of incentive. However, the regional differences may suggest that behaviors regarding cash cards and familiarity with them varies geographically. However, it is also possible that factors not related to incentive type contributed to our findings about differences between cities. For example, survey response rates were the highest in Boston, likely at least partly because the principal investigators for the PCP survey component of BFOR (who signed the survey cover letter) were Boston-based investigators. This difference may have attenuated

some of the differential impact of checks versus cash cards in Boston, although it seems unlikely to fully explain the regional differences seen. Our findings suggest that investigators conducting local or regional surveys should consider local context when they choose survey incentives. For national studies, checks (or cash) may be a safer option to maximize survey responses.

Strengths of this study include its randomized design and enrollment of PCPs from 4 different cities. It also has some limitations. First, our alternating assignment strategy to assign providers to check versus cash card as providers were nominated by their patients to disclose results may not provide true randomization. We are not aware of any ways that this would have biased our findings in this unblinded study, however, and we used multivariable logistic regression to balance known confounders. Second, we had relatively limited covariates for non-responding PCPs, which limited the comparisons of responding and non-responding providers. Third, 42 PCPs, all in the cash card arm, received an intensified survey reminder approach, with a third reminder mailing enclosing a second incentive. We do not believe that this substantially affected our findings, since only 4 PCPs responded to this third reminder. However, since all of these PCPs received cash cards, the third reminder could have biased our findings towards the null. Lastly, our findings may not be generalizable to PCPs practicing outside major cities, or to other cities in the U.S. Nonetheless, we believe that these findings provide valuable information for researchers who are considering what types of incentives to use for provider surveys.

## Conclusion

Monetary incentives in the form of upfront checks may increase clinician survey response rates more than upfront cash card incentives. However, the differential impact of these incentives appears to be region-specific. Further research is needed to explore these differences and further inform the most effective and cost-effective strategies to optimize clinician survey responses.

## Abbreviations

*BRCA*

*BReast CAncer gene*

*PCP*

*Primary Care Provider*

*BFOR*

*BRCA Founder OutReach*

## Declarations

### Consent for publication

Not applicable.

## **Ethical approval and consent to participate**

Ethical approval was obtained from the Advarra central IRB for all study sites, with additional oversight by study institutions. Study participants undergoing *BRCA1/2* testing provided written informed consent. Consent was implied for providers responding to the surveys.

## **Availability of data and materials**

The datasets used and analyzed during the current study are available from the corresponding author on reasonable request.

## **Competing interests**

The authors declare that they have no competing interests.

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## **Author contributions:**

LEP and NLK conceived of and designed the provider incentive study. JL (Levin), KM, AB, CJ, SMD, NT, BK, SCR, CG, YSL, JG, JGH, KO, DK, HS, KS, JL (Lester) contributed to the acquisition of the data. LEP, YSL and NLK analyzed and interpreted the data. LEP, YSL and NLK drafted the manuscript. BK, JG, KO, SMD, KM, JGH, HS, DK, JL (Lester) substantively revised it. All authors have approved the submitted version and have agreed both to be personally accountable for the author's own contributions and to ensure that questions related to the accuracy or integrity of any part of the work, even ones in which the author was not personally involved, are appropriately investigated, resolved, and the resolution documented in the literature.

## Acknowledgements

Not applicable.

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## Supplementary Files

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- [CONSORTchecklistFINAL.docx](#)