Supplementary Table 1. Participant Baseline and Follow-up Survey Measures

Domain	Content
Baseline Medical Survey (completion rate [a] = 93.9%)	
Demographics and personal medical history	Investigator-designed items regarding age, mailing address, sex assigned at birth, personal history of cancer, cancer screening, experience with genetic testing, and healthcare provider involvement in care; 25 items
Family cancer history	Investigator-designed items regarding family history of *BRCA1/2* genetic testing, breast, ovarian, prostate, and pancreatic cancer; 12 items
Anxiety	Six-item short-form of the state scale of the Spielberger State-Trait Anxiety Inventory (STAI) [1]
Chatbot satisfaction	Investigator-designed item asking how likely participants would be to use a similar chatbot again for another healthcare or research experience on a scale of 1-10; 1 item
Other	Investigator-designed items regarding how participants heard about the BFOR study and rationale for provider choice;3 items
Baseline Psychosocial Survey (completion rate [b] = 85.0%)	
Cancer-specific distress	Impact of Event Scale (IES) – anchored to "being at risk of cancer"; 15 items [2]
Perceived risk	Measures of absolute lifetime risk (rated from 0%-100%) for breast, ovarian, and prostate cancer; 3 items
Knowledge	Investigator-designed items regarding knowledge about *BRCA1/2* testing; 10 items
12-Week Medical Survey (completion rate [c] = 52.6%)	
Cancer risk management	Investigator-designed items regarding cancer risk management including surgical decision making for participants with positive results; 10 items
Additional genetic testing	Investigator-designed items regarding additional genetic testing for participants with negative results and a family history justifying additional testing; 6 items
Other	Investigator-designed items regarding referral of family and friends, reason for participation, rating of participation experience, and to whom participants have spoken with their results about; 10 items
12-Week (completion rate [d] = 50.0%) and Annual Psychosocial	
Cancer-specific distress	Impact of Event Scale (IES) – anchored to "being at risk of cancer"; 15 items [2]
Perceived risk	Measures of absolute lifetime risk (rated from 0%-100%) for breast, ovarian, and prostate cancer; 3 items
Satisfaction with genetic testing decision	Satisfaction with Decision (SWD) scale; 5 items [3]
Anxiety	Six-item short-form of the state scale of the Spielberger State-Trait Anxiety Inventory (STAI) [1]
Concerns about genetic testing	Multidimensional Impact of Cancer Risk Assessment (MICRA) that assesses distress, uncertainty, and positive experiences following genetic testing; 25 items [4]
Family communication	Investigator-designed items about communication of genetic

	testing results within the family; 5 items
Knowledge	Investigator-designed items regarding knowledge about *BRCA1/2* testing; 10 items
Self-concept	BRCA1/2 Self-Concept Scale that assesses stigma, vulnerability and mastery following testing; 17 items [5]

Baseline surveys were administered following digital pre-test education and included demographics, a required medial survey, and an optional psychosocial survey. 12-week follow-up surveys were administered at 12-weeks post reported results disclosure and included both medical and psychosocial components.

[a] Completion rate is calculated among the 5,193 enrolled participants, and is based on participants completing at least 1 item within the survey as of March 2020. Survey completion did not differ by region or by ADI (ps>0.05).

[b] Completion rate is calculated among the 5,193 enrolled participants, and is based on participants completing at least 1 item within the survey as of March 2020. Survey completion differed by region (Philadelphia: 89.5%, Boston: 85.9%, New York City: 83.7%, Los Angeles: 83.1%, p<0.001), sex (female: 93.0%, male: 89.2%, p<0.001), age (OR=1.02, 95% CI 1.01-1.02, p<0.001), having a PCP (yes: 91.3%, no: 83.4%, p<0.001), and BRCA prior probability (increased prior probability: 93.7%, low prior probability: 91.8%, familial PV: 90.1%, p=0.017), but not by personal cancer history, baseline anxiety, or ADI (ps>0.05).

[c] Completion rate is calculated among the 3,932 participants who completed study genetic testing and had been sent the survey as of March 2020, and is based on participants completing at least 1 item within the survey. Survey completion differed by region (Philadelphia: 56.8%, Boston: 53.9%, New York City: 51.4%, Los Angeles: 50.0%, p=0.021), BRCA prior probability (low prior probability: 56.6%, familial PV: 49.2%, increased prior probability: 47.2%, p<0.001), and age (OR=1.01, 95% CI 1.00-1.01, p=0.03), but not by sex, having a PCP, personal cancer history, baseline anxiety, ADI, or test results (ps>0.05).

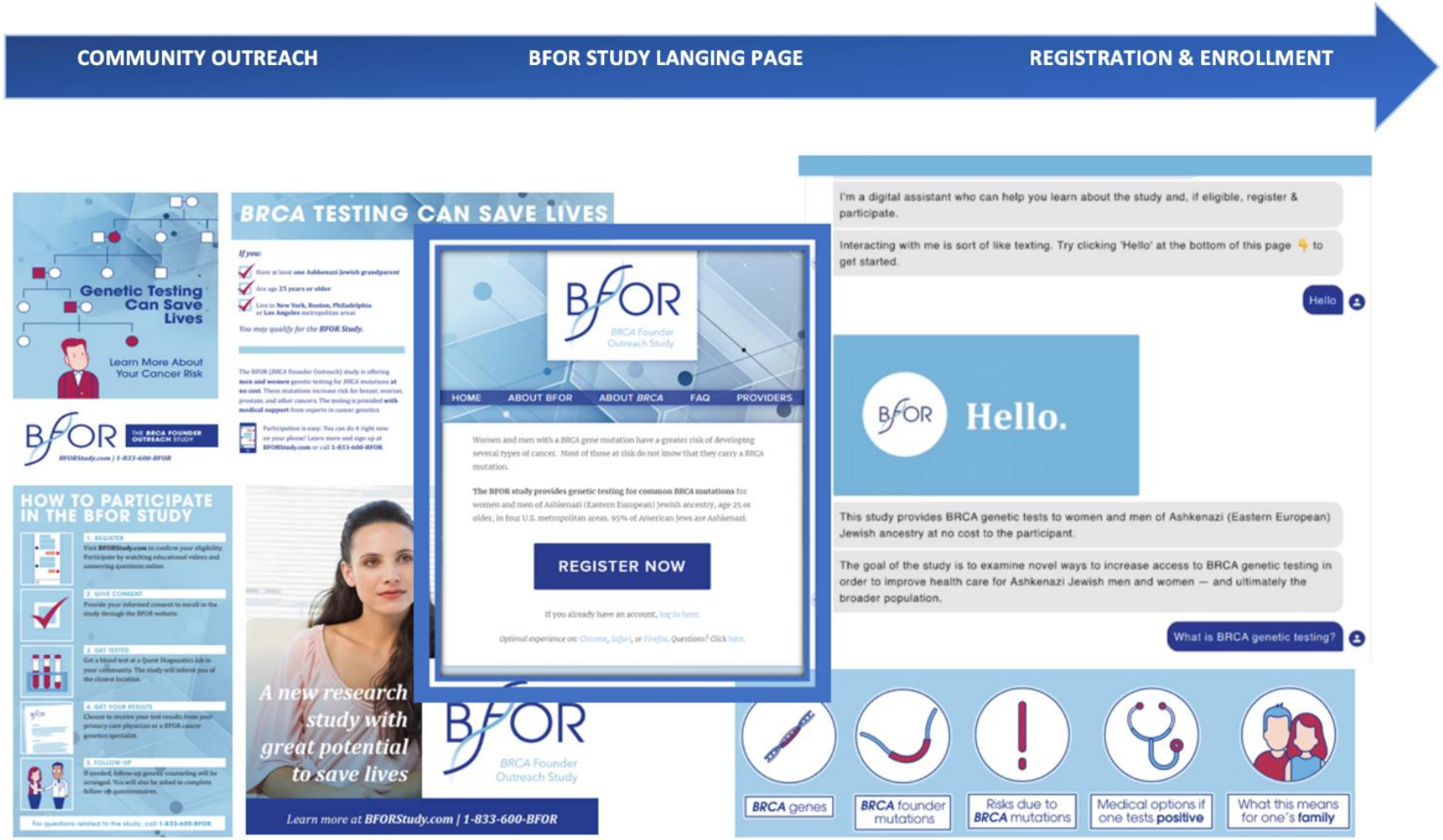
[d] Completion rate is calculated among the 3,932 participants who completed study genetic testing and had been sent the survey as of March 2020, and is based on participants completing at least 1 item within the survey. Survey completion differed by region (Philadelphia: 53.2%, Boston: 52.1%, New York City: 49.3%, Los Angeles: 46.5%, p=0.02) and BRCA prior probability (low prior probability: 54.0%, increased prior probability: 44.9%, familial PV: 44.5%, p<0.001), but not by sex, age, having a PCP, personal cancer history, baseline anxiety, ADI, or test results (ps>0.05).

Supplementary Table 2. Genetic Test Results According to *BRCA* Prior Probability

***BRCA* Prior Probability**	**Result**
2,304 Low Prior Probability of a PV participants completed GT	21 (0.9%) Positive GT
	2,283 (99.1%) Negative GT
1,490 Increased Prior Probability of a PV participants completed GT	31 (2.1%) Positive GT
	1,459 (97.9%) Negative GT
315 Familial PV participants completed GT	86 (27.3%) Positive GT
	229 (72.7%) Negative GT

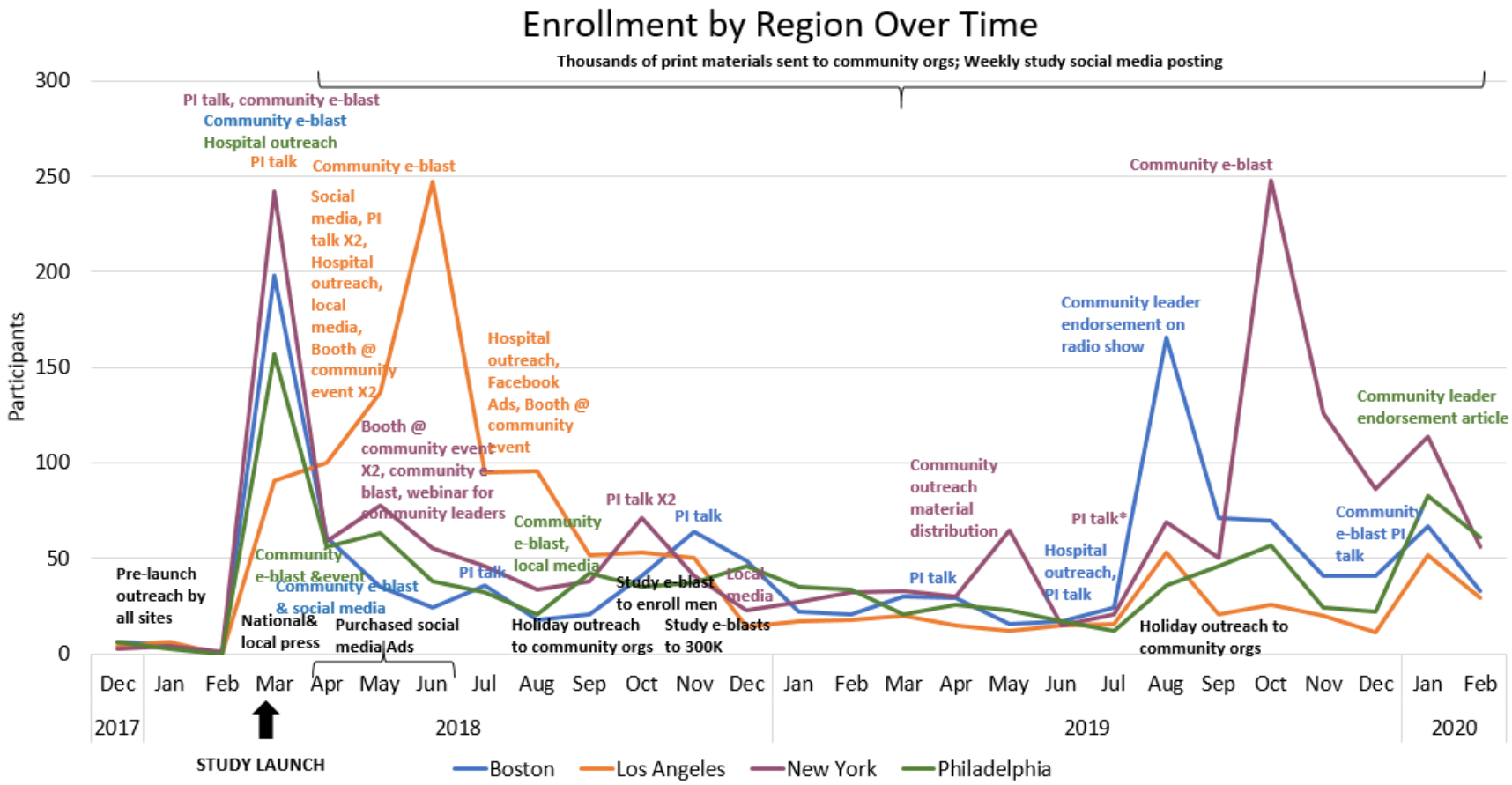
GT= Genetic Testing, PV = Pathogenic Variant.

Supplementary Figure 1. Participant Recruitment and Enrollment



From left to right: Example study advertisements, BFOR study enrollment landing page (www.bforstudy.com), and chatbot utilized for enrollment and registration.

Supplementary Figure 2. Enrollment by Region Over Time



Enrollment by region over time. Enrollment over time by region and corresponding local and national outreach events are shown. *In one instance, of the 354 community leaders who were invited to a webinar hosted by a study PI, 4 attended the virtual event.

Supplementary Methods 1a: Methods of Study Outreach

Participants were recruited to the BFOR study through community-based outreach. To identify and facilitate community partnerships, the BFOR study engaged a public relations firm starting in February 2017 through December 2018. These subject matter experts identified and facilitated engagement with prospective community partners, provided guidance on marketing strategies, and prepared recruitment materials for IRB approval. The BFOR study assembled a community advisory board comprised of members identified as community leaders to also guide the overall outreach and engagement strategy.

In advance of the study launch, 174 prospective community partners were identified. Study investigators and staff contacted prospective community partners (via phone, email, mail, or social media) to offer a meeting to discuss the study and identify opportunities for partnership. Community organizations and leaders could partner with BFOR in the following ways: serving on the community advisory board, formally endorsing the study, sending an email blast to their constituents, sharing BFOR social media content, hosting an event, and featuring BFOR through their own newsletter, website, or public events. The BFOR study team continued to engage these prospective and current community partners throughout the course of the study through emails, attendance at events, investigator-led talks and panels, webinars, and the distribution of digital and print outreach materials.

In addition to connecting with community leaders, the BFOR study also deployed social media marketing, email blasts, and print media. On social media, the study maintained Facebook and Twitter pages throughout the study with regular posting of IRB approved outreach materials. Additionally, a 3-month Ad campaign ran from March 2017-June 2017 with paid advertisements on Facebook and Google. The study deployed a variety of study-initiated email strategies. Throughout the study, study notifications to current participants included a reminder to consider referring friends and family members to enroll. Following the observation that a preponderance of women were enrolling in the study, an email notification to participants to remind them of the importance of BRCA testing for men as well as women was added in September 2018. All prospective and current community partners as well as participants were emailed in November 2018 with the notification that the study had reached the halfway point to full accrual. Also in the Fall of 2018, the study sent three email blasts to over 300,000 individuals of probable AJ ancestry to introduce the study. Lastly, the BFOR study was featured in: New York Jewish Week, The Forward, Jewish Telegraphic Agency, Times of Israel, Genome Wed, Cleveland Jewish News, Jewish Exponent, Jewish Journal, Philadelphia Jewish Voice, Philadelphia Inquirer, the Jewish Orthodox Feminist Alliance's blog, the Jewish Link, Jewish Home, Jewish Community Voice, JNS, 5 Towns Jewish Times, Florida Jewish Journal, the Stoller Report, Kveller, the Jewish Link, the Jewish Bridge, the Bridge, and WBUR.

Supplementary Methods 1b: Quantity of Study Outreach by Site

	Study Investigator Outreach to Community Leaders/Organizations	Study Investigator Presence at Community Event	Email Blasts from Study to Community Members and Participants	Print materials Sent to Community Organizations	Social Media Ads	Print Media
New York	45	12	Yes	>1000 documents	Yes	Yes
Los Angeles	38	10	Yes	>1000 documents	Yes	Yes
Boston	25	8	Yes	>1000 documents	Yes	Yes
Philadelphia	30	14	Yes	>1000 documents	Yes	Yes
National	36					
All sites	174	44	3 e-blasts to 300,000 community members	>4000 documents	3-month campaign	>20 articles

Supplementary Methods 2: *BRCA* Prior Probability Algorithm

An algorithm derived from NCCN *BRCA1/2 (BRCA)* testing guidelines at the time of study inception[6] was created in order stratify participants into *BRCA* prior probability categories based on their personal and family cancer history and their family history of genetic testing without taking their Ashkenazi Jewish (AJ) ancestry into account in order to determine who fulfilled general population guidelines for complete gene *BRCA* testing . These categories informed method of results disclose and recommended follow-up for participants who tested negative. To make this assessment, participants were asked to answer a set of questions about their personal and family history of breast, ovarian, prostate, and pancreatic cancer as well as their family history of *BRCA* genetic testing during study registration. The below details the *BRCA* prior probability categories and personal/family history question triggers for each of these categories.

***BRCA* Prior Probability Category:** Individuals were categorized based on whether they met NCCN *BRCA* testing guidelines without taking their Ashkenazi Jewish (AJ) ancestry into account:

a) **Low Prior Probability of a Pathogenic Variant (PV):** Individuals who did not meet NCCN criteria without taking their AJ ancestry into account were deemed to be at low risk of having a *BRCA* PV;
b) **Increased Prior Probability of a Pathogenic Variant (PV):** Individuals who met NCCN criteria without taking their AJ ancestry into account were deemed to be at an increased risk of having a *BRCA* PV;
c) **Familial Pathogenic Variant(PV):** Individuals at risk for a reported familial *BRCA* PV.

Triggers for Low Prior Probability of a PV:

None; If none of the below question triggers are met, participant is assigned **Low Prior Probability of a PV**

Triggers for Familial PV:

1. "Has someone in your family had *BRCA* genetic testing that was positive?", **Yes = Familial PV**

Triggers for Increased Prior Probability of a PV:

<u>Family History Triggers</u>

"Please consider those who are related to you by blood.
These include your children, parents, brothers and sisters, nieces and nephews, aunts and uncles, and cousins.
Also consider your grandparents, grandchildren, great-grandparents, great-grandchildren, grandchildren of your brothers and sisters, and great-aunts and uncles."

1. "Do you have a relative with ovarian cancer?", **Yes= Increased Prior Probability of a PV**
2. "Do you have a relative with breast cancer?", If Yes:
    - "Is this relative diagnosed at or before age 50?", **Yes= Increased Prior Probability of a PV**
    - "Was she diagnosed with triple-negative breast cancer at or before age 60?", **Yes= Increased Prior Probability of a PV**
    - "Is this relative male?", **Yes= Increased Prior Probability of a PV**

2. “Are there 3 individuals on the same side of the family with either breast cancer (any age), or pancreatic cancer, or prostate cancer? Please include yourself, if applicable.”, **Yes = Increased Prior Probability of a PV**

Personal History Triggers

1. “Have you ever been diagnosed with ovarian cancer?”, **Yes= Increased Prior Probability of a PV**
2. “Have you ever been diagnosed with breast cancer?”, If Yes:
    - “Were you diagnosed at age 50 or younger?”, **Yes= Increased Prior Probability of a PV**
    - “Are you male?”, **Yes= Increased Prior Probability of a PV**
    - “Was your breast cancer “triple negative” i.e. estrogen, progesterone and HER2/neu receptors all were negative?”, If Yes: “Were you diagnosed at age 60 or younger?”, **Yes to both= Increased Prior Probability of a PV**

Supplementary Methods 3: Methods of Results Disclosure for BFOR Participants

Method of results disclosure for participants was dependent upon their disclosing provider (BFOR vs. PCP), their test results, and for those who tested negative, their *BRCA* prior probability category:

- All participants who tested positive received their results directly from their disclosing provider.
- For all participants who had a BFOR provider and tested negative (regardless of *BRCA* prior probability), results along with a letter detailing recommended follow-up were sent by mail directly to participants.
- For all participants with results disclosed by a BFOR provider, results were ultimately sent to all PCPs whom participants listed during registration to promote inclusion of results in medical records.
- For participants with a Low Prior Probability of a PV who tested negative and had a PCP provider, results along with a letter detailing results interpretation were sent directly to participants and PCPs were informed that their patients' results had been disclosed.
- For participants with an Increased Prior Probability of a PV or a Familial PV who tested negative and had a PCP provider, results were disclosed by the PCP.
- For all results disclosed by PCPs, a letter detailing results interpretation, and the participant's personal and family history of cancer provided to the study at baseline were sent directly to the PCPs to notify them of the results and aid in their disclosure.
- PCPs were asked to report to the BFOR team when results had been disclosed. The BFOR team contacted any participants whose PCP had not reported disclosure 7 weeks after results were sent to that provider.

SUPPLEMENTARY REFERENCES:

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