

Coordinating Independent Cancer Catchment Area Surveys to Estimate Health Information Access for an Entire State: The Case of Virginia

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UNIVERSITY
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WELDON COOPER CENTER
for PUBLIC SERVICE
CENTER *for* SURVEY RESEARCH

Authors

Thomas M. Guterbock, University of Virginia

Bernard F. Fuemmeler, Virginia Commonwealth University

Kara S. Fitzgibbon, University of Virginia

Deirdre Middleton, ICF

Kelly Martin, ICF

Lee Harding, ICF

David Wheeler, Virginia Commonwealth University

Gordon D. Ginder, Virginia Commonwealth University

Roger T. Anderson, University of Virginia

Rajesh Balkrishnan, University of Virginia

Ronaldo Iachan, ICF



Overview

- Background and purpose
- Coordination efforts
- Two surveys, similar methods
- Weighting the combined sample
- Comparison to Virginia BRFSS
- Our statewide estimates: HINTS variables
- Concluding remarks

Background

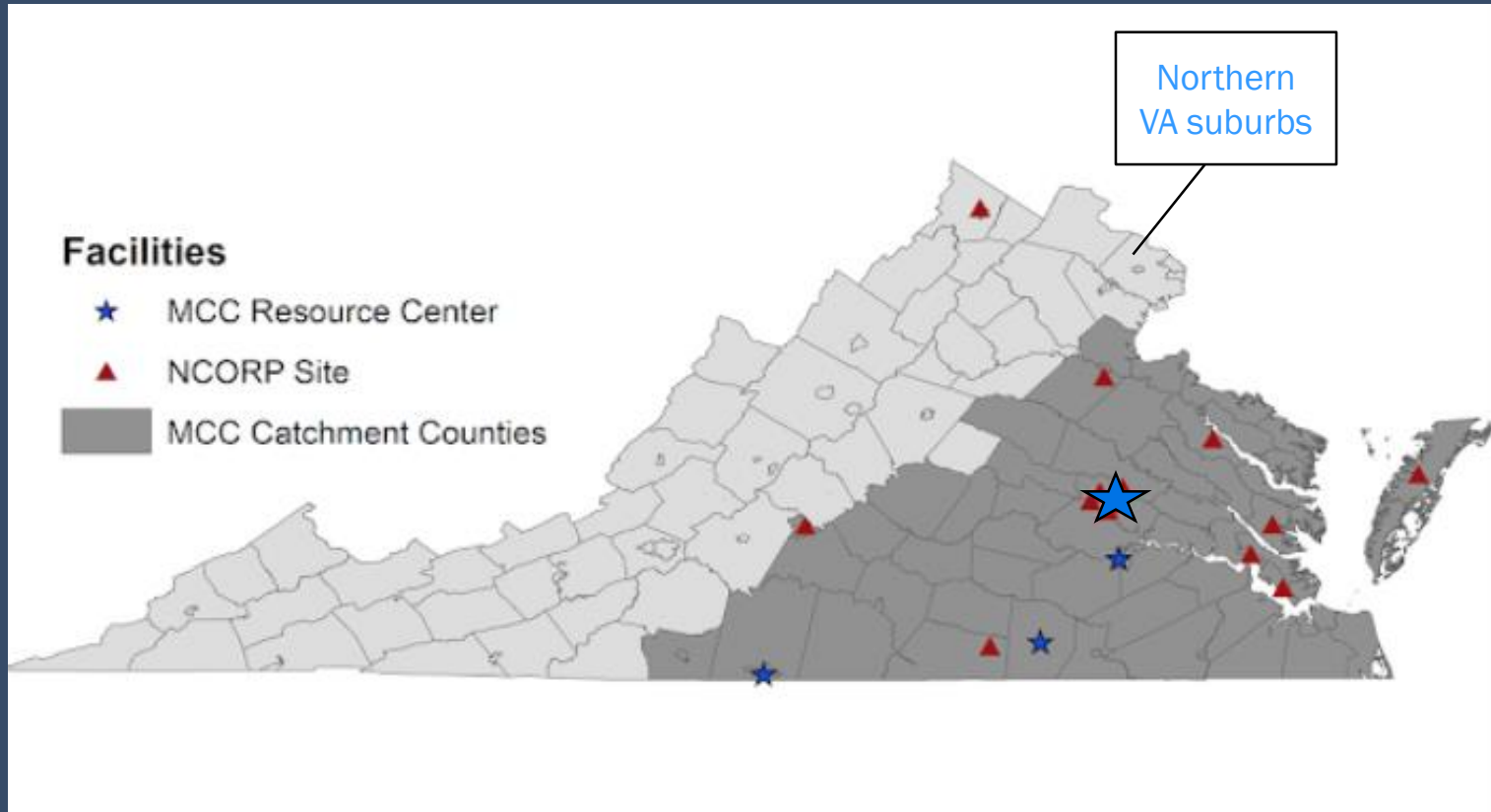
- National Cancer Institute awarded supplements to 29 NCI-designated cancer centers in 2016 and 2018
- Each center surveyed populations in its catchment area, using HINTS questions
 - HINTS: Health Information National Trends Survey
- Two Virginia cancer centers received 2018 awards
 - UVA: University of Virginia Emily Couric Cancer Center
 - VCU: Virginia Commonwealth University Massey Cancer Center
- Their two catchment areas jointly cover most of the state

Purpose

- HINTS asks about cancer beliefs, behaviors
 - But HINTS results are only available at national and regional levels
- BRFSS does not have key indicators of cancer perceptions, information sources
 - Not available at county level, so match to catchment area is only approximate
- *Can we combine our results to generate valid state-wide estimates of cancer beliefs and behaviors?*

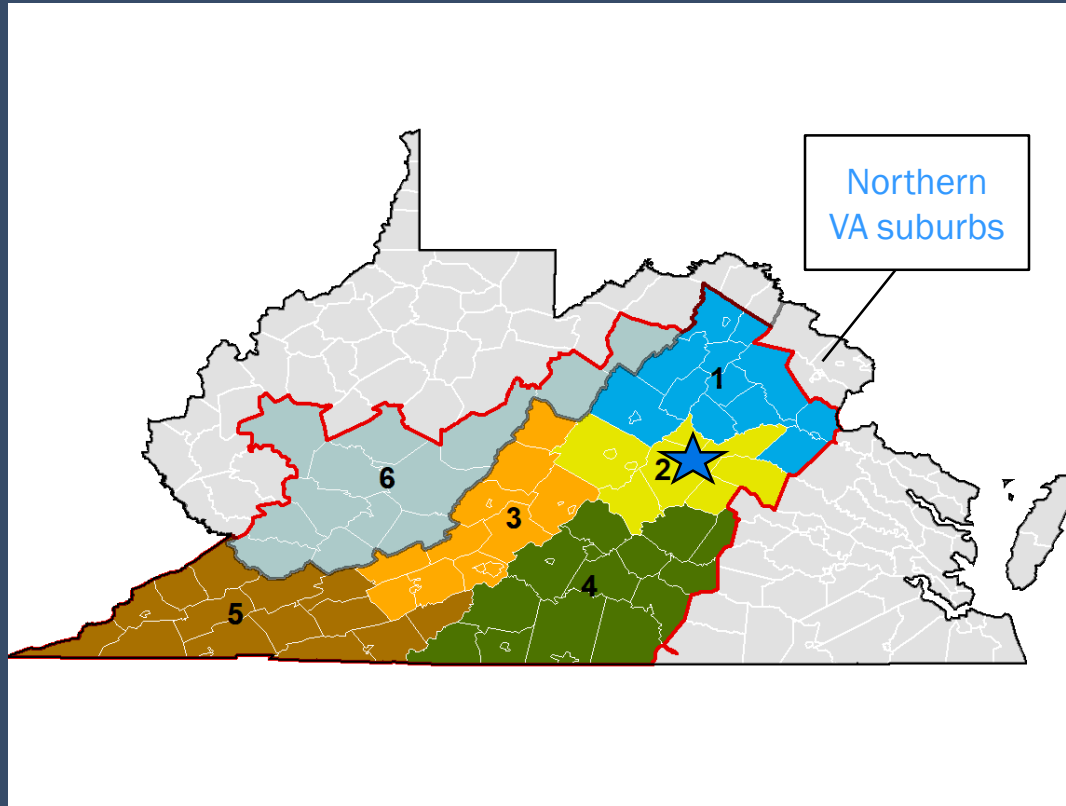
Coordination efforts

VCU Catchment Area



- VCU main hospital is in Richmond, VA
- Includes Virginia's Eastern Shore
- Does not reach into Northern Virginia





UVA Catchment Area

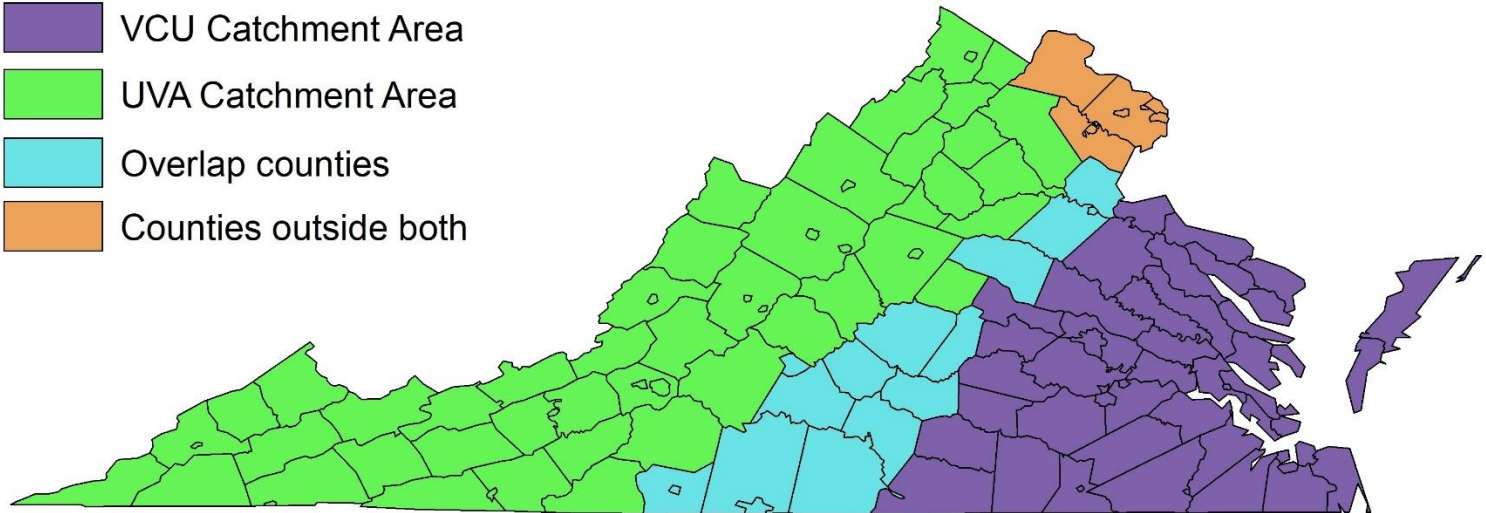


- UVA main hospital is in Charlottesville, region 2
- Divided into six analysis regions
- Does not reach into Northern Virginia (23% of state pop'n)
- Region 6 is in West Virginia (excluded from this analysis)

UVA & VCU Areas Combined

Legend

-  VCU Catchment Area
-  UVA Catchment Area
-  Overlap counties
-  Counties outside both



- Catchment areas overlap (blue-colored counties)
- Neither covers Northern Virginia

Sampling the whole state

- Overlap counties
 - Included in sample for both UVA and VCU surveys
 - Sample lists checked for duplicates
 - Sampling rates are affected by inclusion in both samples
- Counties outside both (Northern Virginia)
 - Allocated between UVA and VCU
 - All were sampled
 - But sampled at lower rates (due to cost)
- Result: Surveys jointly covered ALL of Virginia

Harmonizing the questionnaires

- NCI specified a list of “core” questions recommended for all participating centers
 - Many of these were included in both surveys
- UVA questionnaire was reviewed by VCU before fielding, and several questions modified to match UVA wording
- Both questionnaires include key items asked statewide by BRFSS and nationally by HINTS

Comparison of Survey Methods

VCU & UVA methods similar

- Both surveys used both probability and non-probability methods
 - Only probability samples considered here
- Both used ABS samples
 - With multiple mailings, incentives, web option
- Both survey instruments were lengthy
- UVA sample was stratified by 6 Virginia regions
 - Sampled at unequal rates
- UVA added cell phone RDD sampling
 - But only 68 completions resulted [RR3 \approx 3%]
 - UVA phone completions are included here

Mail-out protocols comparable

UVA Survey

- Advance letter
- First packet with \$2
- Reminder postcard
- Second packet
 - Web option offered
 - \$10 contingent incentive
- Close-out postcard

- Mailed to: 2,380
- Mail completes: 601
- AAPOR RR4: 25.3%

VCU Survey

- Advance letter
 - Includes web link
- First packet with \$2
 - Web option offered
 - \$20 contingent incentive
- Reminder postcard
- Second packet

- Mailed to: 6,000
- Mail completes: 895
- RR4: 17.0%

Weighting the Combined Samples

Multi-step weighting process

- Weighting conducted by ICF (using SAS)
- Base weights to correct for . . .
 - Region-specific sampling rates in UVA catchment
 - Dual sampling of overlap counties
 - Lower sampling rate in non-covered counties
- Post-stratification raking for . . .
 - Sex
 - Race/ethnicity
 - Age
 - Education

Effect of weighting

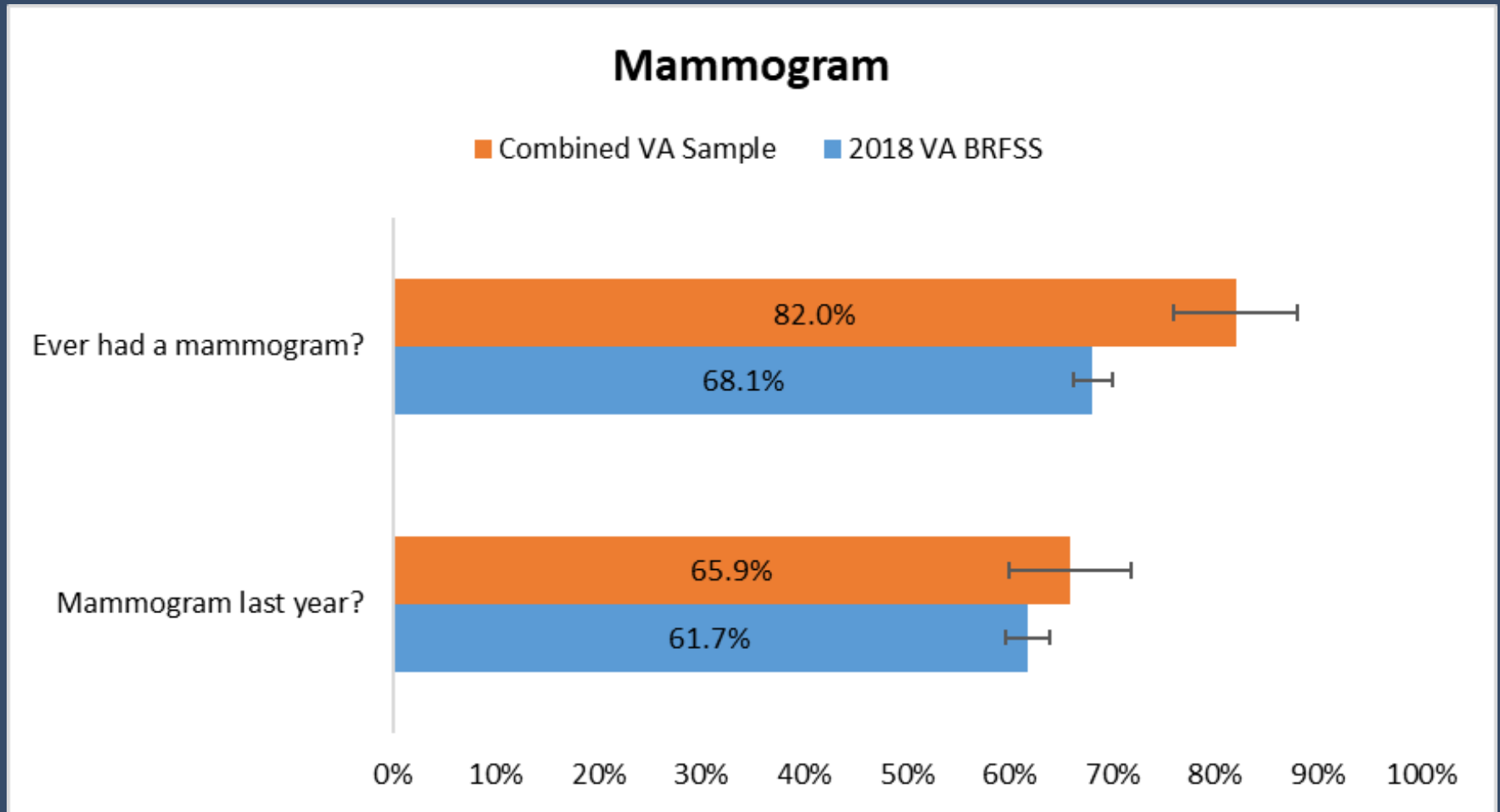
- Design effects range around ~ 3.0
- Final case count:
 - VCU: 767
 - UVA: 729
 - Total: 1,496
- Approximate effective sample size:
- ~ 500
 - Margin of error: ± 4.4 percentage points

Comparison to 2018 Virginia BRFSS results

Comparable items

- The Behavioral Risk Factor Surveillance Survey [BRFSS] is conducted annually in Virginia
 - Statewide n for 2018: 10,321
- Directly comparable items:
 - HADMAM—Ever had a mammogram [asked of women over 40]
 - HOWLONG—Time since last mammogram
 - BLDSTOOL—Ever had blood stool test [asked of all over 40]
 - LSTBLDS3—How long since last blood stool test
 - HADCOL—Ever had a colonoscopy [asked of all over 40]
 - LASTCOL—How long since last colonoscopy
- None of these was asked of all respondents

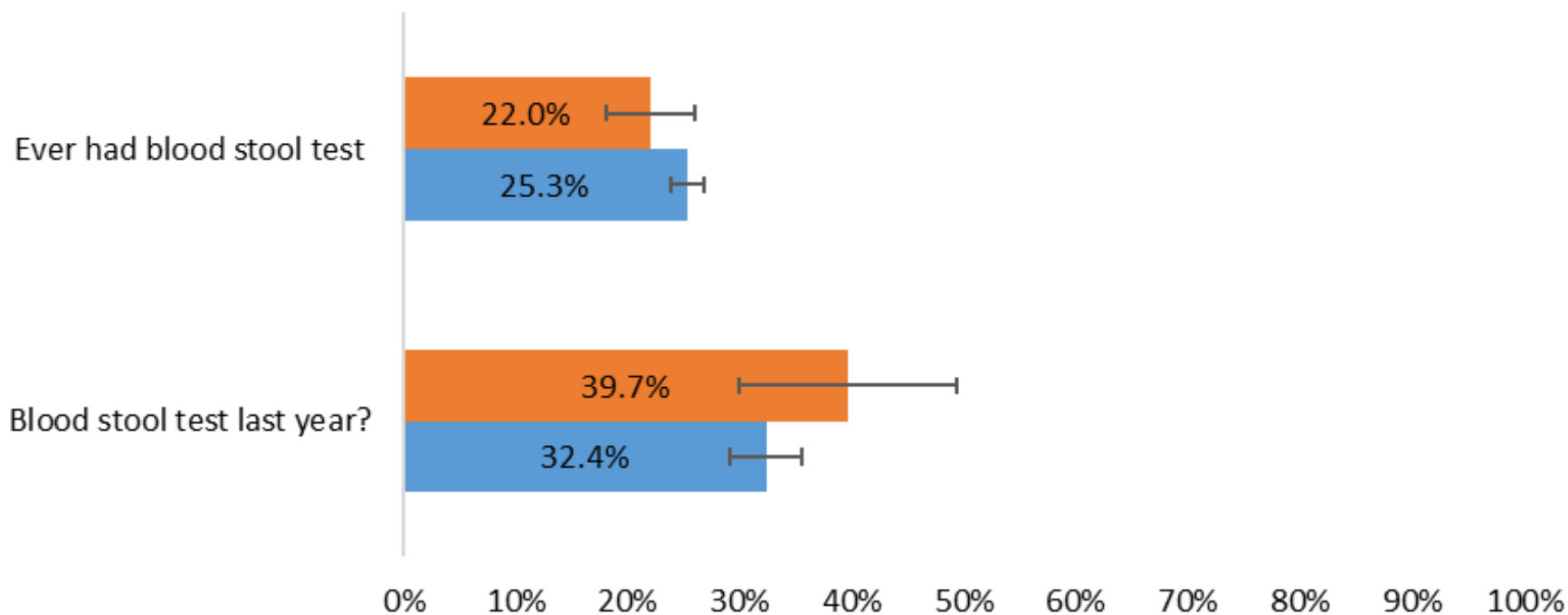
Combined sample compared to BRFSS



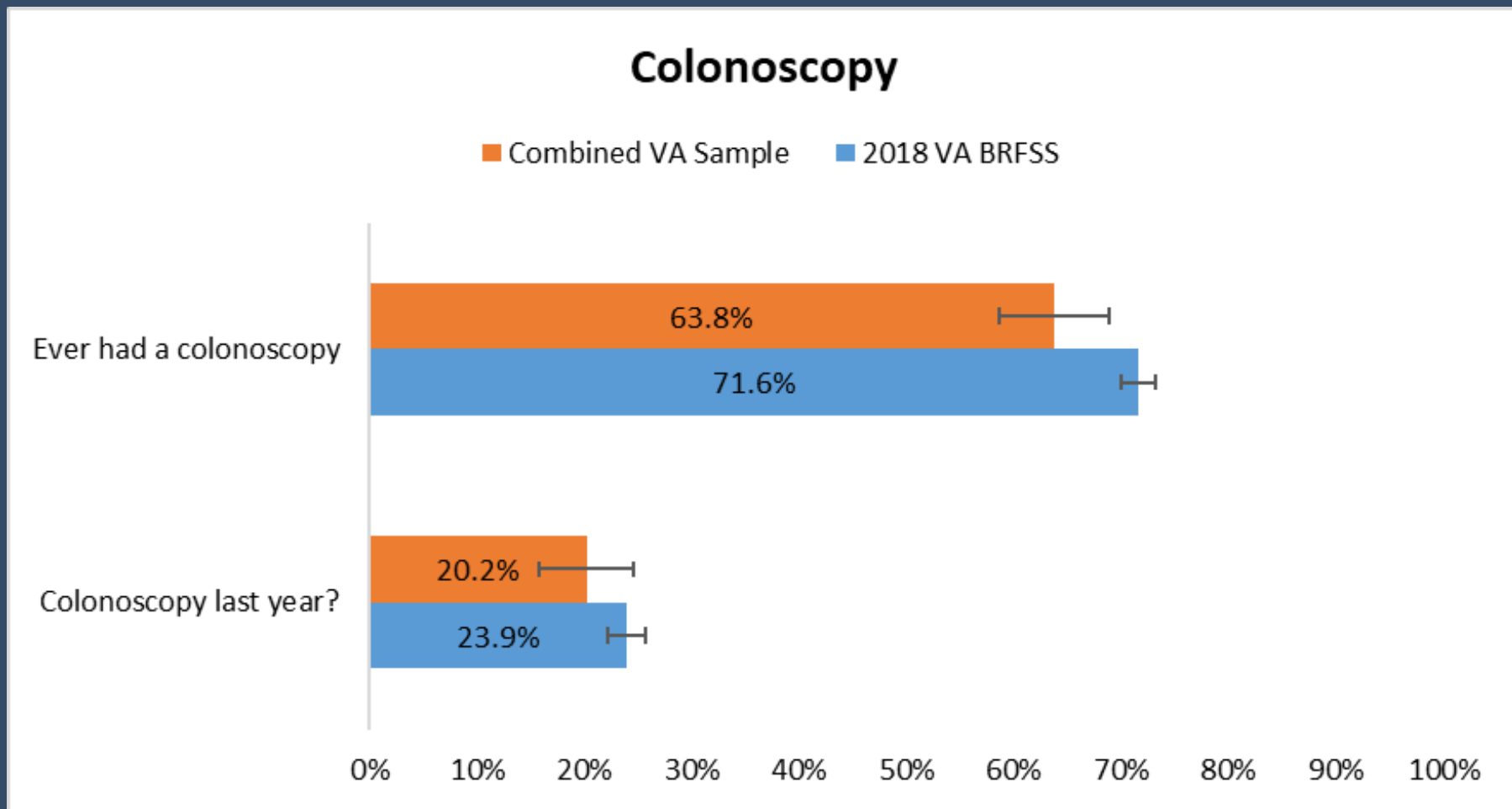
Combined sample compared to BRFSS

Blood Stool Test

Combined VA Sample 2018 VA BRFSS



Combined sample compared to BRFSS



New Estimates for the State of Virginia

Key variables from HINTS

Results for HINTS behavior Q's

Item	Combined VA Sample Estimate	n of cases	National HINTS	Difference
Have looked at your medical records online	52.2%	1460	38.9%	13.3%*
Have been diagnosed as having cancer	17.4%	1449	9.5%	7.9%*
Have smoked at least 100 cigarettes in your entire life	41.6%	1460	35.9%	5.7%
Now smoke cigarettes everyday	22.1%	607	24.4%	-2.3%
Have used an e-cigarette, even one or two times	14.5%	1448	19.4%	-4.9%
Now use an e-cigarette every day	2.5%	283	10.7%	-8.2%*
Talked with health professional about lung cancer test, past 12 months	7.1%	1454	4.0%	3.1%
Have heard of the cervical cancer vaccine or HPV shot	72.3%	1436	64.2%	8.1%*
Health care professional recommended HPV vaccine, last 12 months	13.1%	1443	23.1%	-10.0%*

* Indicates the difference is statistically significant at .05 level

Results for HINTS attitude Q's

Item	Combined VA Sample Estimate	n of cases	National HINTS	Difference
It seems like everything causes cancer	59.0%	1423	71.6%	-12.0%*
There's not much you can do to lower your chances of getting cancer	23.6%	1427	30.9%	-7.4%*
It's hard to know which recommendations to follow about preventing cancer	74.1%	1430	74.8%	-1.1%
Cancer is most often caused by a person's behavior or lifestyle	43.6%	1421	62.7%	-18.5%*
When I think about cancer, I automatically think about death	58.8%	1428	62.9%	-4.1%

*Indicates the difference is statistically significant at .05 level.

Percentages in this table combine strongly agree and somewhat agree

Results for HINTS info search Q's

Item	Combined VA Sample Estimate	n of cases	National HINTS	Difference
It took a lot of effort to get the information you needed	35.3%	1170	37.9%	-2.6%
You felt frustrated during your search for the information	36.1%	1166	34.5%	1.6%
You were concerned about the quality of the information	52.1%	1171	56.0%	-3.9%
The information you found was hard to understand	27.0%	1168	34.7%	-7.7%

These differences are not statistically significant.
Percentages in this table combine strongly agree and somewhat agree

Concluding remarks

. . . and Limitations

Concluding remarks

- Hope these results will inform cancer action planning for the State of Virginia
 - Results to be shared with policy leaders at the state level
- Possible biases
 - Higher engagement with health system?
 - Topic-salience bias? Sponsors were Cancer Institutes
- Limitations
 - NoVa sample not large enough, given region size
 - Large design effect from weighting to correct differences between sample and population

Acknowledgements

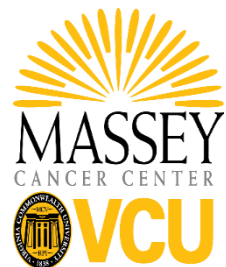
VCU: Sources of Funding & Team Members

FUNDING

P30CA016059-37S2 (“Massey Cancer Center Support Grant – Population Health Assessment in Cancer Center Catchment Areas”)

TEAM MEMBERS

Gordon D. Ginder, MD and Robert Winn, MD (PI)
Bernard F. Fuemmeler, PhD, MPH – PD
David C. Wheeler, PhD, MPH – Co-I
Sun Jung (Sunny) Kim, PhD – Co-I
Bassam Dahman, PhD – Biostatistician
Tamas Gal, PhD – Cancer Informatics
Carrie A. Miller, PhD – NCI T32 Post Doctoral Fellow
Albert J. Ksinan, PhD – Data Scientist
Bonny B. Morris - Doctoral Candidate
Elizabeth K. Do, PhD, MPH – Program Coordinator
Westley L. Fallavollita, BS – Research Assistant
Kendall Fugate-Laus, BS – Research Assistant



UVA: Sources of Funding & Team Members

FUNDING

P30CA044579-27S5 (“Population Health Supplement to the University of Virginia Cancer Center”)

TEAM MEMBERS

Thomas P. Loughran, Jr. – PI

Roger T. Anderson – Co-I

Rajesh Balkrishnan – Co-I

George P. Batten – Project coordinator

Wendy F. Cohn – Associate Director, Community Outreach & Engagement

Raj P. Desai --Biostatistician

Noelle E. Voges – Project coordinator

Lindsay Hauser – Community Outreach Coordinator

Bryan E. Price – Community Outreach Specialist

Kara S. Fitzgibbon – Director, Center for Survey Research

Thomas M. Guterbock – Academic Director, Center for Survey Research

Sean M. Johnson – Survey Operations Manager, Center for Survey Research

Hexuan Zhang – Research Analyst, Center for Survey Research

Contact info

For further information contact:

- Ronaldo Iachan, ICF: Ronaldo.Iachan@ICF.com
- Roger Anderson, UVA: ra2ee@Virginia.edu
- Bernard Fuemmeler, VCU:
Bernard.Fuemmeler@vcuhealth.org
- Tom Guterbock, UVA: TomG@Virginia.edu

Appendix Tables

With confidence intervals

Combined sample compared to BRFSS

Item	Combined Sample	n of cases	2018 BRFSS	Difference
Ever had a mammogram?	82.0% (76.0%, 88.0%)	713	68.1% (66.2%, 70.0%)	13.9%*
Mammogram last year?	65.9% (60.0%, 71.8%)	643	61.7% (59.6%, 63.9%)	4.2%
Ever had blood stool test	22.0% (18.1%, 26.0%)	1208	25.3% (23.9%, 26.8%)	-3.3%
Blood stool test last year?	39.7% (29.9%, 49.4%)	358	32.4% (29.2%, 35.5%)	7.3%
Ever had a colonoscopy	63.8% (58.7%, 68.8%)	1216	71.6% (70.0%, 73.2%)	-7.8%*
Colonoscopy last year?	20.2% (15.8%, 24.5%)	873	23.9% (22.2%, 25.6%)	-3.7%

*Indicates the difference is statistically significant at .05 level.

Results for HINTS behavior Q's

Item	Combined VA Sample Estimate	n of cases	National HINTS	Difference
Have looked at your medical records online	52.2% (47.7%, 56.6%)	1460	38.9% (36.9%, 40.9%)	13.3%*
Have been diagnosed as having cancer	17.4% (14.4%, 20.5%)	1449	9.5% (9.4%, 9.6%)	7.9%*
Have smoked at least 100 cigarettes in your entire life	41.6% (37.1%, 45.9%)	1460	35.9% (33.3%, 38.5%)	5.7%
Now smoke cigarettes everyday	22.1% (16.7%, 27.4%)	607	24.4% (21.0%, 27.8%)	-2.3%
Have used an e-cigarette, even one or two times	14.5% (11.1%, 18.0%)	1448	19.4% (17.0%, 21.8%)	-4.9%
Now use an e-cigarette every day	2.5% (0.0%, 5.5%)	283	10.7% (5.5%, 15.9%)	-8.2%*
Talked with health professional about lung cancer test, past 12 months	7.1% (4.9%, 9.3%)	1454	4.0% (3.0%, 5.1%)	3.1%
Have heard of the cervical cancer vaccine or HPV shot	72.3% (68.3%, 76.2%)	1436	64.2% (61.2%, 67.2%)	8.1%*
Health care professional recommended HPV vaccine, last 12 months	13.1% (9.7%, 16.5%)	1443	23.1% (19.2%, 26.9%)	-10.0%*

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Results for HINTS attitude Q's

Item	Combined VA Sample Estimate	n of cases	National HINTS	Difference
It seems like everything causes cancer	59.0% (54.5%, 63.5%)	1423	71.6% (69.4%, 73.9%)	-12.0%*
There's not much you can do to lower your chances of getting cancer	23.6% (19.8%, 27.4%)	1427	30.9% (28.3%, 33.5%)	-7.4%*
It's hard to know which recommendations to follow about preventing cancer	74.1% (69.9%, 78.2%)	1430	74.8% (72.7%, 77.0%)	-1.1%
Cancer is most often caused by a person's behavior or lifestyle	43.6% (39.1%, 48.0%)	1421	62.7% (58.4%, 67.1%)	-18.5%*
When I think about cancer, I automatically think about death	58.8% (54.4%, 63.2%)	1428	62.9% (60.3%, 65.5%)	-4.1%

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It took a lot of effort to get the information you needed	35.3% (30.2%, 40.4%)	1170	37.9% (35.0%, 40.9%)	-2.6%
You felt frustrated during your search for the information	36.1% (31.0%, 41.2%)	1166	34.5% (31.7%, 37.3%)	1.6%
You were concerned about the quality of the information	52.1% (47.1%, 57.2)	1171	56.0% (52.0%, 60.0%)	-3.9%
The information you found was hard to understand	27.0% (22.2%, 31.7%)	1168	34.7% (30.4%, 39.0%)	-7.7%

The differences are not statistically significant at .05 level.
 Percentages in this table combine strongly agree and somewhat agree