Variation in Veterans' Access to Internet and Email: Potential Impact on VHA Electronic Health Communication

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Introduction

- Health care communication is increasingly web-based in the VA
  - For example, My Health***e*** Vet* (MHV) allows access to trusted, accurate and timely health information; and eventually PHI protected emails
  - The VA has invested time and expense on My Health***e*** Vet website
  - It asserts, "…the best part is, you can easily access your personal health information in your My Health***e*** Vet account from any place you have an Internet connection."

*https://www.myhealth.va.gov

Introduction cont'd

- Internet access is important for Veterans in care
- It can provide quick access to information and allows communication with their provider
- Patients' access to internet and email pose critical limitations

Goal

- Estimate the proportion of Veterans with internet access and an email address
- Assess whether these outcomes varied by patients'
  - Socio-demographic characteristics
  - Healthcare utilization characteristics
- We hypothesized that marginalized groups would have less access to internet and email

Methods

Veterans' Aging Cohort Study

Prospective observational cohort study of HIV+ and age/race/site matched control group of HIV- veterans in care at 8 VA facilities

Study's aim is to understand the role of co-morbid medical and psychiatric disease in determining clinical outcomes in HIV infection

Special focus on the role of alcohol use and abuse in determining clinical outcomes

www.vacohort.org

Methods

- We used the 3rd wave of VACS
- Data was collected from October 2005 to January 2007
- Outcomes were self reported
    - Survey questions were:
        - "Do you have access to the internet?"
        - "Do you have an email address?"
    - Response: yes or no

Analyses

- Used Chi-square(χ^2), t-test, Fisher's test, and Kruskal Wallis test

- Multivariable logistic regression was used to determine which factors were associated with internet access and email

Results

Data Sample and Description of Outcome Variables

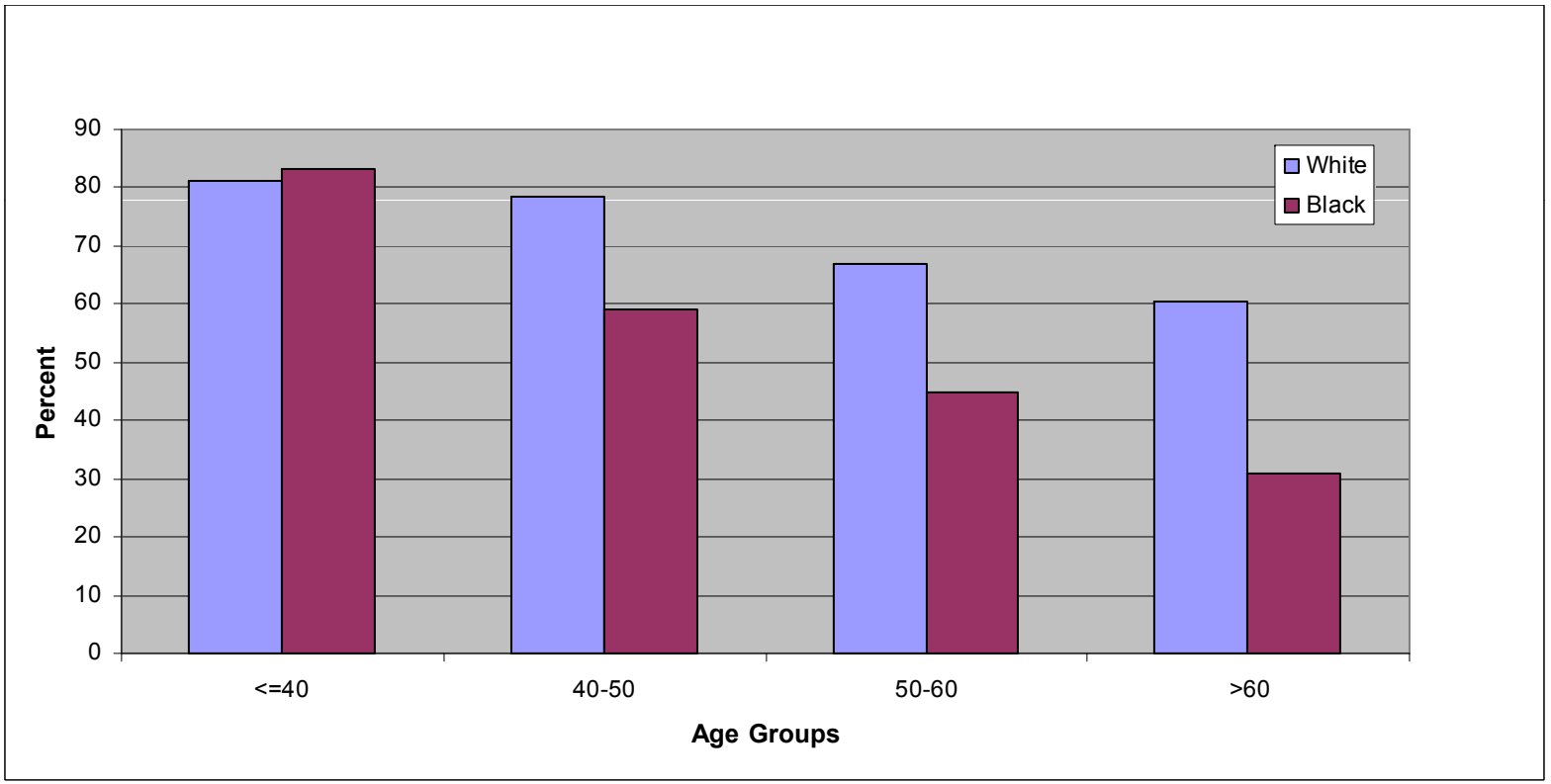
Patient Demographics and Utilization (N=3931)

Variables	Overall
Age (mean)	53
Race:	
White	23%
Black	65%
Hispanic	9%
Other	4%
Sex, male	94%
College/Graduate school	59%
Income >= $12000	52%
Excellent health in general (good/excellent)	66%
VA Inpatient care in the last 4 months	25%
VA Outpatient care in the last 4 months	89%

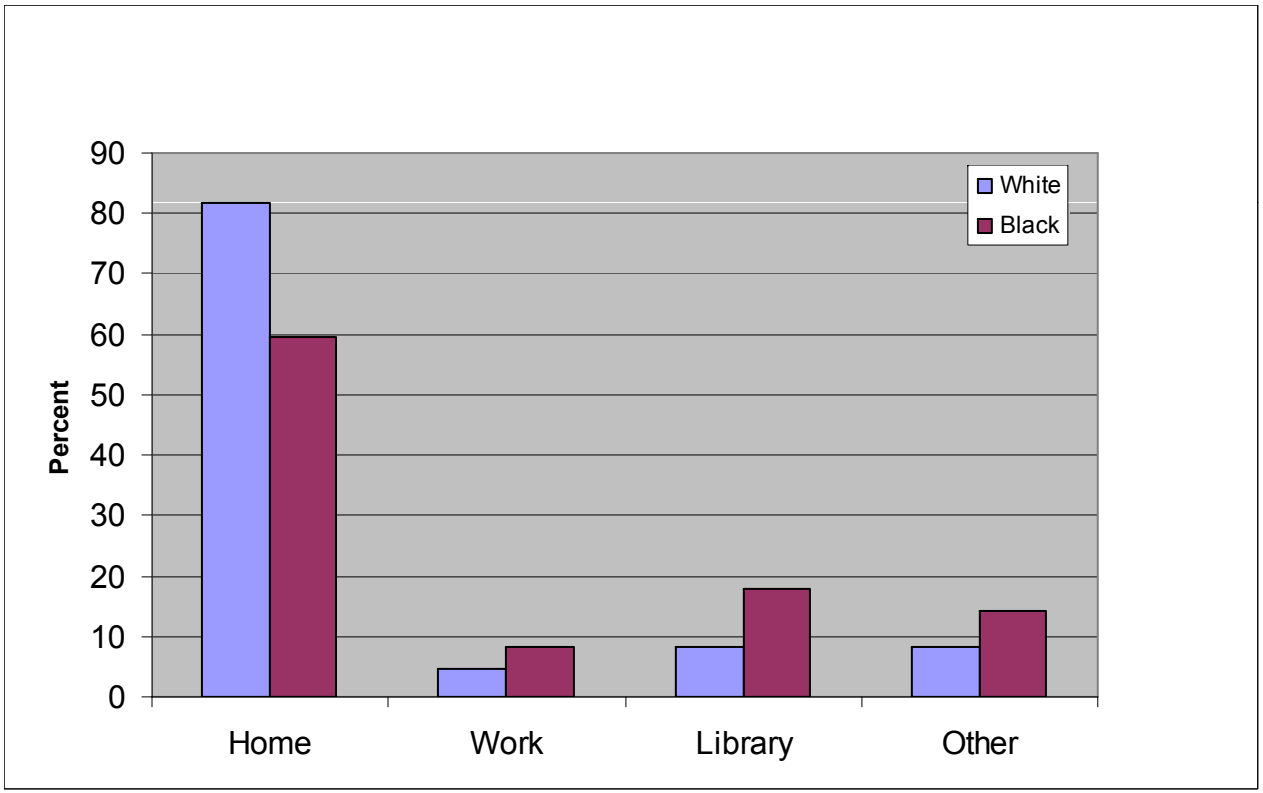
Description of Outcome Variables N=3931

Variables	Overall
Internet access	55%
Email address	43%
Internet access only	13%
Email address only	1.4%
Both internet access and email address	42%

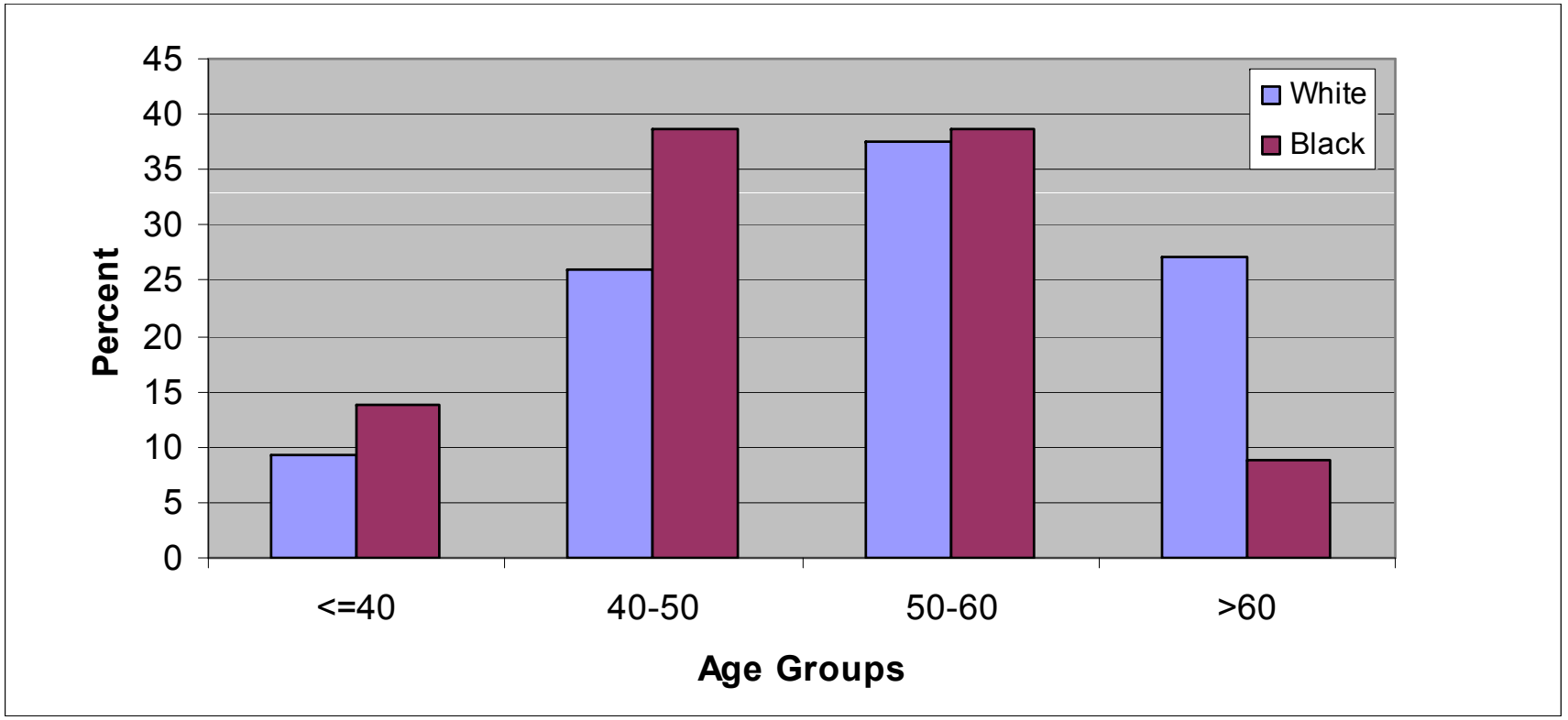
Distribution of Internet Access by Age Group and Race



Distribution of Where Subjects had Internet Access



Home Internet Access by Race and Age



Results

Internet access

Patient Demographic by Internet Access (N=3931)

Variables	Internet		
	No, n=1770	**Yes, n=2161**	**p value**
Age (mean)	56	51	<0.001
Race (%)			<0.001
White	31	69	
Black	49	51	
Hispanic	50	50	
Other	41	59	
Sex (%)			<0.001
Female	27	73	
Male	46	54	

Patient Demographic by Internet Access cont'd

Variables	Internet		
	No, n=1770	Yes, n=2161	p value
Education (%)			<0.001
High school/GED or less	62	38	
College/Graduate school	33	67	
Income (%)			<0.001
< $12000	60	40	
>= $12000	32	68	
Email address (%)			<0.001
No	77	23	
Yes	3	97	
Health in general (%)			<0.001
Poor/fair	36	64	
Good to excellent	50	50	

Health Care Utilization by Internet Access N=3931

Variables	Internet		
	No, n=1770	**Yes, n=2161**	**p value**
VA Inpatient care in the last 4 months			<0.001
No	43	57	
Yes	52	48	
VA Outpatient care in the last 4 months			0.03
No	50	50	
Yes	44	56	

Logistic Model
Internet Access N=3931

Variables	**OR**	**95% CI**	
Black (ref. group white)	0.44	0.37	0.53
Hispanics (ref. group white)	0.44	0.33	0.58
Age/10 years	0.54	0.49	0.59
Sex	0.68	0.48	0.96
Income ≥ $12000	2.60	2.25	3.01
College/Graduate school	2.75	2.38	3.18
VA utilization in last 4mths			
Inpatient care	0.82	0.69	0.97
Outpatient care	1.35	1.07	1.70
Health in general (poor/fair)	1.44	1.23	1.67

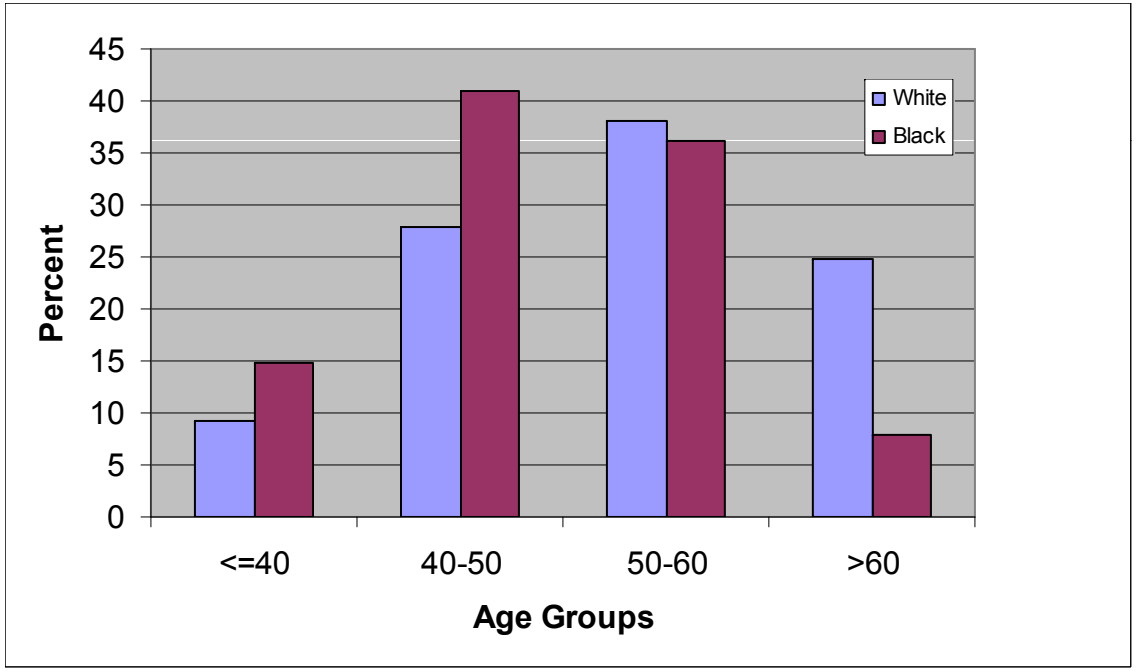
Polytomous Logistic Regression of Internet Access

	Access Elsewhere			Access at Home		
Variables	**OR**	**95% CI**		**OR**	**95% CI**	
Black (ref. group white)	0.82	0.62	1.07	0.36	0.30	0.44
Hispanics (ref. group white)	0.69	0.46	1.05	0.38	0.28	0.52
Age/10 years	0.55	0.49	0.62	0.53	0.48	0.58
Sex	0.66	0.43	1.01	0.69	0.48	0.99
Income ≥ $12000	1.52	1.24	1.85	3.29	2.81	3.85
College/Graduate school	2.24	1.83	2.76	3.02	2.57	3.54
Used VA in last 4mths ≥1 times						
Inpatient care	0.86	0.69	1.08	0.80	0.67	0.96
Outpatient care	1.26	0.91	1.74	1.39	1.08	1.79
Health in general (poor/fair)	1.47	1.19	1.82	1.42	1.20	1.68

Results

Email

Having an Email Address by Race and Age



Patient Demographic by Email (N=3931)

Variables	Email		
	No, n=2236	Yes, n=1695	p value
Age (mean)	55	51	<0.001
Race (%)			
White	40	60	<0.001
Black	62	38	
Hispanic	61	39	
Other	56	44	
			<0.001
Sex			
Female (%)	36	64	
Male (%)	58	42	

Patient Demographic by Email cont'd

Variables	Email		
	No, n=1770	Yes, n=2161	p value
Education			<0.001
High school/GED or less	74	26	
College/Graduate school	45	55	
Income			<0.001
< $12000	72	28	
>= $12000	43	57	
No internet	97	3	<0.001
Internet	24	76	
Health in general			<0.001
Poor/fair	48	52	
Good to excellent	62	38	

Health Care Utilization by Email N=3931

Variables	Email		
	No, n=2236	Yes, n=1695	p value
VA Inpatient care in the last 4 months			<0.001
No	54	46	
yes	66	34	
VA Outpatient care in the last 4 months			0.05
No	61	39	
yes	56	44	

Logistic Model
Email Address N=3931

Variables	**OR**	**95% CI**	
Black (ref. group white)	0.37	0.31	0.44
Hispanics (ref. group white)	0.41	0.31	0.55
Age/10 years	0.53	0.48	0.58
Sex	0.62	0.45	0.86
Income ≥ $12000	2.62	2.27	3.04
College/Graduate school	2.99	2.57	3.48
VA utilization in last 4mths			
Inpatient care	0.72	0.60	0.85
Outpatient care	1.28	1.01	1.63
Health in general (poor/fair)	1.46	1.25	1.70

Limitations

- Our sample consisted of older patients who were mostly male, which limits its generalizability

- Outcomes and explanatory variables were self-reported, which can give rise to non-differential misclassification, from either over-reporting or underreporting

- We did not assess the specific type of internet use, information sought or frequency of use

Conclusions and Implications

Conclusions

- Veterans' access to internet and email varies by race and age in our sample

- Among veterans in care in the VA who were surveyed in our study, blacks were
  - 2 times less likely to have internet access compared to whites
  - 3 times less likely to have an email address

- This race disparity was worse among older patients

Conclusions cont'd

- For each 10 years increment in age, patients were 2 times less likely to have both internet access and email
- Higher education and annual income were strongly associated with internet access and email
- Poor health, and VA utilization were also associated but were less pronounced
- The findings either by email or internet access were the same

Implications

- Minorities and older individuals are vulnerable groups that are less likely to have access to care and more likely to have health problems
- Those who need access to care most are less likely to have internet access and email
- To expand the use of electronic communication for patient services we must address these disparities in internet access and email
- Disparities in access to health care information may exacerbate current disparities in health care outcomes

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Questions?