

Commonwealth of Virginia Healthcare Broadband Analysis

January 10, 2011

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Project Goals

- Begin to develop an understanding of current connectivity 'baseline' across healthcare provider segments
 - Provide healthcare broadband & HIT detail as part of Commonwealth broadband mapping team
- Create linkage between broadband status and HIT implementation
 - Telehealth
 - Electronic Health Records
 - Health Information Exchange
- Implement a survey methodology to facilitate ongoing annual updates
 - Online survey instrument, with offline capabilities
 - Secure public and private healthcare industry endorsements (government agencies, associations, societies) to drive participation
- Support Regional Extension Center outreach

Developed Provider Survey Methodology

- Segment the Provider Universe for Broadband/HIT Analysis
- Distribute On-Line Interactive Survey through Healthcare Associations to more than 5,000 Providers in Commonwealth
 - Survey participation vs. comprehensiveness challenge
- Publish Survey on Multiple State Agency and Medical Association Web Sites
- Enable Commonwealth to Assess Overall Healthcare Broadband, Telehealth, EHR and HIE Adoption Rates
- Update Data Annually for 5 Years

Target Provider Universe

- Hospitals (143) source: VHI.org
 - Acute Care, Critical Access, Ambulatory Surgical
 - Children, Psychiatric, LTAC, Rehabilitation
- Rural Health Clinics (50) source: CMS.gov
- Community Health Centers (114 sites in 29 centers)
source: vacommunityhealth.org
- Physicians identified through Medical Society of Virginia e-mail database (est. 6,000)
- Other key provider segments
 - Behavioral Health (40 Community Service Boards)
 - Home Health/Assisted Living/Nursing locations identified through key associations (est. 500)

Secured Public/Private Endorsement

Public



Private



Key Collaborators



Enhanced Support for REC Outreach

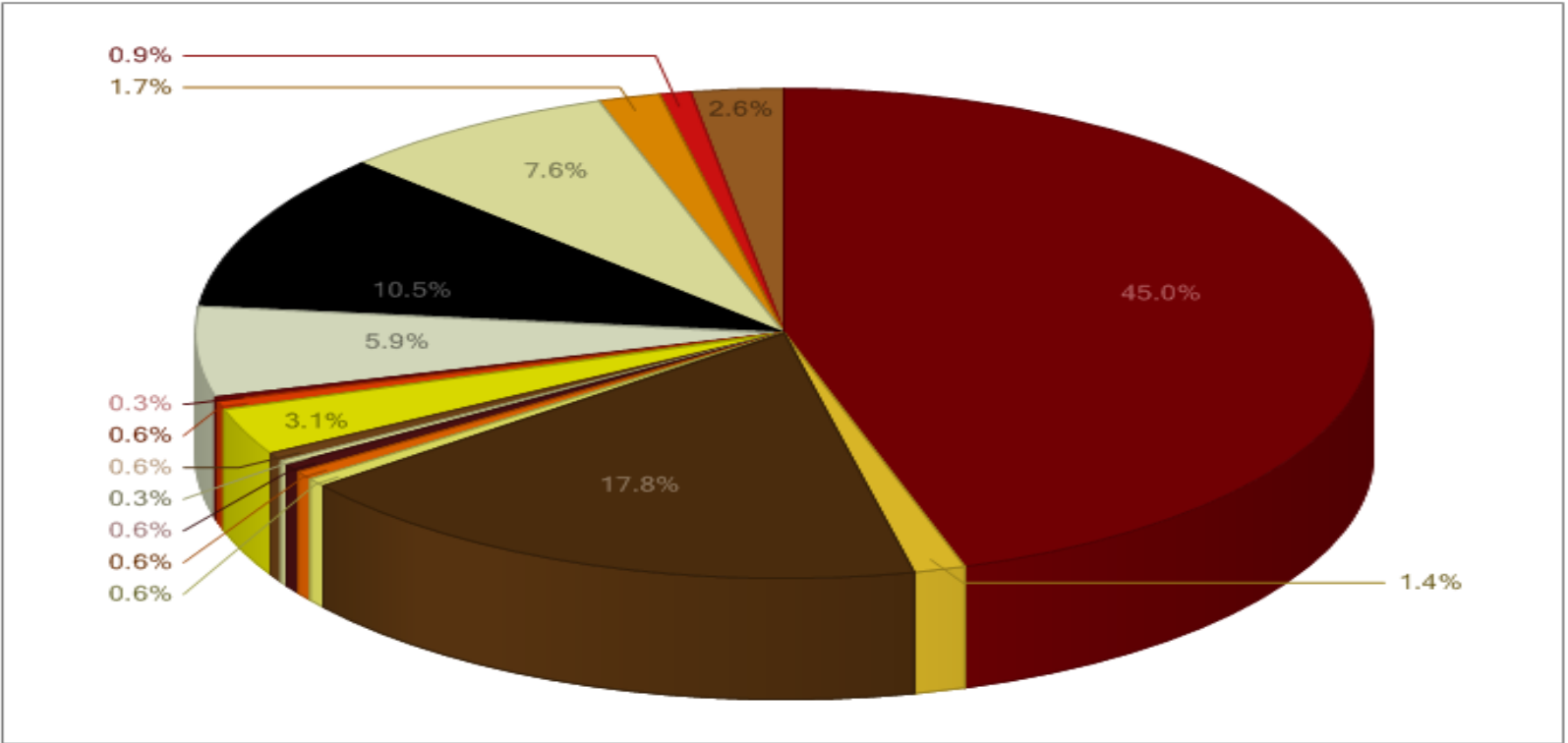
- Survey tailored to allow certain respondents focused on primary care to ask for additional assistance with EHR planning and implementation
 - Small physician practices
 - Rural Health Clinics and Community Health Centers
- More than 50 of these locations — nearly all of them physician practices representing almost one-third of all physician responses — requested REC Support
- Detailed contact information forwarded to Commonwealth REC

Overall Survey Respondent Demographics

- Diverse participation, with particular strength in key provider groups
 - Physicians: 45% of survey responses
 - Hospitals: 21% of survey responses
 - Home Health/Assisted Living/Nursing: 14% of survey responses
 - Behavioral Health/Developmental Disability: 10% of survey responses
 - Community Health Centers/Small Clinics: 4% of survey responses
- Moreover, 30% of all respondents are located in rural or mixed rural locations (Isserman definition)
- Total responses of n=353 over period of online survey availability
 - E-mail invitations and promotion by Association partners
 - Posts on public Commonwealth web sites (Healthcare, Tech)
 - Direct e-mail invitations to rural physicians
- Survey excluded households and providers without site-based locations (e.g. nurses working at multiple facilities)

Survey Participation by Provider Type

Which of the following healthcare provider descriptions best describes your location?



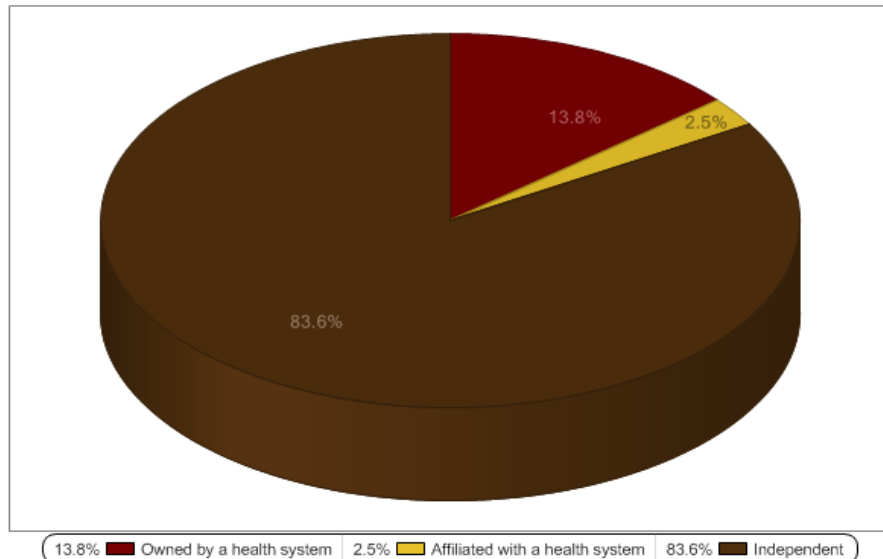
45.0%	Physician Practice	0.6%	Rural Health Clinic
1.4%	Non-Physician Clinical Practice	0.3%	Free Clinic
17.8%	Acute Care Hospital	5.9%	Assisted Living/Nursing Facility
0.6%	Ambulatory Surgical Hospital	10.5%	Behavioral Health/Developmental Disability
0.6%	Children's Hospital	7.6%	Home Health Agency
0.6%	Critical Access Hospital	1.7%	Pharmacy/Lab
0.3%	Long-Term Acute Care Hospital	0.9%	Emergency Medical Services Location
0.6%	Psychiatric Hospital	2.6%	Other (please specify)
3.1%	Federally-Qualified Health Center		

n= 353

Physician Population: Affiliation/Practice Size

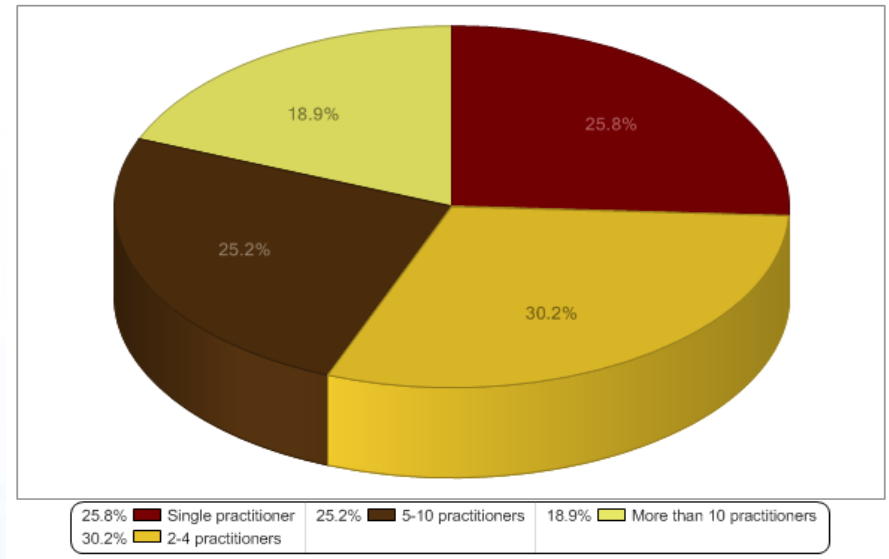
- Physicians participating in the survey are largely independent, with less than 15% owned by a major health system
- A wide range of physician practice sizes are represented, with an even distribution between small and large practices
- Rural physicians are also represented, with more than 25% located in Rural or Mixed Rural counties (per the Isserman definition)

Q26. How would you characterize the practice's affiliation?



n=159

Q27. How would you characterize the size of the location/practice?



n=159

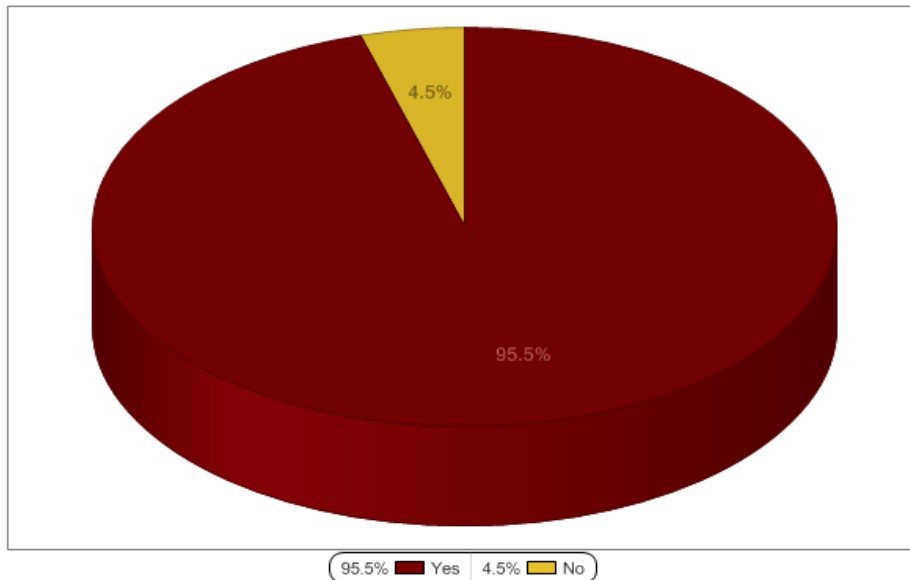
Summary Insights: Overall Respondents

- Broadband service, as defined by the NTIA or even under more strict definitions (e.g. FCC), appears to be widely utilized by healthcare providers in the Commonwealth
 - Perceived as critical for executing healthcare mission
 - Many providers in the Commonwealth have already invested in significant broadband capability
 - Broadband seen as an important investment to enable Health IT
- Telehealth, broadly defined, is used by well over half of survey respondents, though more commonly for educational/distance learning purposes than 'real-time' clinical purposes
 - However, increased utilization of Telehealth appears to be desired
 - Key barriers are cost-related, especially a lack of reimbursement
- EHR utilization is widespread, with populations aiming to meet 'meaningful use' criteria by 2015
 - Cost of implementing/operating systems the barrier if EHR not in place
- Health Information Exchange is not yet widely utilized, primarily due to a lack of awareness

Broadband Usage by Type of Service

- Nearly all of the locations surveyed utilize at least some form of broadband (according to the NTIA definition of broadband speeds)
- Fiber/Dedicated Internet Access, DSL, and Cable are the most commonly used types of service
- Many locations, especially hospital respondents, utilize multiple modes of broadband service

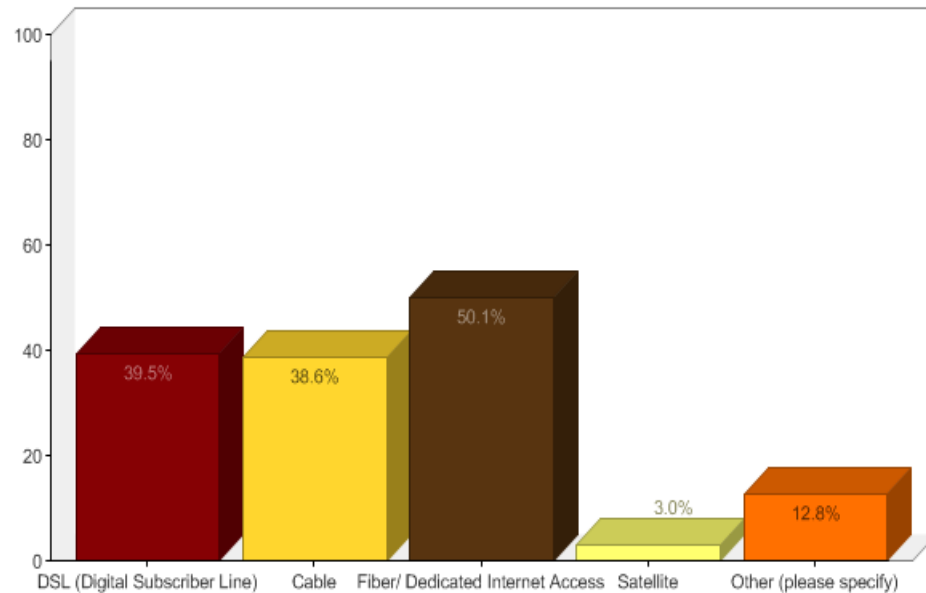
Q1. Is your healthcare location currently utilizing broadband service to access the Internet?



n= 353

Broadband Service: High-speed Internet access (e.g. DSL, Cable, Fiber, etc) providing two-way data transmission with advertised speeds of at least 768 kbps downstream and 200 kbps upstream to end users. (definition per National Telecommunications Information Administration)

Q2. Please select the type of broadband service your healthcare location utilizes: (CHECK ALL THAT APPLY)



n=337. Note that percentages add up to more than 100% because multiple responses were allowed

Reported Broadband Speeds

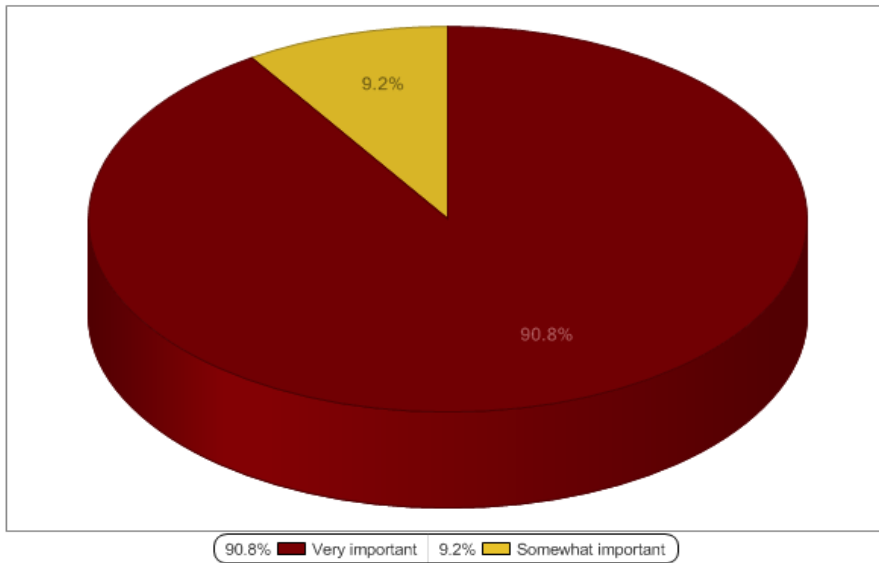
- Providers responding to the survey report relatively high broadband connectivity speed results from their online speed test (conducted at www.speedtest.net)
- Hospitals, not surprisingly, report the fastest connectivity speeds
- However, physicians and other more remote providers also report healthy speeds relative to baseline NTIA definitions of broadband service
 - Suggests meaningful existing investment in broadband connectivity
 - Likely to have an impact on willingness to invest further in broadband; respondents in many provider segments indicate significant uncertainty over these future broadband investments

Broadband Service: High-speed Internet access (e.g. DSL, Cable, Fiber, etc) providing two-way data transmission with advertised speeds of at least 768 kbps downstream and 200 kbps upstream to end users. (definition per National Telecommunications Information Administration)

Importance of Broadband for Healthcare

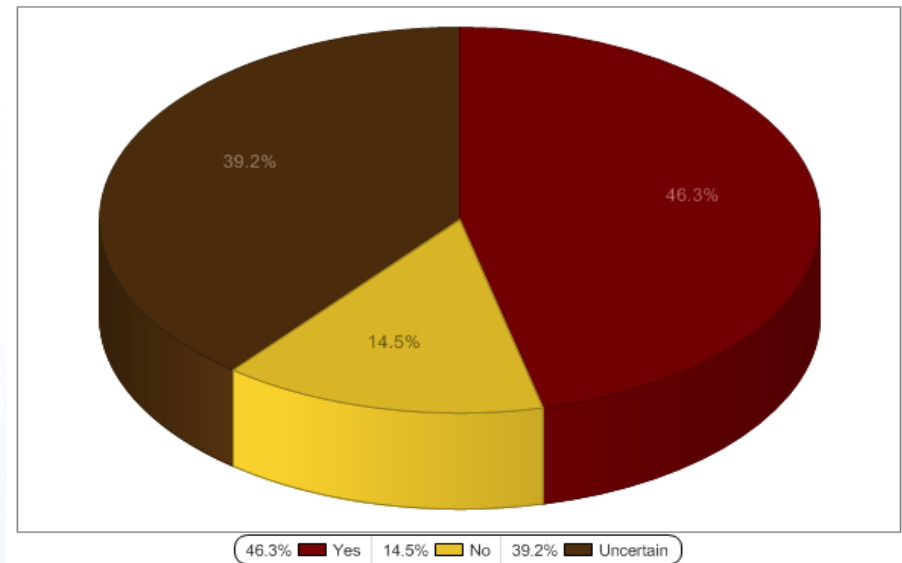
- Broadband connectivity is clearly very important across the survey population for executing their core healthcare mission, suggesting an increased awareness of the opportunities that Health Information Technology presents
- Nearly half of respondents indicated that they were likely to invest in additional broadband capacity in the near term, though nearly 40% were uncertain about future broadband investment

Q5. How important is broadband connectivity for executing your location's core healthcare mission?



n=337

Q6. Does your organization intend to invest in additional broadband capacity over the next 3 years?

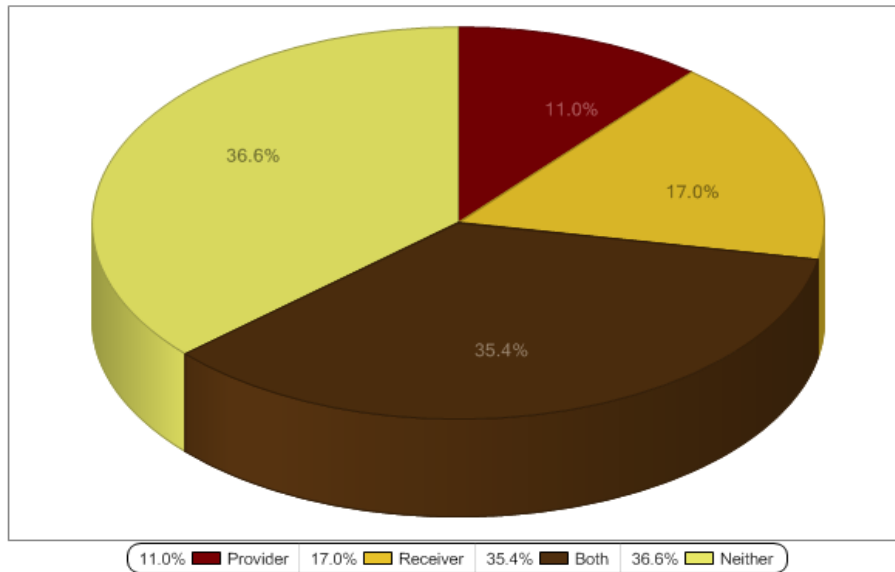


n=337

Telehealth Usage and Key Services

- More than 60% of respondents indicated they were involved in some form of Telehealth activity, with more than a third involved in both providing and receiving services
- **However, while a wide range of Telehealth services are utilized, the dominant services are either education-related (Webinars and Distance Learning) or involve more mature Store-and-Forward technology**
- 'Live' clinical interaction via Video Consultations and Remote Monitoring appears to be in relatively early stages of use

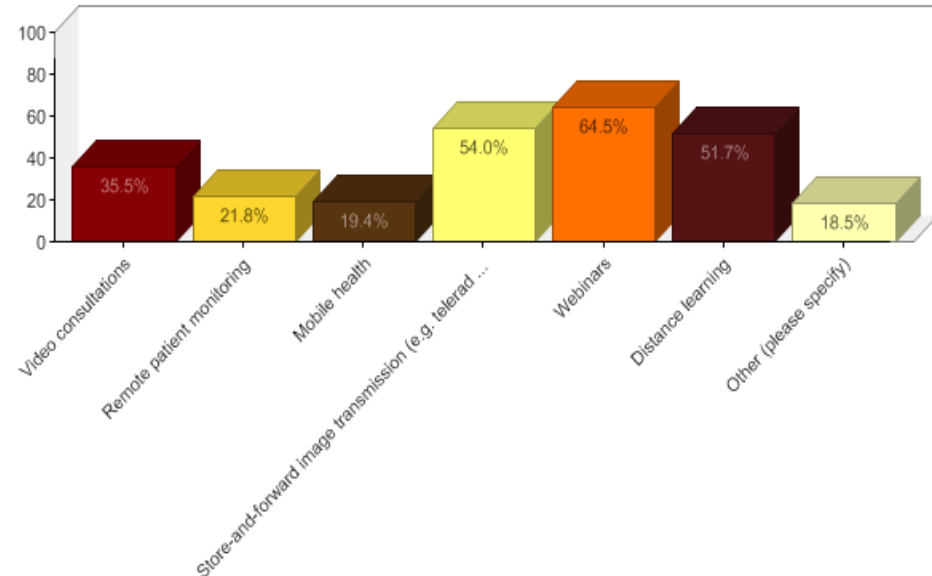
Q7. Is your location currently a provider or a receiver of Telehealth services?



n=336

Telehealth: the electronic exchange of information -- data, images, and video -- to aid in the practice of medicine, using technologies that enable video consultation, remote monitoring, and store-and-forward image transmission over fixed or mobile networks. Also includes non-clinical practices such as distance learning.

Q8. Which of the following Telehealth services do you utilize? (CHECK ALL THAT APPLY)

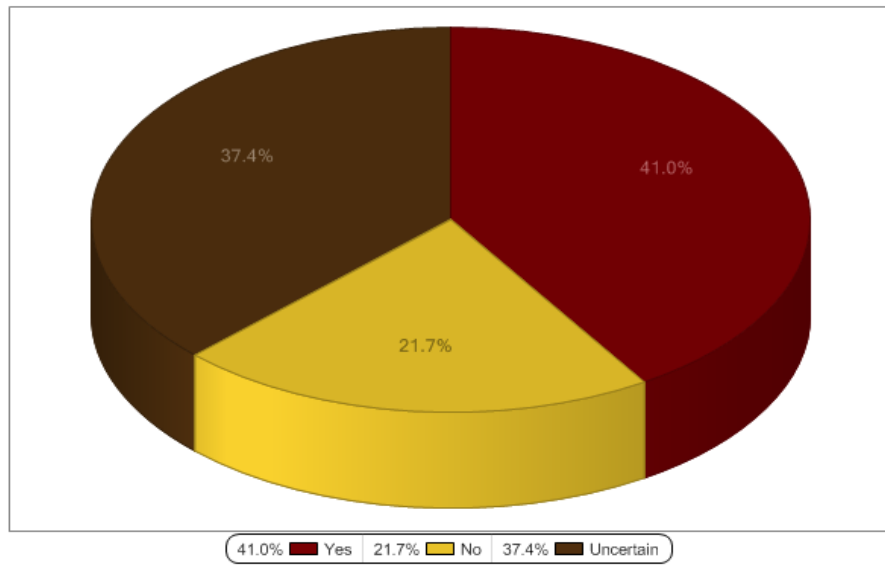


n=211. Note that percentages add up to more than 100% because multiple responses were allowed

Telehealth Expansion and Key Constraints

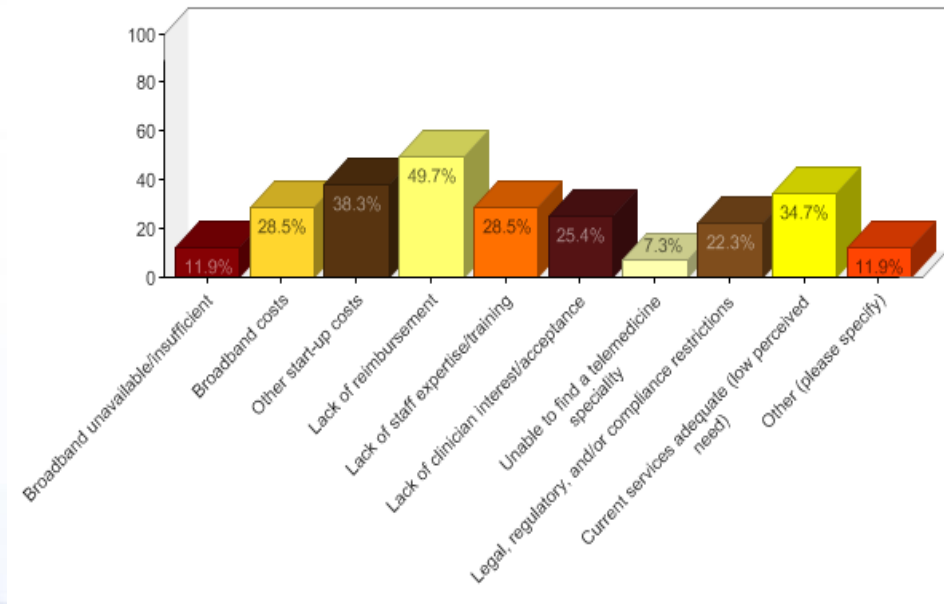
- More than 40% of respondents indicate a desire to initiate or expand their Telehealth activity in the near term, even though reimbursement uncertainty remains
- Cost-related barriers, along with the perception that current delivery modes are adequate, appear to be the most important constraints to Telehealth
 - Lack of reimbursement still the leading barrier
 - Start-up costs, including costs for broadband, also important

Q9. Do you expect to either initiate or expand your use of Telehealth in the next 12 months?



n=337

Q10. What are the most significant barriers to your utilization or expansion of Telehealth? (CHECK ALL THAT APPLY)

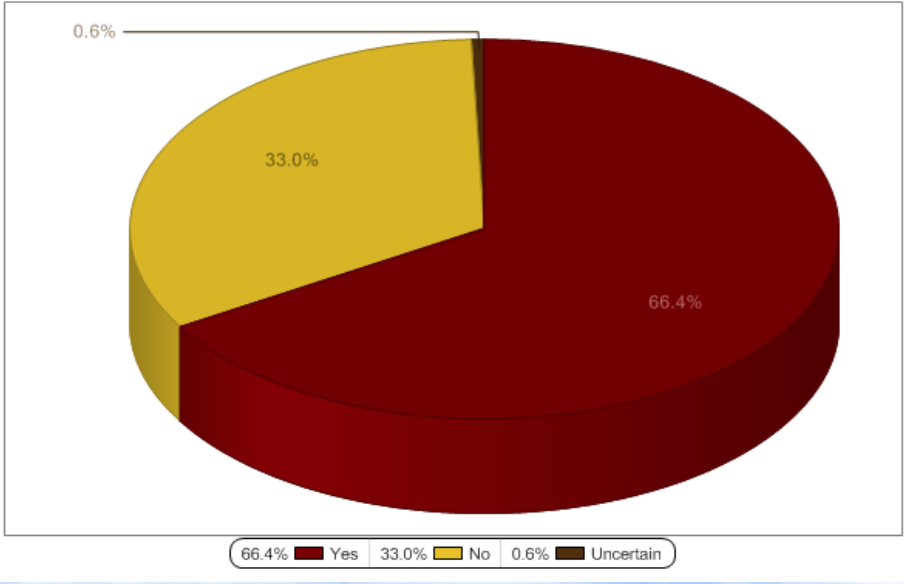


n=193. Note that percentages add up to more than 100% because multiple responses were allowed

Electronic Health Records Utilization

- Two-thirds of all respondents are already utilizing an Electronic Health Records (EHR) system, reflecting significant industry and governmental focus
- Among those who have not implemented EHR, cost is by far the leading barrier, with lack of technical support/training a secondary factor
 - Implementation costs
 - Ongoing operating costs
 - Unclear ROI

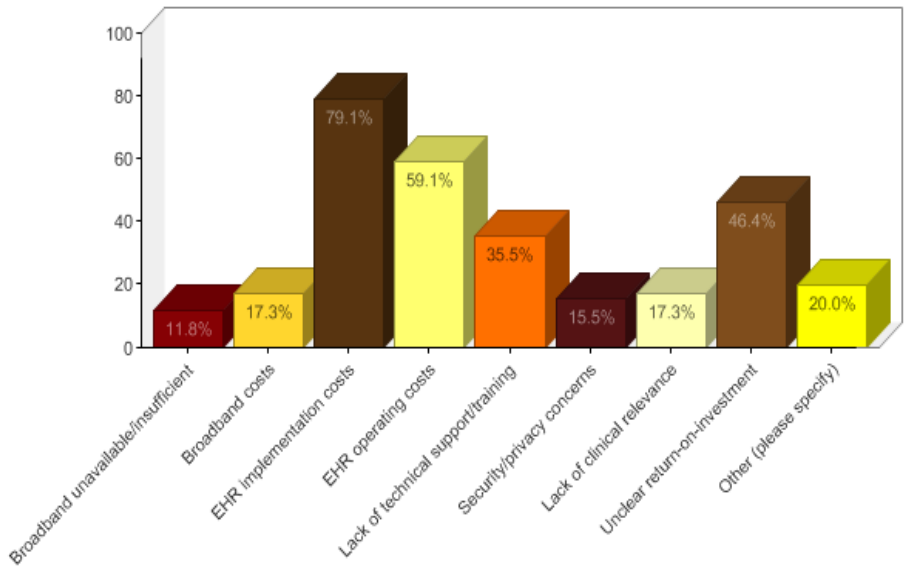
Q11. Is your location currently utilizing an Electronic Health Records (EHR) system?



n=336

Electronic Health Records: digital records of patient health information generated by one or more encounters in any care delivery setting.

Q13. What are the most significant barriers to your implementation of an EHR system? (CHECK ALL THAT APPLY)

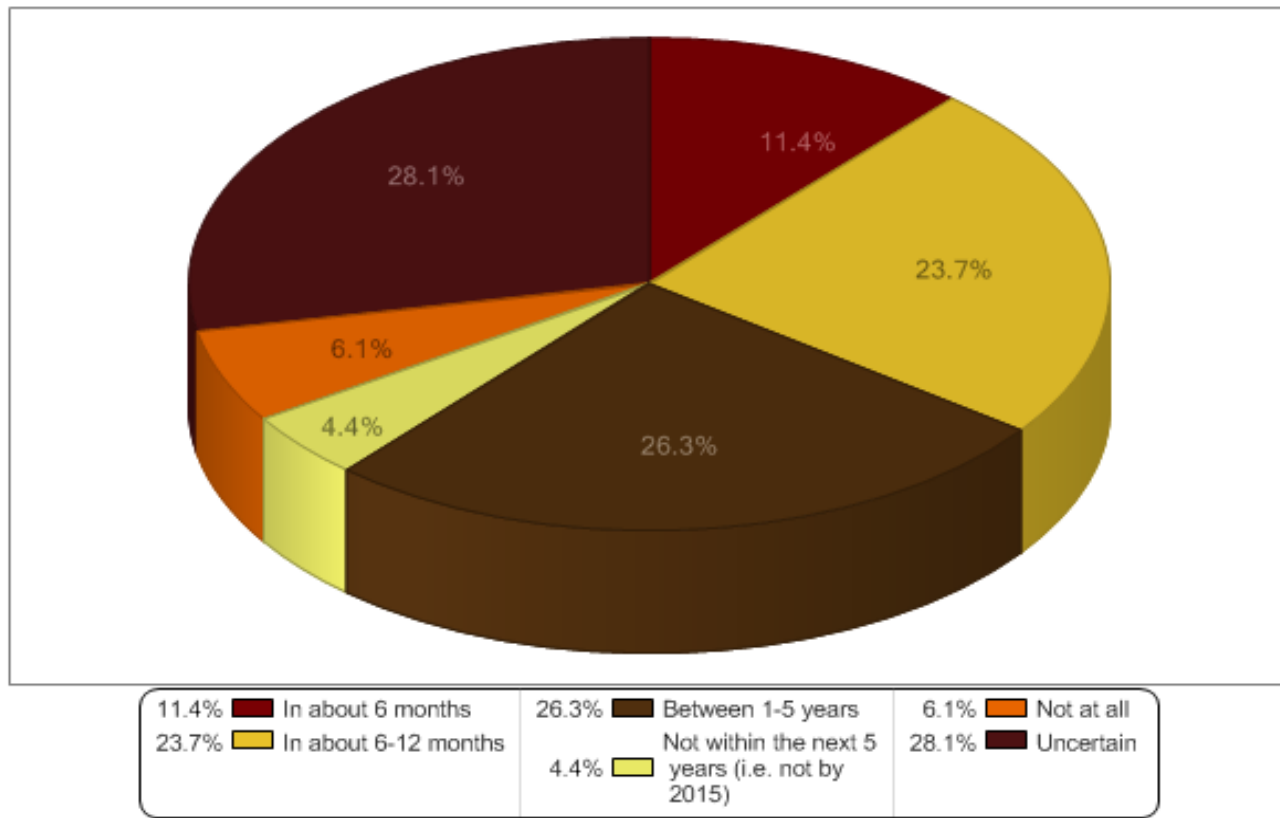


n=110. Note that percentages add up to more than 100% because multiple responses were allowed

Projected EHR Implementation

- Of respondents *who do not currently utilize EHR*, more than a third expect to implement a system within 1 year, while another 25% expect to implement EHR within 5 years

Q12. How soon do you intend to implement an EHR system?

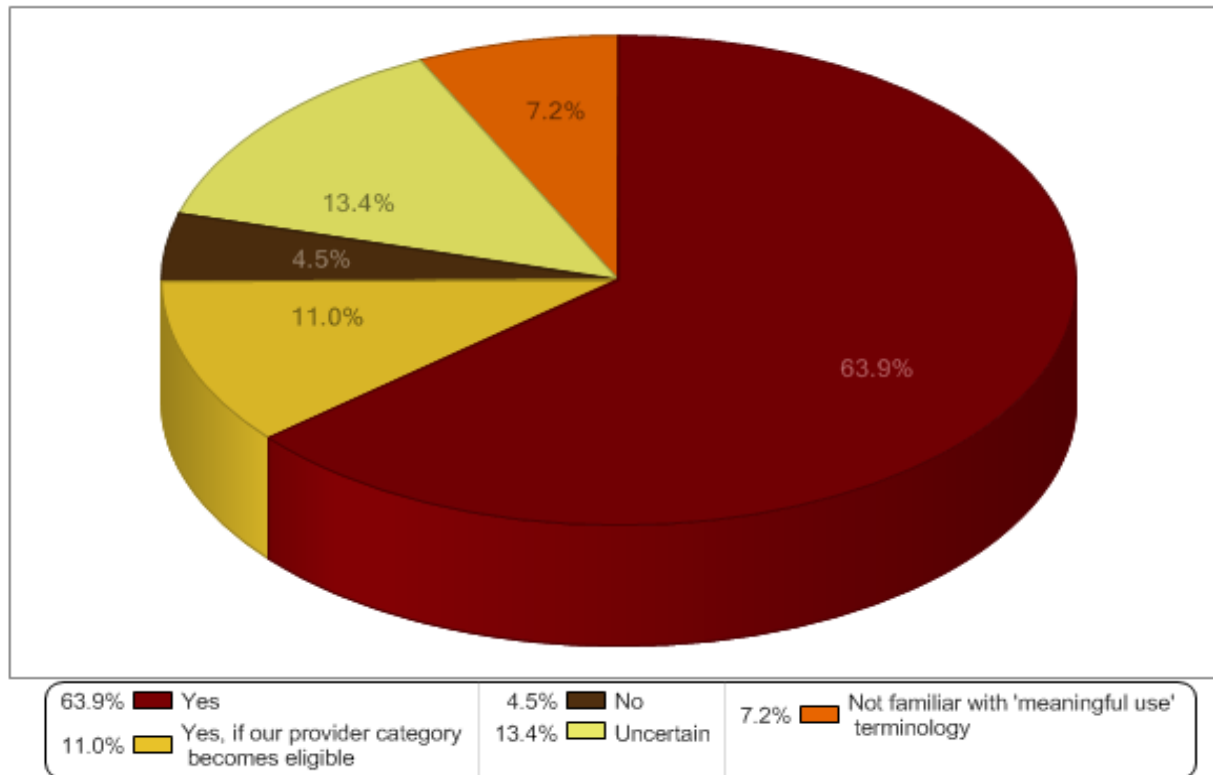


n=114

EHR Implementation and 'Meaningful Use'

- Nearly 75% of the entire survey population believe that they will meet the U.S. Department of Health and Human Services' criteria for 'meaningful use' of an EHR system by the 2015 deadline
- However, 20% of survey respondents are uncertain or even unsure of what 'meaningful use' status requires; less than 5% believe they will not meet criteria by 2015

Q15. Do you expect to meet the Department of Health and Human Services Health IT criteria for 'meaningful use' of an EHR system by 2015?

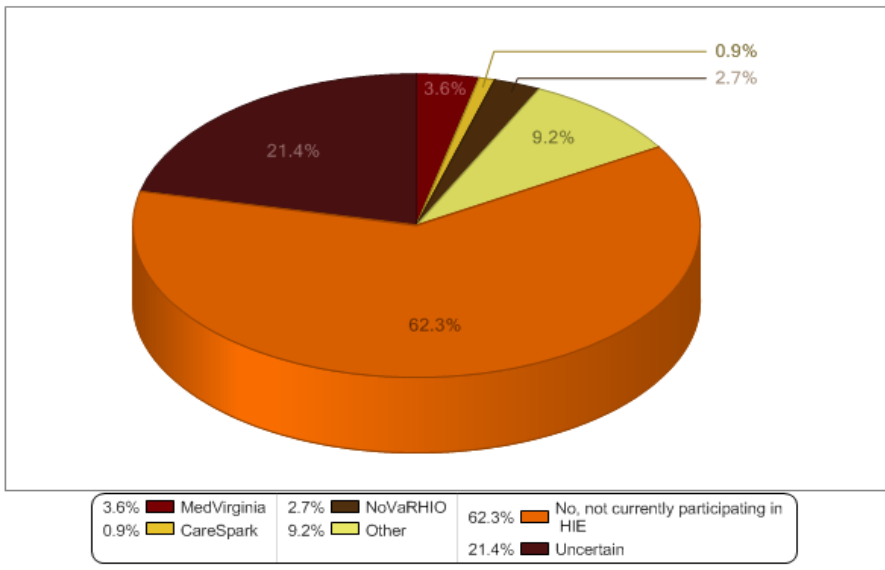


n=335

Health Information Exchange Participation

- More than 80% of the survey population is not involved, or not aware of any involvement, with a Health Information Exchange (HIE)
- Low participation in HIE appears to be driven primarily by a lack of understanding of HIE benefits and a lack of clarity on how to begin HIE

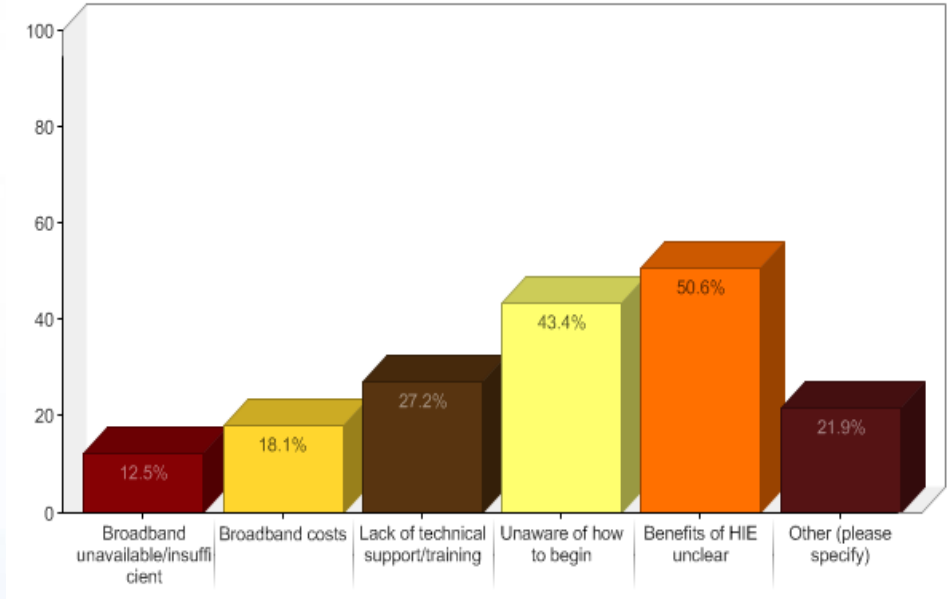
Q16. Does your location currently participate with other healthcare providers in one of the following Health Information Exchanges?



n=337

Health Information Exchange: a network characterized by the reliable and secure transmission, access, and retrieval of healthcare-related data among diverse facilities, health information organizations (HIOs) and government agencies according to national standards.

Q17. What are the most significant barriers to your participation in a Health Information Exchange? (CHECK ALL THAT APPLY)



n=265

Key Implications

- Healthcare providers in the Commonwealth are significant consumers of broadband service, using broadband to enable Health IT functions that are mission-critical
- Many providers intend to increase their use of Telehealth services, and require increasing levels of broadband service to enable more 'real-time' clinical interaction services, such as Video Consultation
- Most providers, including physicians, appear to be on track to implement Electronic Health Records and meet 'meaningful use' criteria by 2015
 - Nonetheless, nearly one-third of physician respondents are requesting assistance in EHR implementation
- Health Information Exchange is still a relatively unknown model, with low awareness across many provider segments

Summary Insights: Hospitals

- Hospitals in the Commonwealth are widely connected to broadband service, most commonly via Fiber/Direct Internet Access, and currently realize high connectivity speeds
 - Multiple modes of service common, with DSL and Cable often utilized as well
- Hospitals are active participants in Telehealth and the majority of respondents expect to expand their activity
 - More than 95% of hospital respondents are involved in some form of Telehealth activity, and nearly 60% identified as both a provider and receiver of Telehealth services
 - 60% of hospital respondents indicate that they expect to initiate or expand their use of Telehealth in the next year
- Hospitals are actively implementing EHR systems in anticipation of meeting 'meaningful use' requirements
- Health Information Exchange is relatively more common in the hospital provider segment, though still in early stages of development

Summary Insights: Physicians

- Physicians in the Commonwealth are active users of broadband for Health IT, though there is still significant uncertainty about the need to invest in greater connectivity
 - DSL, Cable, and Fiber/Direct Internet Access equally common
 - Existing speeds may be sufficient for near-term needs, especially given perceived cost
- More than half of responding physicians are active in Telehealth, and more would like to initiate/expand if cost-related barriers were reduced
 - Reimbursement and Broadband/other start-up costs
- Physicians continue to make progress toward implementation of Electronic Health Records
 - 60% currently utilizing EHR systems
 - 33% requested REC assistance
 - 75% expecting to meet 'meaningful use' criteria by 2015
- Health Information Exchange is still in its infancy here, as most physicians are unclear on both how to participate and how it would benefit their practices

Summary: Community HCs/Small Clinics

- Strong representation from Community Health Centers (FQHCs):
 - 31% of centers responding, representing 37% of provider sites
 - Additional input from Rural Health/Free Clinics
- Broadband was utilized by more than 70% of these centers
 - 80% considered broadband to be Very Important to their mission
 - 50% indicated that they intended to invest in additional broadband capacity over the next 3 years
- HIT utilization
 - Most respondents indicated some use of Telehealth services, and 50% of them intend to expand their use in the next year
 - 90% were already using an EHR system (facilitated by widespread implementation of eClinicalWorks across most of the CHC association) and expect to meet criteria for 'meaningful use' by 2015
 - They are generally not participating in Health Information Exchange, primarily due to a lack of awareness

Summary: Behavioral Health/Dev. Disability

- Strong participation from the Community Service Boards
 - More than 90% responding
 - Provided early input into survey instrument for broader provider participation
- Broadband was utilized by all of these respondents
 - 100% considered broadband to be Very Important to their mission
 - 70% indicated that they intended to invest in additional broadband capacity over the next 3 years
- HIT utilization
 - About 55% indicated some current use of Telehealth services, and 60% of them intend to expand their use in the next year
 - Use of Video consultation is much more more prevalent here (71% of those using Telehealth) than in other populations, in addition to typical Webinar/ Distance learning uses
 - 65% were already using an EHR system, and the remainder expect to have one in place by 2015
 - They are generally not participating in Health Information Exchange, not only due to a lack of awareness but also due to broadband constraints and lack of technical support/training

Summary: Home Health/Assisted Liv./Nursing

- Broadband was utilized by all survey respondents that identified as either Assisted Living/Nursing or Home Health
 - Cable and Fiber/Direct Internet Access most common for Assisted Living/Nursing
 - Cable and DSL most common for Home Health
 - Broadband is viewed by more than 80% of both segments as Very Important, and approximately 50% of respondents in both segments intend to invest in additional connectivity
- HIT utilization
 - More than 50% of both Assisted Living/Nursing and Home Health respondents are not currently active in Telehealth, but nearly 45% of Home Health and 30% of Assisted Living/Nursing respondents intend to initiate or expand Telehealth activity in the next year
 - Home Health respondents are more active in EHR (70%) than Assisted Living/Nursing (29%). Both cite implementation and operating costs as key barriers, and Home Health also cites lack of technical support/training
 - Both Home Health and Assisted Living/Nursing respondents had significant uncertainty or lack of familiarity around 'meaningful use' and its relevance
 - Neither segment was active in Health Information Exchange, due primarily to a lack of both awareness and understanding of benefits

Improving Survey Methodology/Updates

- Increasing the participation of Commonwealth healthcare associations and societies
 - Deeper ‘integration’ of survey with existing association/society strategy and communications
- Improving integration of speed test with the survey
- Increasing outreach and participation with ‘limited-broadband’ provider segments
- Diving deeper on key HIT issues where appropriate and efficient

Future Research/Key Questions

- Track federal funding for Commonwealth-based broadband and HIT projects
 - How are funds used/allocated
 - Impact on HIT adoption and utilization
- Undertake deeper dive in telehealth sector
 - Program profiles and analysis
 - Assess emerging role of remote monitoring and video consultation
- Determine public-private partnership opportunities
 - Best practice analysis in other states
 - Outline potential model(s) for Commonwealth

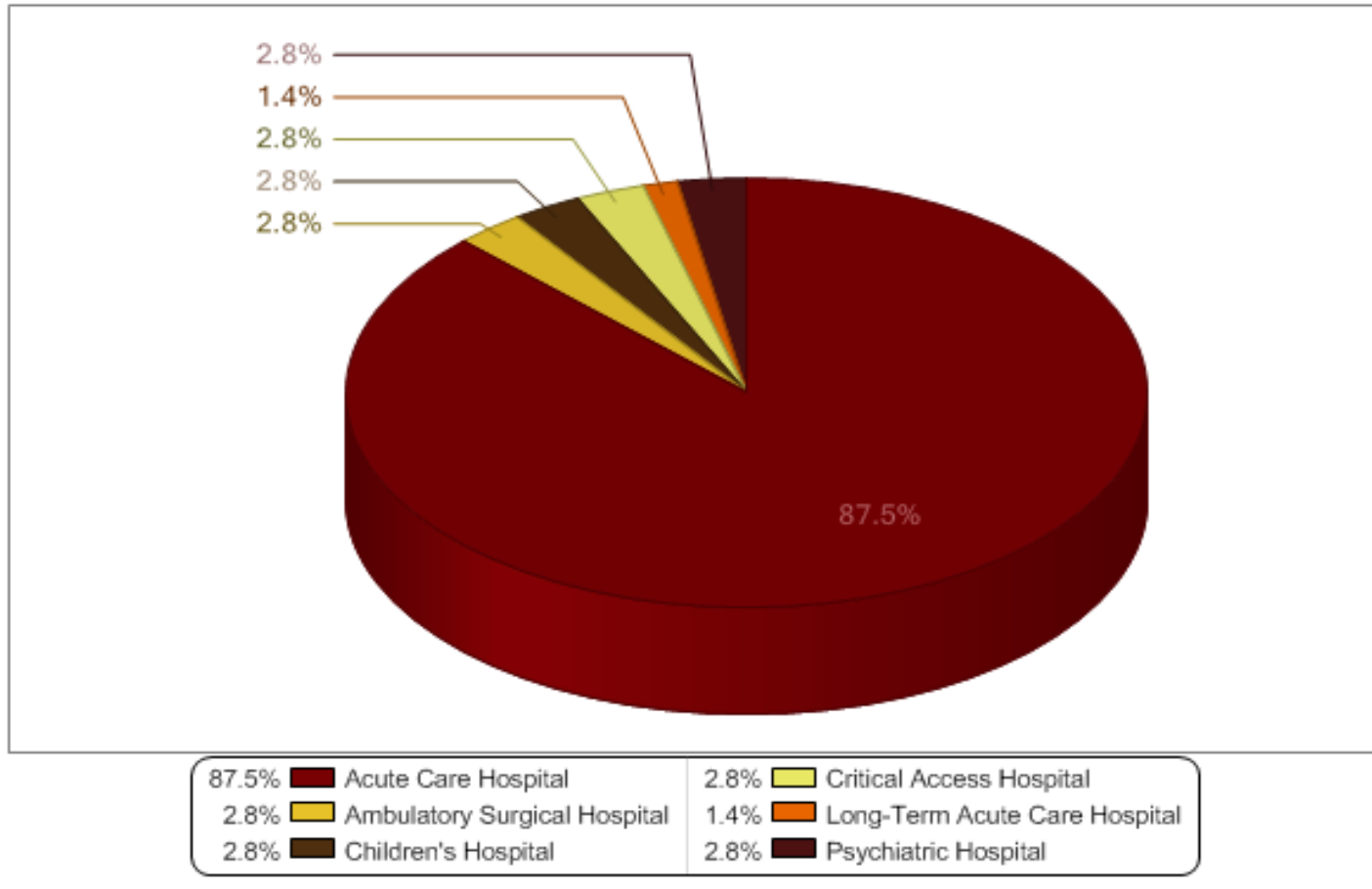
Detailed Provider Analysis: Hospitals

Summary Insights: Hospitals

- Hospitals in the Commonwealth are widely connected to broadband service, most commonly via Fiber/Direct Internet Access, and currently realize high connectivity speeds
 - Multiple modes of service common, with DSL and Cable often utilized as well
- Hospitals are active participants in Telehealth and the majority of respondents expect to expand their activity
 - More than 95% of hospital respondents are involved in some form of Telehealth activity, and nearly 60% identified as both a provider and receiver of Telehealth services
 - 60% of hospital respondents indicate that they expect to initiate or expand their use of Telehealth in the next year
- Hospitals are actively implementing EHR systems in anticipation of meeting 'meaningful use' requirements
- Health Information Exchange is relatively more common in the hospital provider segment, though still in early stages of development

Hospital Respondents by Type

- Half of all Virginia hospitals participated in the survey, a significant majority of which identified themselves as Acute Care locations
- About 25% of hospital responses were submitted from Rural or Mixed Rural areas (per the Isserman definition)

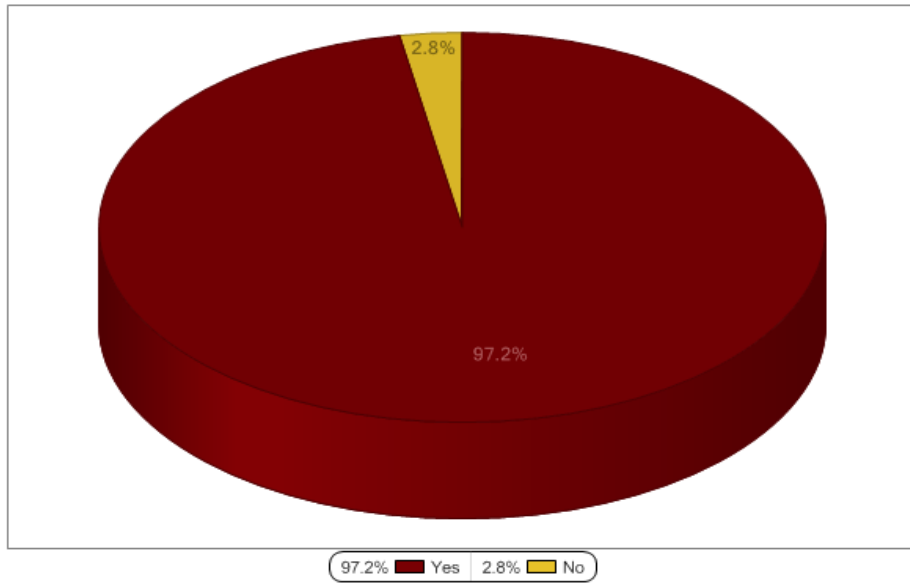


n= 72

Broadband Usage by Type of Service

- Nearly all hospital respondents report the use of broadband service (according to the NTIA definition of broadband speeds)
- Fiber/Dedicated Internet Access is clearly the leading mode of service at more than 85% of locations, with DSL (Digital Subscriber Line) and Cable service used in about 40% of locations
- Multiple modes of broadband access are relatively common across hospital respondents

Q1. Is your healthcare location currently utilizing broadband service to access the Internet?

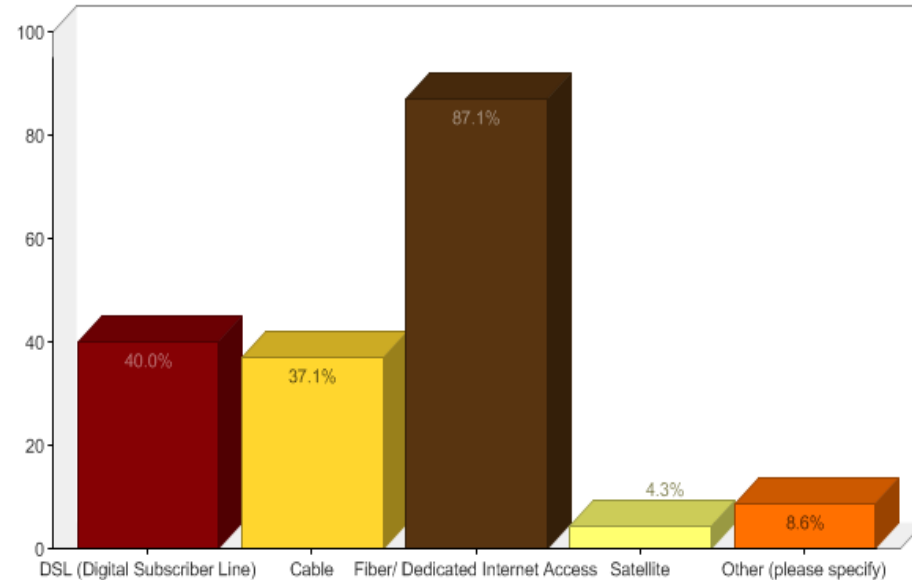


n= 72

Broadband Service: High-speed Internet access (e.g. DSL, Cable, Fiber, etc) providing two-way data transmission with advertised speeds of at least 768 kbps downstream and 200 kbps upstream to end users. (definition per National Telecommunications Information Administration)

Note: Two respondents that indicated a lack of broadband usage were both closely affiliated with Acute Care health systems but not located in the hospital facilities themselves

Q2. Please select the type of broadband service your healthcare location utilizes: (CHECK ALL THAT APPLY)

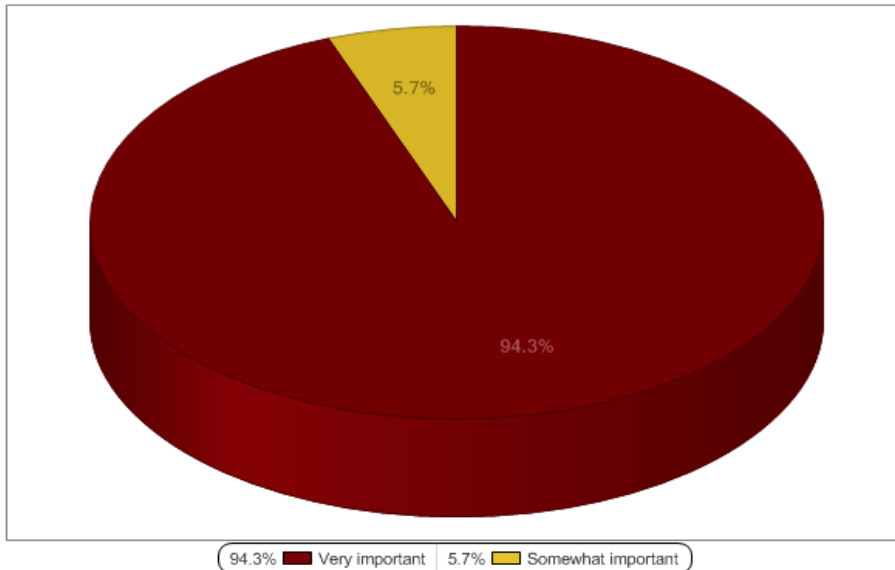


n=70. Note that percentages add up to more than 100% because multiple responses were allowed

Importance of Broadband for Healthcare

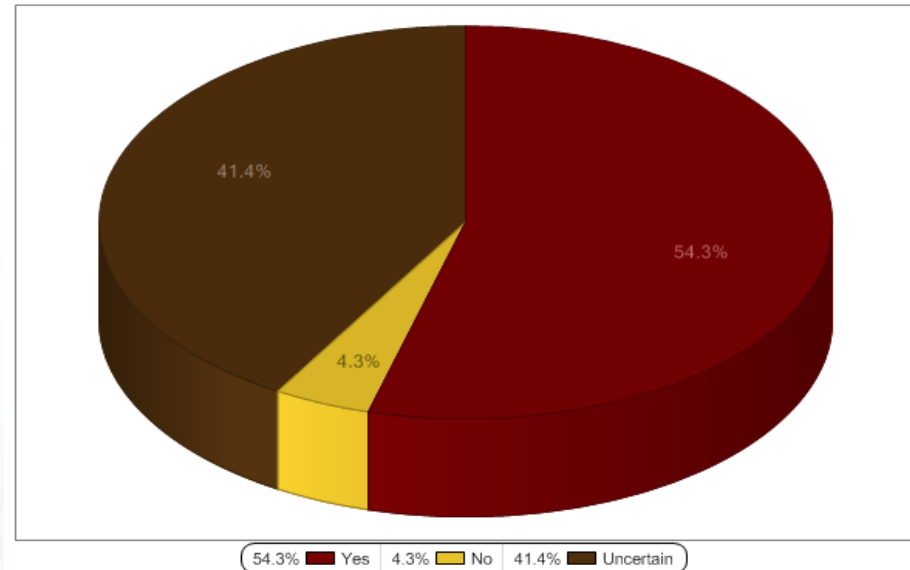
- Broadband connectivity is critical for hospitals' core healthcare mission, enabling their Health IT priorities
- However, while the majority of hospitals indicated they do intend to invest in additional broadband capacity over the next 3 years, more than 40% are uncertain about the level of investment that will be made

Q5. How important is broadband connectivity for executing your location's core healthcare mission?



n=70

Q6. Does your organization intend to invest in additional broadband capacity over the next 3 years?

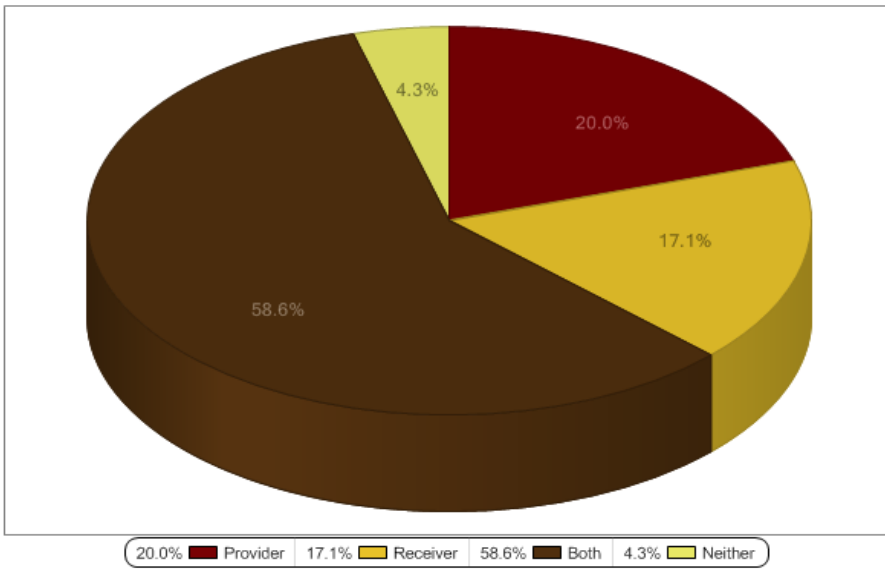


n=70

Telehealth Usage and Key Services

- More than 95% of hospital respondents are involved in some form of Telehealth activity, and nearly 60% identified as both a provider and receiver of Telehealth services
- The leading Telehealth service utilized is Store-and-forward image transmission, and approximately 50% of respondents actively use education-related Telehealth services
- Clinical interaction through Video consultation is much more common in this group than in the overall survey population, at more than 45% of respondents

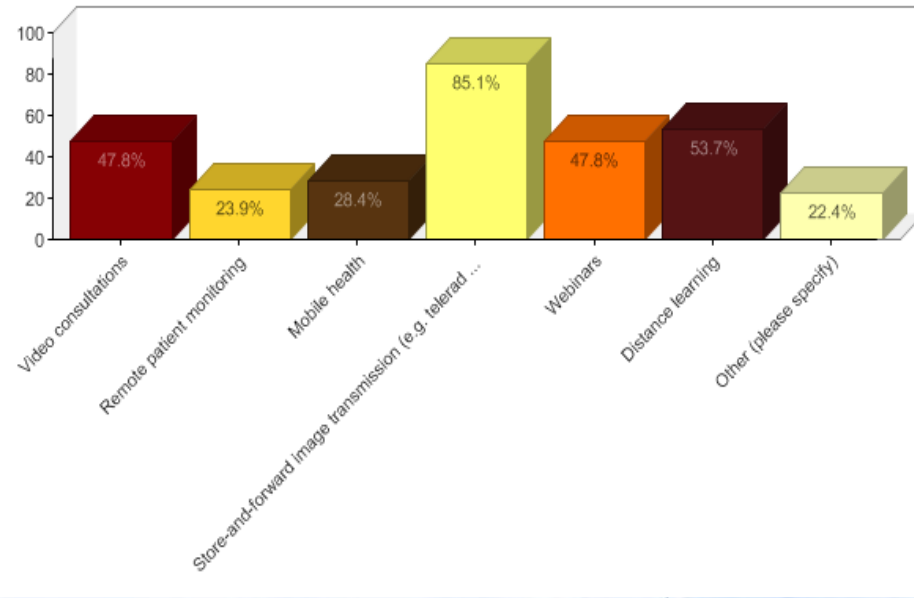
Q7. Is your location currently a provider or a receiver of Telehealth services?



n=70

Telehealth: the electronic exchange of information -- data, images, and video -- to aid in the practice of medicine, using technologies that enable video consultation, remote monitoring, and store-and-forward image transmission over fixed or mobile networks. Also includes non-clinical practices such as distance learning.

Q8. Which of the following Telehealth services do you utilize? (CHECK ALL THAT APPLY)

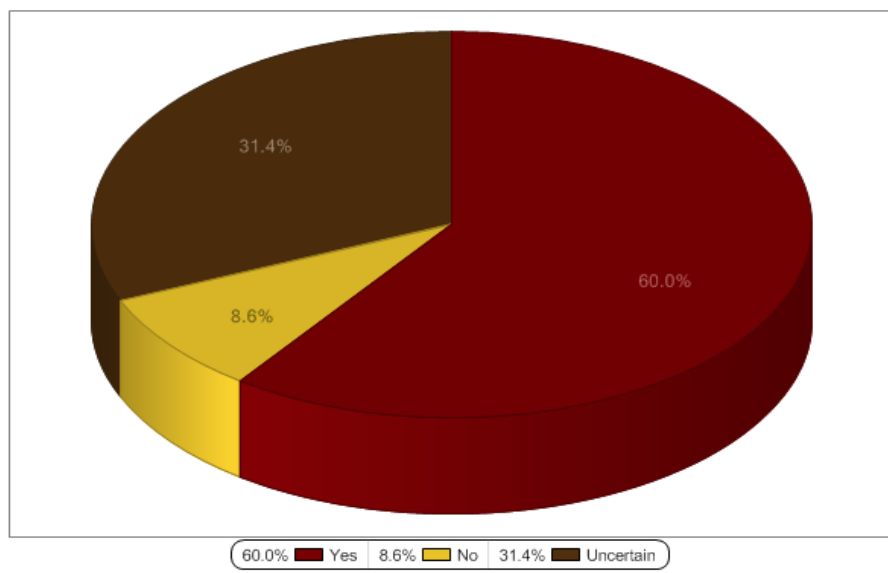


n=67. Note that percentages add up to more than 100% because multiple responses were allowed

Telehealth Expansion and Key Constraints

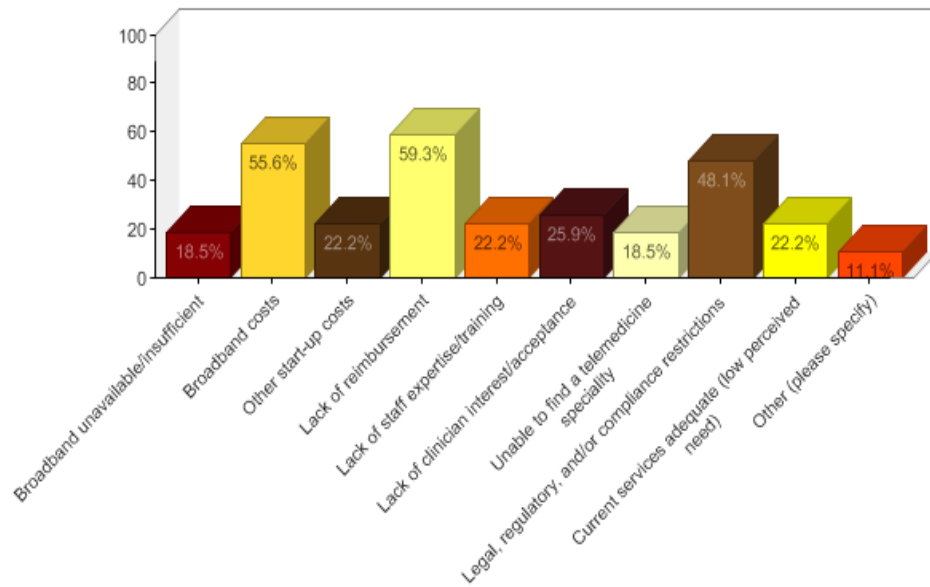
- **60% of hospital respondents indicate that they expect to initiate or expand their use of Telehealth in the next year**, though more than 30% are uncertain about expansion
- While Lack of reimbursement is the most commonly noted barrier to expansion, Broadband costs also pose a major barrier for Telehealth expansion in hospitals
- Hospital respondents also note Legal, regulatory, and/or compliance restrictions as a key factor

Q9. Do you expect to either initiate or expand your use of Telehealth in the next 12 months?



n=70

Q10. What are the most significant barriers to your utilization or expansion of Telehealth? (CHECK ALL THAT APPLY)

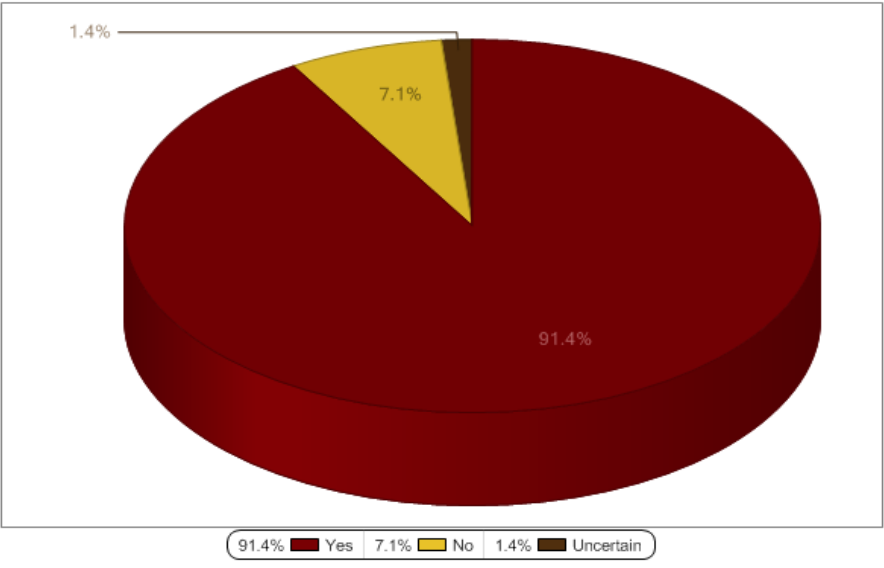


n=27. Note that percentages add up to more than 100% because multiple responses were allowed

Electronic Health Records Utilization

- More than 90% of hospital respondents are utilizing an Electronic Health Records (EHR) system at their location, consistent with their strong investment in broadband connectivity
- More than 85% of these hospital locations also expect to meet U.S. Department of Health and Human Services' criteria for 'meaningful use' of an EHR system by 2015

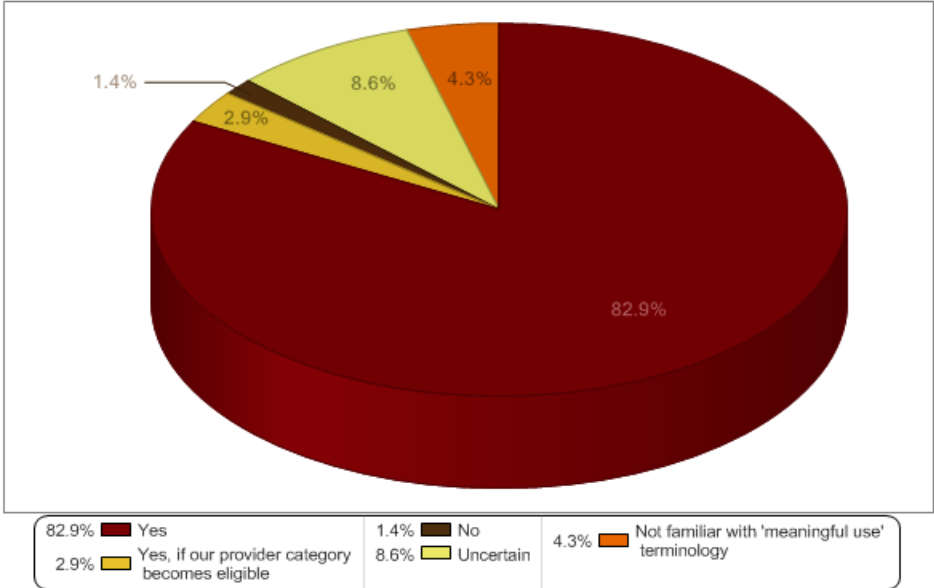
Q11. Is your location currently utilizing an Electronic Health Records (EHR) system?



n=70

Electronic Health Records: digital records of patient health information generated by one or more encounters in any care delivery setting.

Q15. Do you expect to meet the Department of Health and Human Services Health IT criteria for 'meaningful use' of an EHR system by 2015?

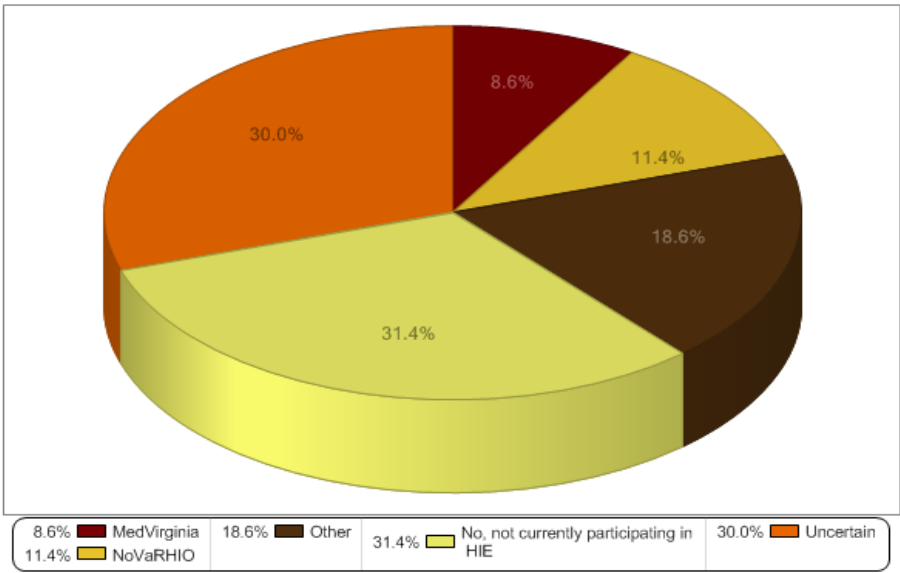


n=70

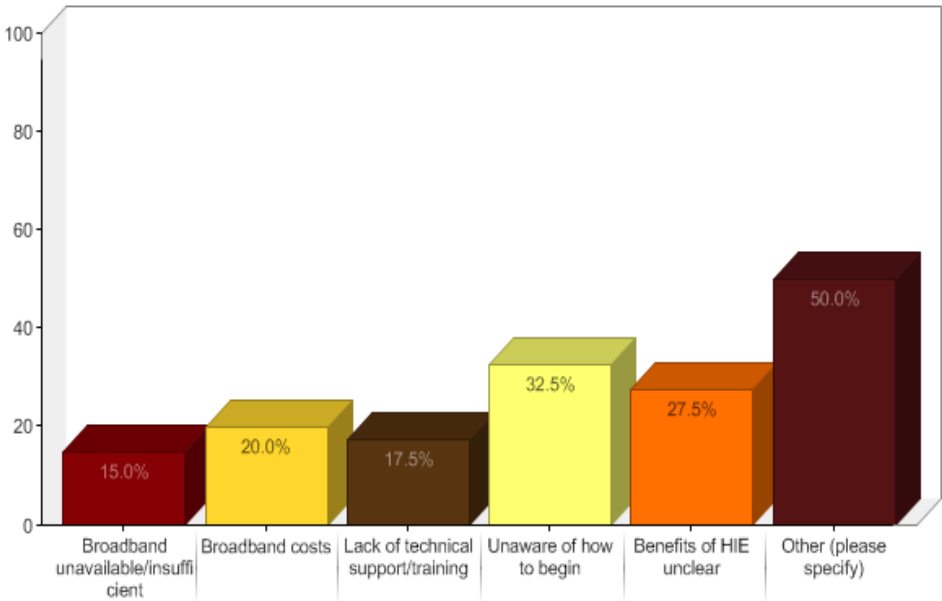
Health Information Exchange Participation

- Nearly 40% of hospitals surveyed are exchanging information either in a formal Health Information Exchange (HIE) or directly with other institutions or government agencies in the Commonwealth
- Of those not participating in HIE, about one-third are unaware of how to begin and a slightly lower percentage are unclear about the benefits of HIE
 - Half of these respondents also indicated an 'Other' reason for not participating, including lack of organizational consensus on the right approach and data/software compatibility concerns

Q16. Does your location currently participate with other healthcare providers in one of the following Health Information Exchanges?



Q17. What are the most significant barriers to your participation in a Health Information Exchange? (CHECK ALL THAT APPLY)



n=70
 Health Information Exchange: a network characterized by the reliable and secure transmission, access, and retrieval of healthcare-related data among diverse facilities, health information organizations (HIOs) and government agencies according to national standards.

n=40

Detailed Provider Analysis: Physicians

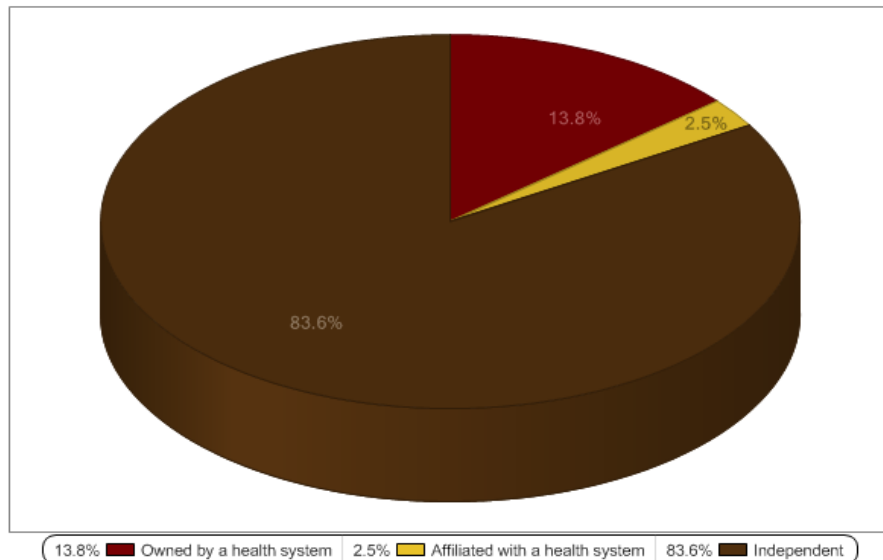
Summary Insights: Physicians

- Physicians in the Commonwealth are active users of broadband for Health IT, though there is still significant uncertainty about the need to invest in greater connectivity
 - DSL, Cable, and Fiber/Direct Internet Access equally common
 - Existing speeds may be sufficient for near-term needs, especially given perceived cost
- More than half of responding physicians are active in Telehealth, and more would like to initiate/expand if cost-related barriers were reduced
 - Reimbursement and Broadband/other start-up costs
- Physicians continue to make progress toward implementation of Electronic Health Records
 - 60% currently utilizing EHR systems
 - 33% requested REC assistance
 - 75% expecting to meet 'meaningful use' criteria by 2015
- Health Information Exchange is still in its infancy here, as most physicians are unclear on both how to participate and how it would benefit their practices

Physician Population: Affiliation/Practice Size

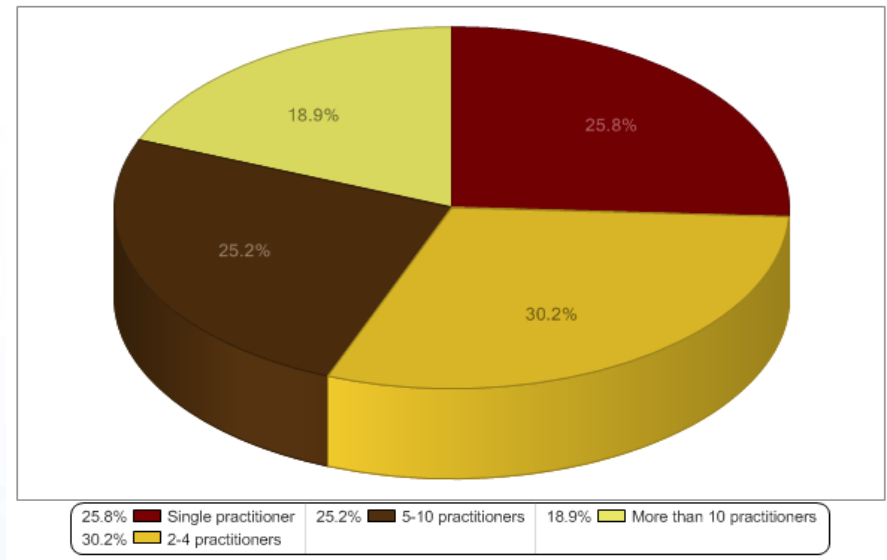
- Physicians participating in the survey are largely independent, with less than 15% owned by a major health system
- A wide range of physician practice sizes are represented, with an even distribution between small and large practices
- Rural physicians are also represented, with approximately 25% located in Rural or Mixed Rural counties (per the Isserman definition)

Q26. How would you characterize the practice's affiliation?



n=159

Q27. How would you characterize the size of the location/practice?

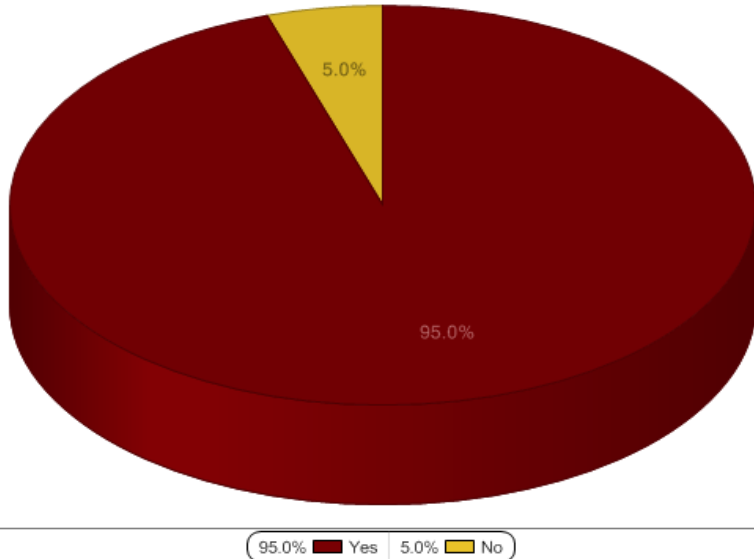


n=159

Broadband Usage by Type of Service

- Nearly all physicians surveyed report the use of some form of broadband (according to the NTIA definition of broadband speeds)
- DSL (Digital Subscriber Line), Cable, and Fiber/Dedicated Internet Access are equally-common types of service
- Some physicians report using multiple modes of broadband service, but this is significantly less prevalent than in other population segments (e.g. hospitals)

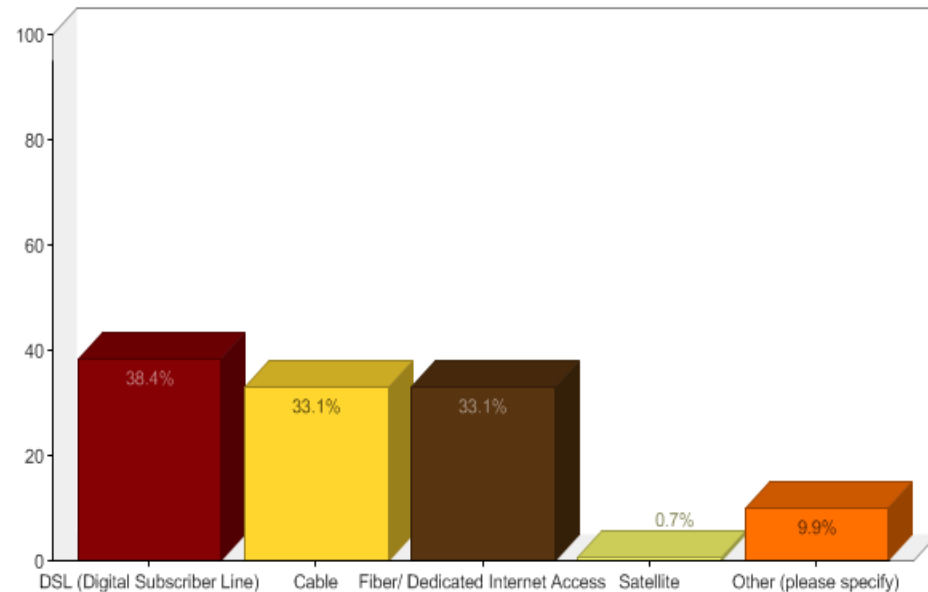
Q1. Is your healthcare location currently utilizing broadband service to access the Internet?



n= 159

Broadband Service: High-speed Internet access (e.g. DSL, Cable, Fiber, etc) providing two-way data transmission with advertised speeds of at least 768 kbps downstream and 200 kbps upstream to end users. (definition per National Telecommunications Information Administration)

Q2. Please select the type of broadband service your healthcare location utilizes: (CHECK ALL THAT APPLY)

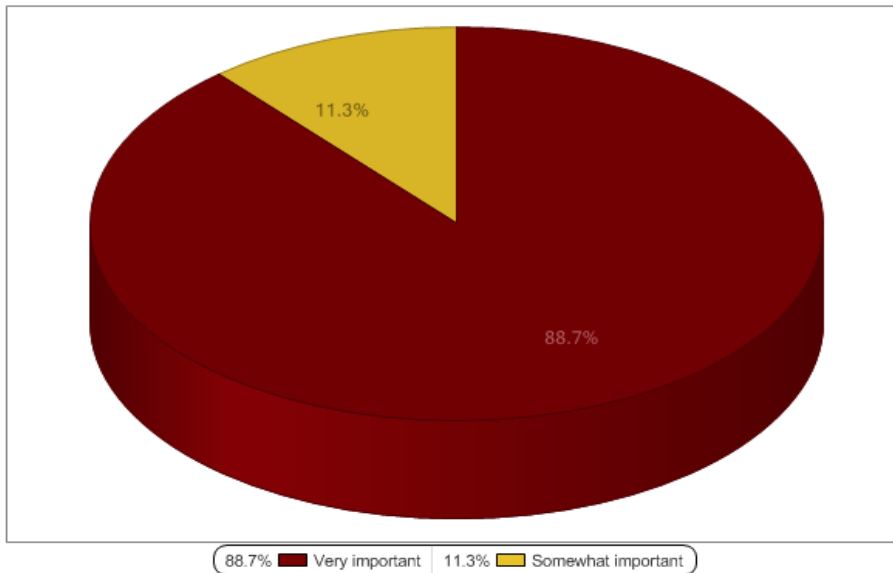


n=151. Note that percentages add up to more than 100% because multiple responses were allowed

Importance of Broadband for Healthcare

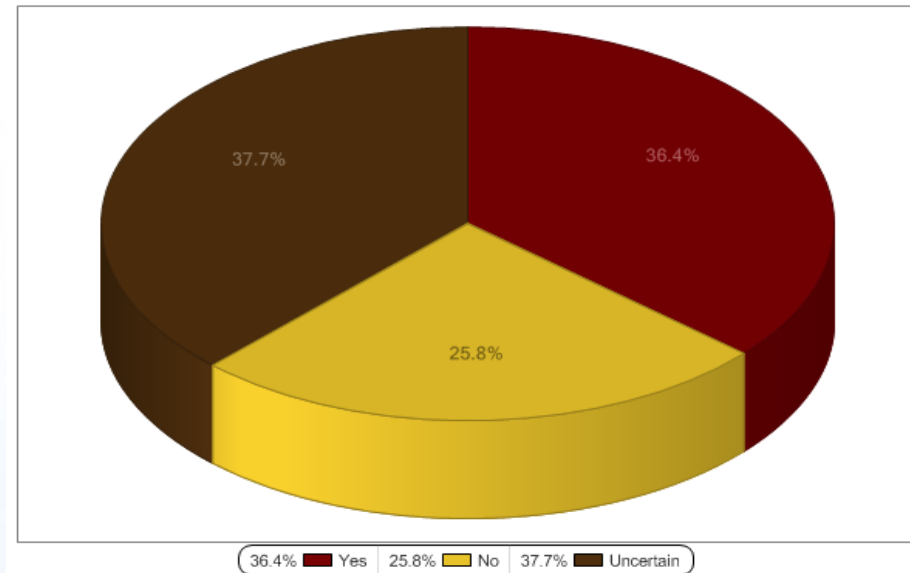
- Broadband connectivity is clearly very important for the physician population's core healthcare mission and related Health IT priorities
- However, the percentage of responding physicians indicating they do not intend to invest in additional broadband capacity over the next 3 years (26%) is nearly twice as high as the overall survey population
 - This may indicate that physicians feel they are already sufficiently invested in broadband to meet their existing Health IT needs

Q5. How important is broadband connectivity for executing your location's core healthcare mission?



n=151

Q6. Does your organization intend to invest in additional broadband capacity over the next 3 years?

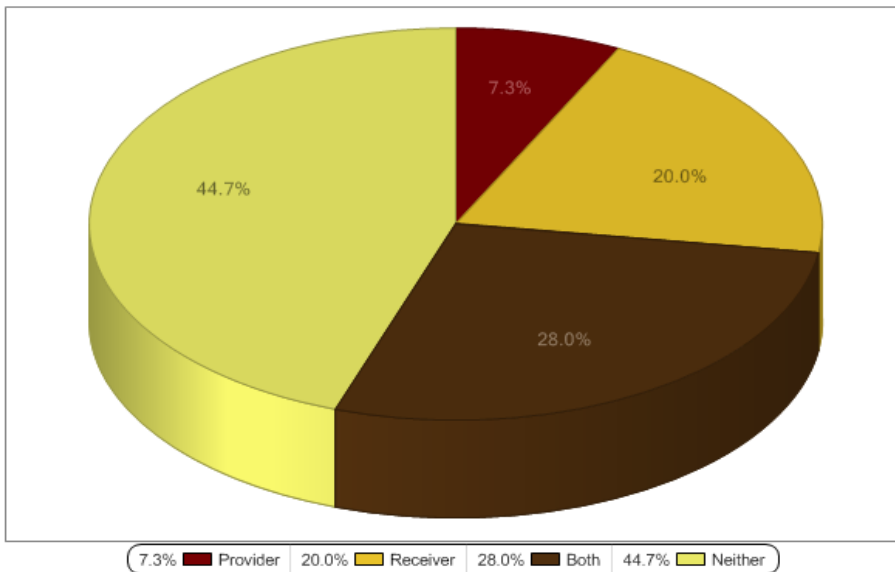


n=151

Telehealth Usage and Key Services

- A little more than half of responding physicians are involved in some form of Telehealth activity, and more than 25% reported **both** providing and receiving Telehealth services
- Similar to the overall population, the leading Telehealth services utilized are education-related (Webinars and Distance Learning) or involve mature Store-and-Forward technology solutions
- 'Live' clinical interaction technologies appear to be in relatively early stages of use

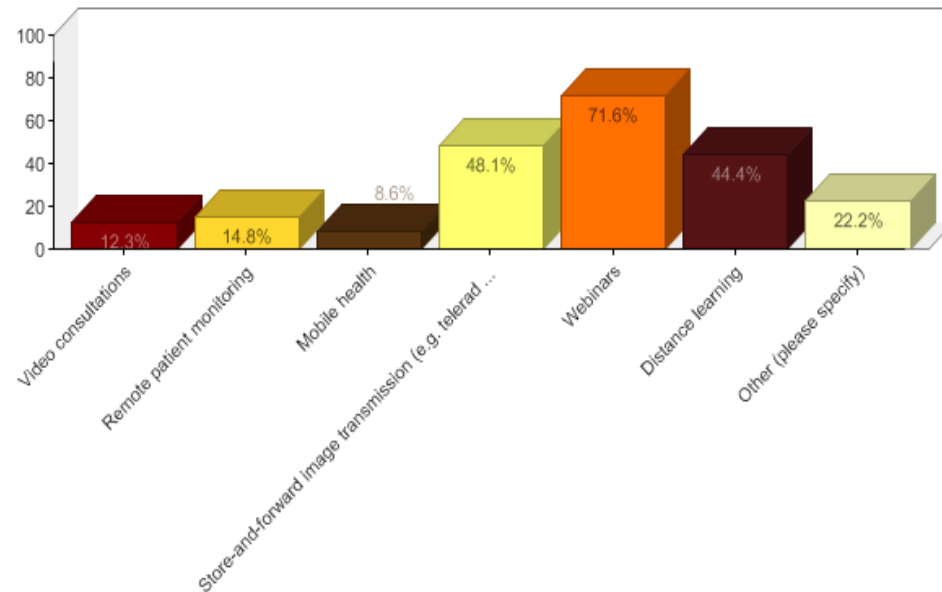
Q7. Is your location currently a provider or a receiver of Telehealth services?



n=150

Telehealth: the electronic exchange of information -- data, images, and video -- to aid in the practice of medicine, using technologies that enable video consultation, remote monitoring, and store-and-forward image transmission over fixed or mobile networks. Also includes non-clinical practices such as distance learning.

Q8. Which of the following Telehealth services do you utilize? (CHECK ALL THAT APPLY)

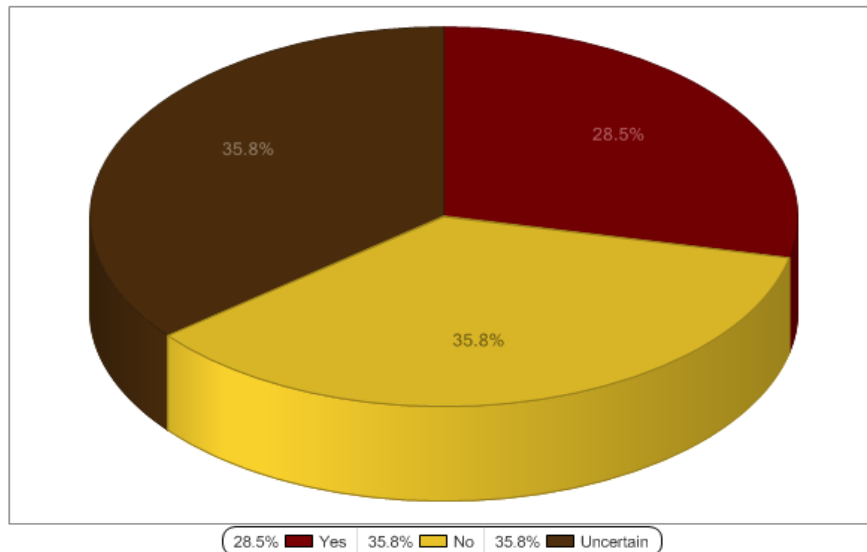


n=81. Note that percentages add up to more than 100% because multiple responses were allowed

Telehealth Expansion and Key Constraints

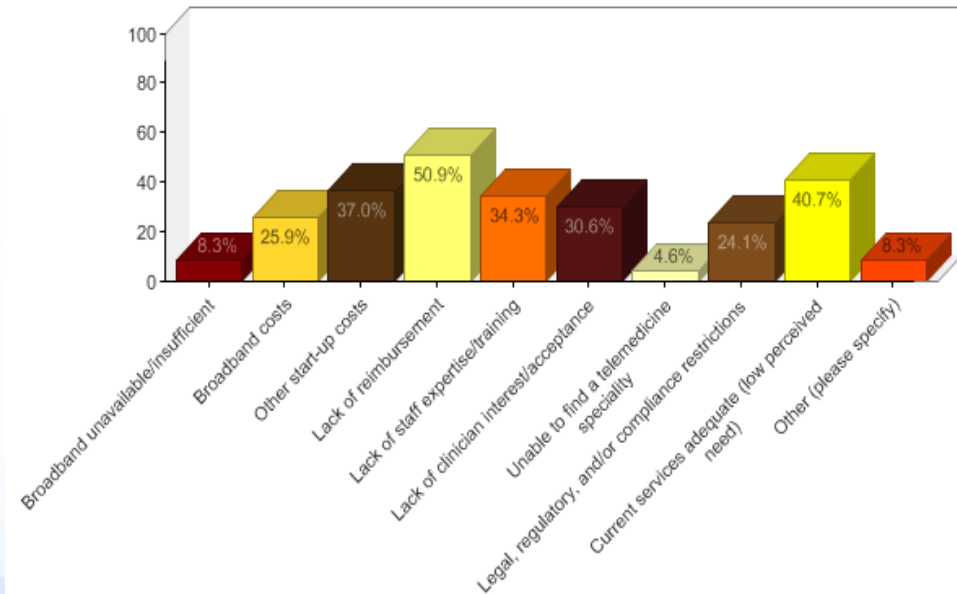
- Approximately 30% of physician respondents indicate that they expect to initiate or expand their use of Telehealth in the next year, although close to 35% are uncertain about expansion
- Cost-related barriers, along with the perception that current delivery modes are adequate, are the most important constraints to physician use of Telehealth
 - Lack of reimbursement
 - Start-up costs, including Broadband costs
- Also, relative to the overall population, a larger percentage of physicians also indicated Lack of expertise/training and Lack of clinician interest/acceptance as important barriers

Q9. Do you expect to either initiate or expand your use of Telehealth in the next 12 months?



n=151

Q10. What are the most significant barriers to your utilization or expansion of Telehealth? (CHECK ALL THAT APPLY)

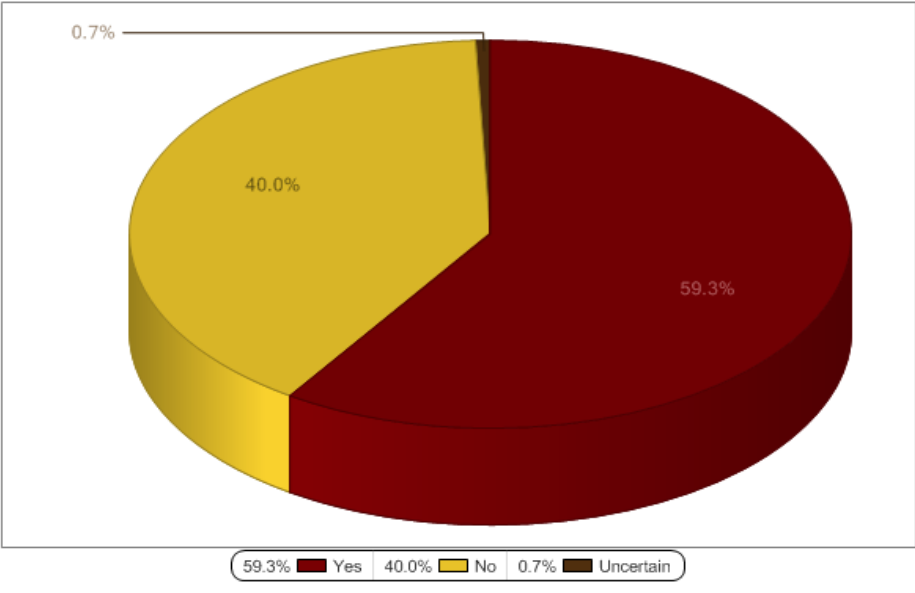


n=108. Note that percentages add up to more than 100% because multiple responses were allowed

Electronic Health Records Utilization

- 60% of physician respondents are currently utilizing an Electronic Health Records (EHR) system at their location
- Among those who have not implemented EHR, implementation costs are as important a barrier as they are to the overall population, but ongoing operating costs and a lack of clarity on ROI are even more important barriers to physicians
- Lack of technical support/training appears relevant but secondary to the cost-related factors

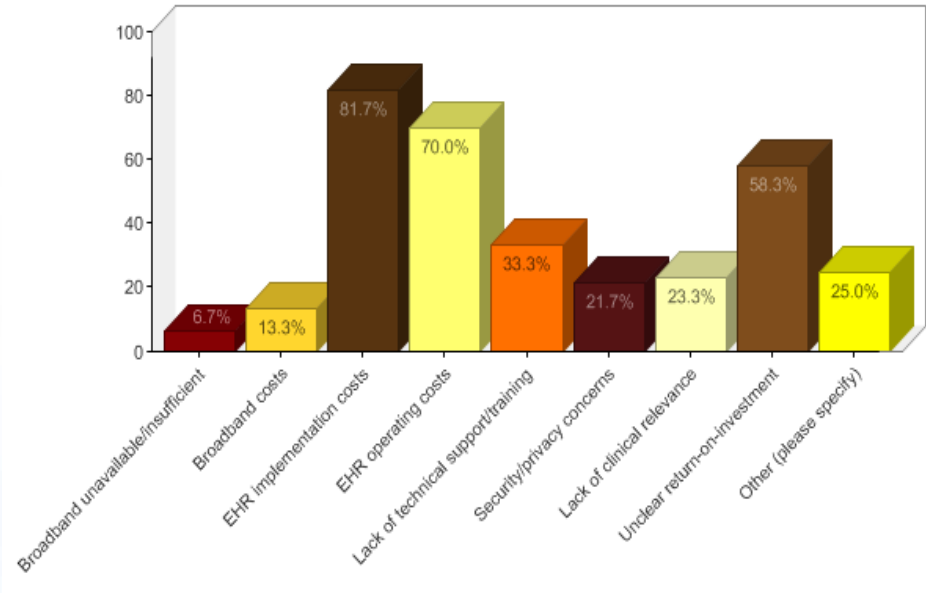
Q11. Is your location currently utilizing an Electronic Health Records (EHR) system?



n=150

Electronic Health Records: digital records of patient health information generated by one or more encounters in any care delivery setting.

Q13. What are the most significant barriers to your implementation of an EHR system? (CHECK ALL THAT APPLY)

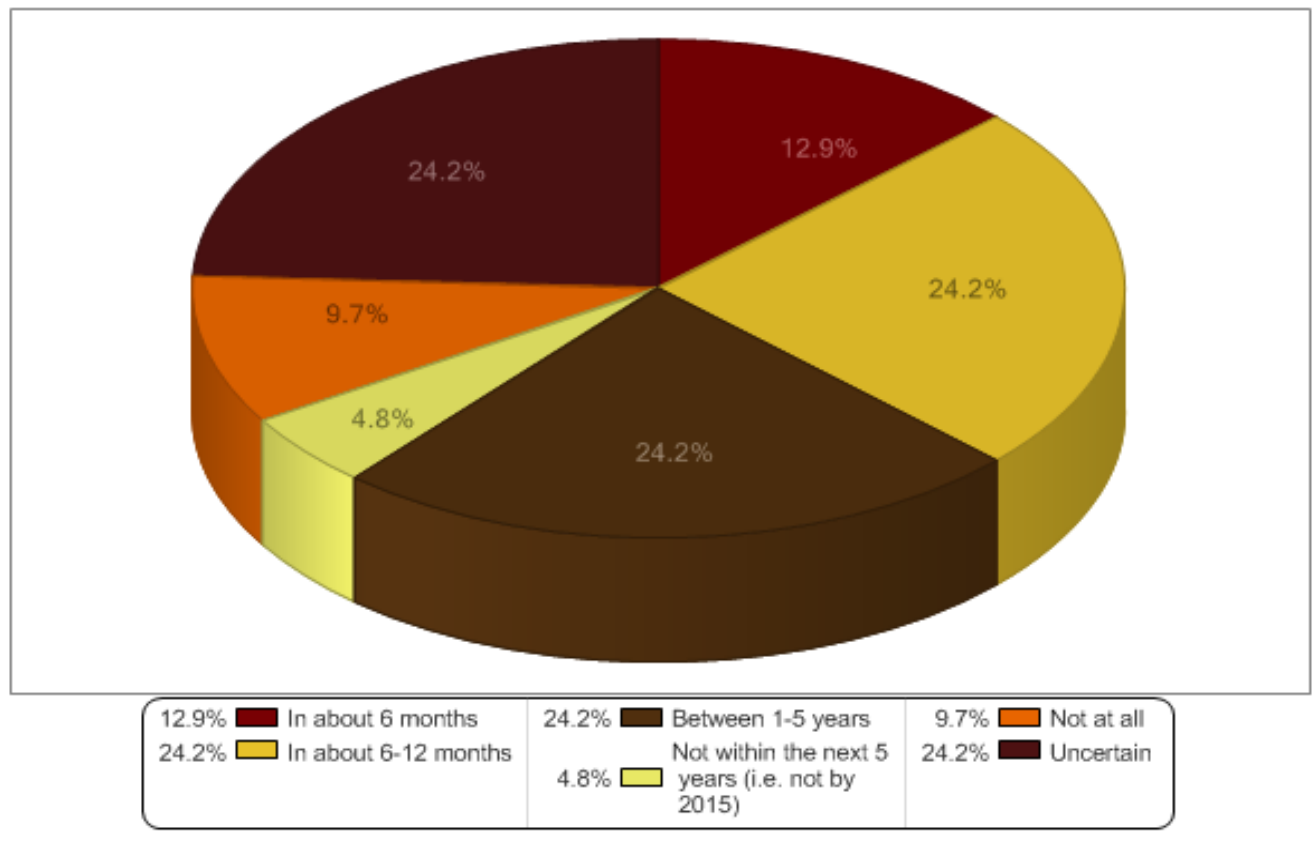


n=60. Note that percentages add up to more than 100% because multiple responses were allowed

Projected EHR Implementation

- Of physicians *who do not currently utilize EHR*, more than a third expect to implement a system within one year, while nearly another 25% expect to implement EHR within 5 years
- For those that remain uncertain about EHR implementation, many indicate a desire for assistance from the Commonwealth

Q12. How soon do you intend to implement an EHR system?

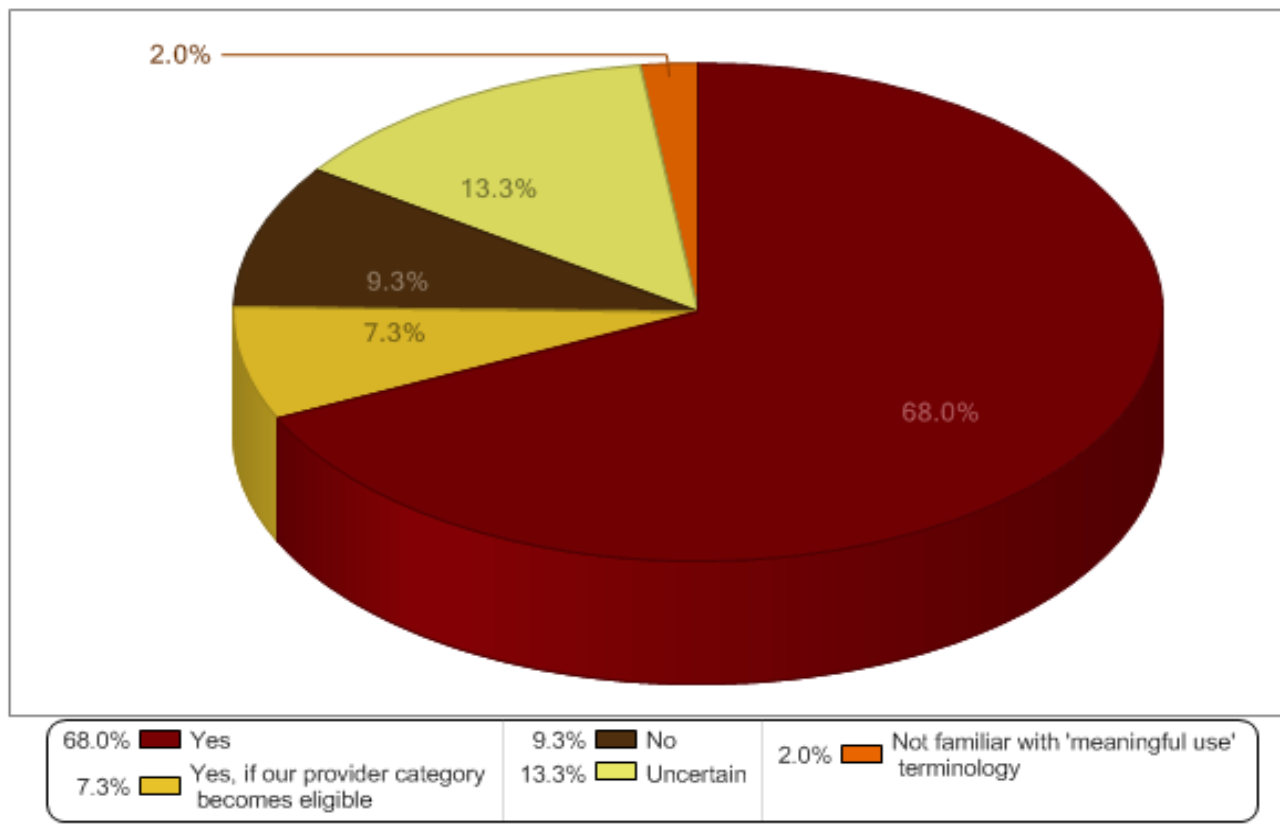


n=62

EHR Implementation and 'Meaningful Use'

- 75% of responding physicians believe they will meet U.S. Department of Health and Human Services' criteria for 'meaningful use' of an EHR system by the 2015 deadline
- **However, nearly one-third of responding physicians requested REC assistance**

Q15. Do you expect to meet the Department of Health and Human Services Health IT criteria for 'meaningful use' of an EHR system by 2015?

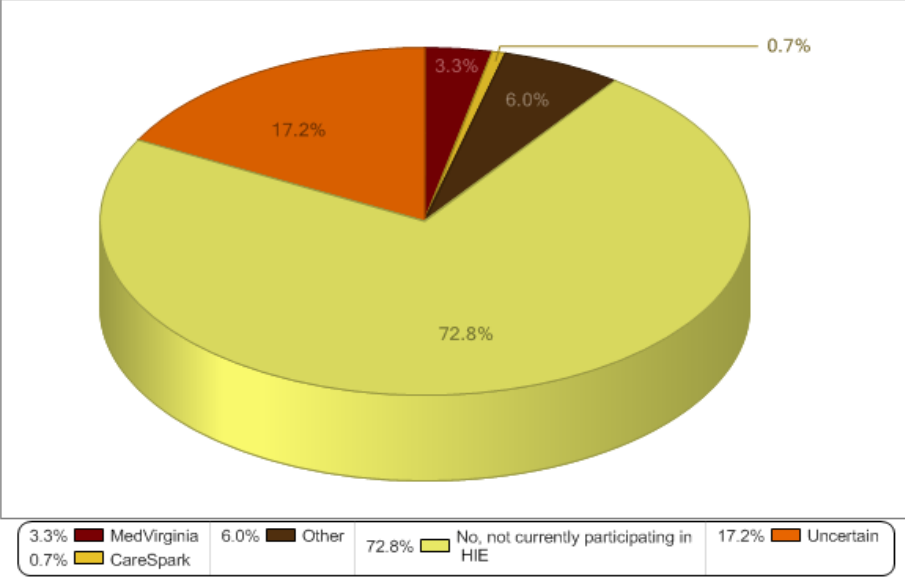


n=150

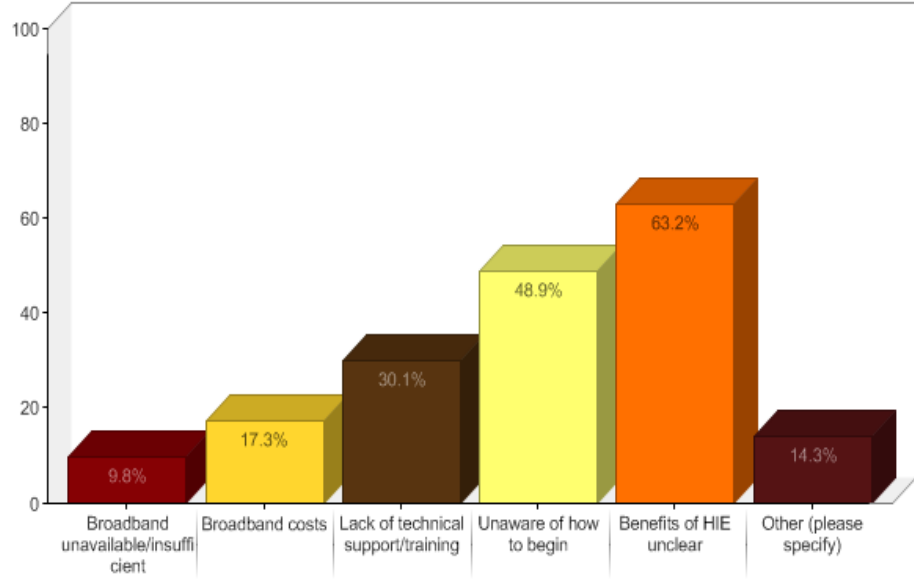
Health Information Exchange Participation

- Only 10% of responding physicians are participating in Health Information Exchange (HIE) in the Commonwealth
- In the physician population, low HIE participation is primarily driven by a lack of understanding of HIE benefits and lack of clarity on how to begin HIE

Q16. Does your location currently participate with other healthcare providers in one of the following Health Information Exchanges?



Q17. What are the most significant barriers to your participation in a Health Information Exchange? (CHECK ALL THAT APPLY)



n=151
 Health Information Exchange: a network characterized by the reliable and secure transmission, access, and retrieval of healthcare-related data among diverse facilities, health information organizations (HIOs) and government agencies according to national standards.

n=133