Health Services Wait Times Report Findings

February 16, 2022

Agency of Human Services
Green Mountain Care Board
Department of Financial Regulation

Impact of COVID-19 Pandemic

We would like to thank all health providers, staff, frontline workers, & Vermont hospitals for their work fighting COVID-19.

Health care system under strain

- Health care providers have worked tirelessly to provide care to Vermonters throughout the COVID-19 pandemic
- Health care providers including hospitals, emergency medical services, home health, primary care and more helped to stand up a statewide network for COVID-19 testing and vaccinations
- The pandemic stressed the entire health care system, creating high inpatient counts for hospitals and staffing shortages across the system
    - New safety protocols and workforce shortages have impacted services statewide, resulting in backlogs that keep patients from moving between health care settings
    - Even when the number of persons needing care for COVID-19 decreases, the system will still be impacted by workforce shortages and potential new demand for deferred care
- Providers pivoted rapidly:
    - Telemedicine use increased dramatically
    - 91% of surveyed Vermont physicians reported an increase in their use of telemedicine during the pandemic

Contents

Rationale & Structure of the Report

Report Rationale & Structure

1. Vermonters Report Delays in Care
2. Impacts of Delayed Care
3. Goals of Report
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Vermonters' Experiences Accessing Care

Reports of long waits for some health appointments in Vermont have been previously documented, but recent reporting by *Seven Days* shed new light on the **challenges and severe consequences** Vermonters can face.

Throughout the study, **we heard directly from Vermonters** in public forums and written testimony that supported reports in the media. The following is a sample of their experiences:

"It is not OK for someone with a potential diagnosis of leukemia to wait 4 months just to 'get in the door'... Some leukemias will be terminal in a shorter time than this."

"I can't imagine how many other parents are struggling to find care for their children."

"I will not make it over 3 months bleeding every day."

"This situation regarding wait times has been going on FOR YEARS."

"I have to somehow cope with this pain... Where is the CARE in our healthcare here in Vermont???"

"I am a doctor and told the scheduler it was likely cancerous. They gave me the earliest available appointment... a 5-month wait."

Impacts of Delayed Care

Health Impact

- There is evidence that **long wait times for clinically appropriate care can lead to worse health outcomes**, especially among older and more vulnerable patients
    - The risk of patient mortality significantly increased when wait times were longer than **31 days** among older and more vulnerable patients

Emotional Impact

- Many Vermonters reported understandable **frustration, anxiety and suffering** when they or a loved one was unable to receive care in a timely manner
- Research shows patient satisfaction declines with longer wait times

Financial Impact

- Delayed health care can have a significant impact on hospitalization costs, since some **individuals will have gotten sicker** when they do eventually receive care

Equity Impact

- Barriers to care **disproportionately affect** those who may not have the time, resources, or knowledge to navigate a complicated medical system

Study Goals

1	Invite Vermonters to share their stories directly with our team to expand on previous reports
2	Bring providers and experts together to speak directly to wait times across Vermont's health care system
3	Gather data to validate patient and provider reports and measure wait times statewide
4	Consider reasons why medical wait times are so long in Vermont, including the role of the COVID-19 pandemic
5	Develop recommendations to help address medical wait times and improve patient experience

Report Scope & Structure

We heard from people and providers that specialty care had some of the longest waits in Vermont. We initially focused the report on the following **21 areas of specialty care:**

- Addiction / Addiction Psychiatry
- Allergy and Immunology
- Cardiology
- Dermatology
- Ear, Nose and Throat
- Endocrinology
- Gastroenterology
- General Surgery
- Gynecology
- Hematology
- Nephrology
- Neurology
- Orthopedic Surgery
- Pain Management
- Podiatry
- Psychiatry
- Pulmonology
- Radiology
- Rheumatology
- Sleep Medicine
- Urology

Report Team

Interagency collaboration between Agency of Human Services, Green Mountain Care Board, and Department of Financial Regulation. The below were contracted partners:

- Oliver Wyman Actuarial Consulting: data gathering and analysis
- Oliver Wyman Life Sciences: independent physician with extensive hospital administration experience to serve as independent project evaluator

Data Sources

Qualitative Data

- Two public listening sessions (70 total participants)
- Focus groups comprised of:
  - 20 Primary Care Providers (PCPs)
  - 12 Specialists
  - 5 Mental health providers
  - 8 Referral coordinators
- Written testimony
  - Patient reports (68 written responses)
  - Reports/extracts from providers (e.g., provider emails and narratives, file estimating wait times by one primary care practice)
- Media articles
- Academic research
- Provider survey responses (55)
- Conversations with hospitals
  - Calls with administrators, staff, and providers

Quantitative Data

- Green Mountain Card Board Data
  - Wait times submitted as part of hospital budgeting reports
  - VHCURES claims database
- “Secret Shopper” Patient Access Survey
  - 400 unique specialty practices contacted
  - 21 different specialities
  - 1000+ phone calls
- Blueprint Primary Care Chart Audit
  - 2000+ individual chart referrals reviewed
- Blueprint Consumer Assessment of Healthcare Providers and Systems (CAHPS)
- Hospital-reported data
  - Clinical, staff, and appointment data provided UVM, DHMC
  - First and third available appointment data
- Oliver Wyman Analysis
  - IBM Watson MarketScan® (commercial database)
  - Definitive Healthcare data (commercial database)
  - Medicare 5% Limited dataset
  - Vermont Provider Survey (VDH)
  - MGMA DataDive
  - American Community Survey Public Use -- Microdata Sample
  - US Census Bureau Population Projections
  - ACA Carrier and Medicaid Provider Listings
  - National Health Expenditures
  - American Medical Association Benchmarking
- Benchmarks
  - Peer state claims analysis from IBM Watson MarketScan®
  - Merritt Hawkins 2017 Survey of Physician Appointment Wait Times
  - VA data on wait times

Lack of Wait Times Data

There is limited available data on wait times nationally, and there is no agreed-upon metric to assess wait times

- Limited literature on wait times in healthcare — **and wait times for specialists in particular**
- No agreed-upon national standard for tracking wait times. The following organizations use different metrics:

Institute for Healthcare Improvement	**Recommends** measuring wait times using **third next available appointment**
Veterans Affairs	**Tracks** the time between **when referral is placed & when appointment occurs**
Merritt Hawkins **National physician search firm**	**Phone surveys** that ask providers for the next available appointment
Vizient **Healthcare performance improvement company**	Measures percent of **new patients seen within a certain time frame**
Vermont	Hospitals report varying metrics: • First and third next available • New patients seen in 14 days

Lack of Wait Times Data

Accurate data on wait times in Vermont has not historically been available

- **No state entity is responsible** for measuring access across the entire health system in the state of Vermont
  - The Green Mountain Care Board, which regulates hospitals, has recently begun collecting data on third next available appointments for primary and specialty practices owned by hospitals in Vermont
    - No data has historically been reported for wait times for primary and specialty care at non-hospital affiliated independent practices, FQHCs, ambulatory surgery centers, or express care centers
    - The Department of Mental Health collects data on average length of stay in hospital emergency departments to assess mental health wait times
  - The Office of the Healthcare Advocate works with patients to access care, but does not collect data from healthcare sites on wait times
  - Insurance companies report if providers are accepting new patients, but not how long patients must wait to see those providers

- Metrics used to assess wait times in Vermont have **not adequately captured patient experience**
  - Providers and hospitals generally agree the metrics Vermont has used to assess wait times — such as the first and third next available appointments — are inaccurate and have not been sufficient to assess patients' experiences accessing care

Quantifying the Problem

Quantifying the Problem

1. Means of Gathering Data
    a. Public Comment
    b. Provider and Expert Comment
    c. CAHPS Survey
    d. Claims Data Analysis
    e. Secret Shopper
    f. Primary Care Chart Audit
    g. Findings

Public Comments

Testimony

- 70 participants in public listening sessions
- Written testimony from 68 patients and caregivers comprising 76 pages

Common Themes

- Material impact to health and wellbeing
    - Approximately a third of patients described issues relating to pain, both physical and psychological, resulting from delayed care as well as declines in overall health
- Bureaucratic hurdles to making appointments
    - Complex referral processes, unique referral forms for each department, imaging and testing requirements before appointments can even be scheduled, lengthy packets to be filled out before an appointment
- Poor communication between hospitals and patients
    - Patients reported lost referrals adding unnecessary delays to scheduling, long waits for referrals to be triaged by the medical system, and a lack of follow up between specialists and the patient's PCP
- Difficulty accessing psychiatric and eating disorder services, particularly for children
- Inequitable patient access
    - Time and resources, understanding of the medical system, health conditions, and transportation were all cited as factors influencing patients' ability to advocate for themselves and navigate the health system

Provider Comments

Testimony

- Focus groups included 20 PCPs, 12 specialists, 5 mental health providers, and 8 referral coordinators
- Provider emails, 55 provider survey responses, and practice-level data

Common Themes

- Workforce shortages, high turnover, and recruitment challenges were commonly cited drivers of wait times in survey responses and focus groups
- Some providers expressed frustration with the consolidation of specialty services at tertiary care facilities, reducing ability to provide specialty care at regional hospitals
- Some providers cited inappropriate PCP referrals as well as unnecessary care by specialists as additional drivers
- Providers reported devoting increasing amounts of time to administrative tasks, such as entering data into EHR (electronic health record) systems and drafting prior authorization requests, leaving providers “shoehorning patients into 15-minute slots when there’s 40 minutes of work to do”
- Communication breakdowns between specialists and PCPs, exacerbated by poor interoperability of EHR systems
    - Administrative burden, operational challenges in the referral process, and lost referrals contribute to long lags in appointment scheduling
    - Consult notes do not regularly come back to the PCP
        - In 2021, 56% of consult notes returned to the PCP compared to 65% in 2019 (based on Blueprint chart auditing of 2,300+ PCP chart records)

Patient Surveys

What can existing patient surveys tell us about access to specialists?

Survey tool: Consumer Assessment of Healthcare Providers & Systems (CAHPS) Specialty Care Composite

The Specialty Care Composite surveys patients about care received from specialists.

The composite includes the following questions:

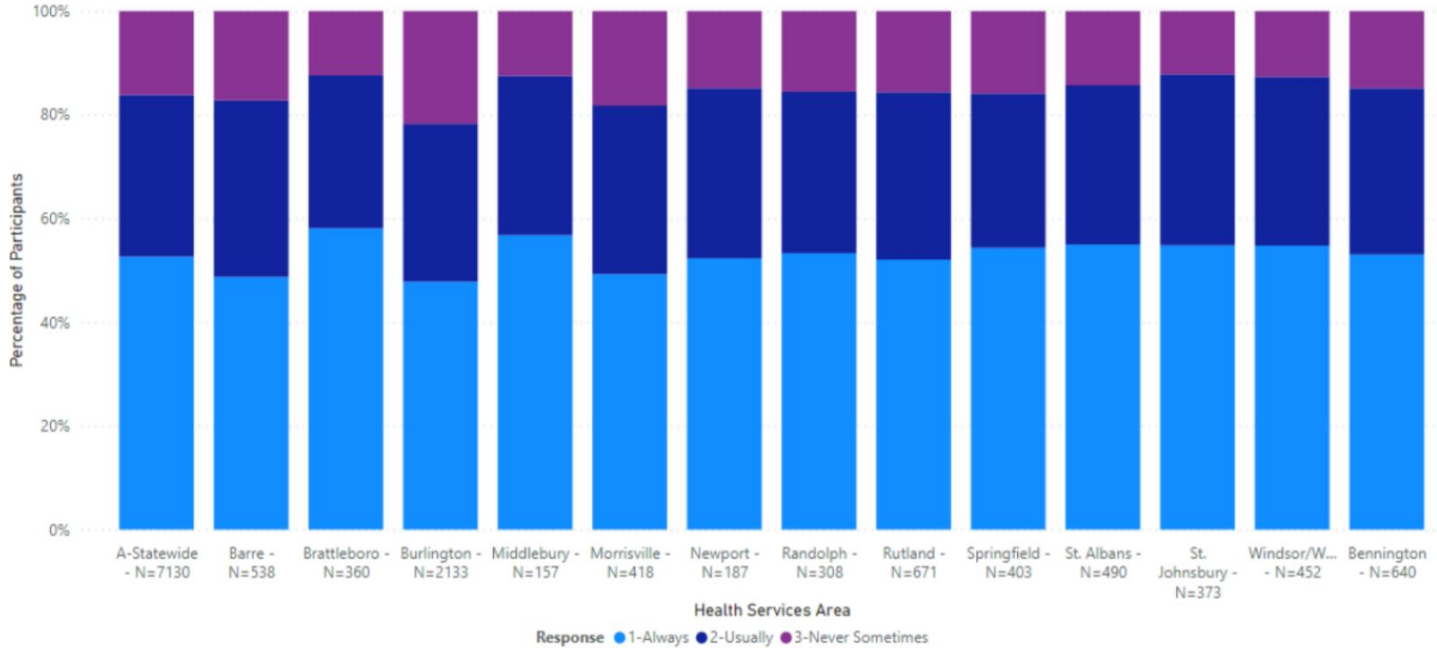
- In the last 6 months, how often was it easy to get appointments with specialists?
- In the last 6 months, how often did the specialist you saw most seem to know the important information about your medical history?

Responses to these composite questions are represented on the next two slides.

Blueprint CAHPS Specialty Care Composite

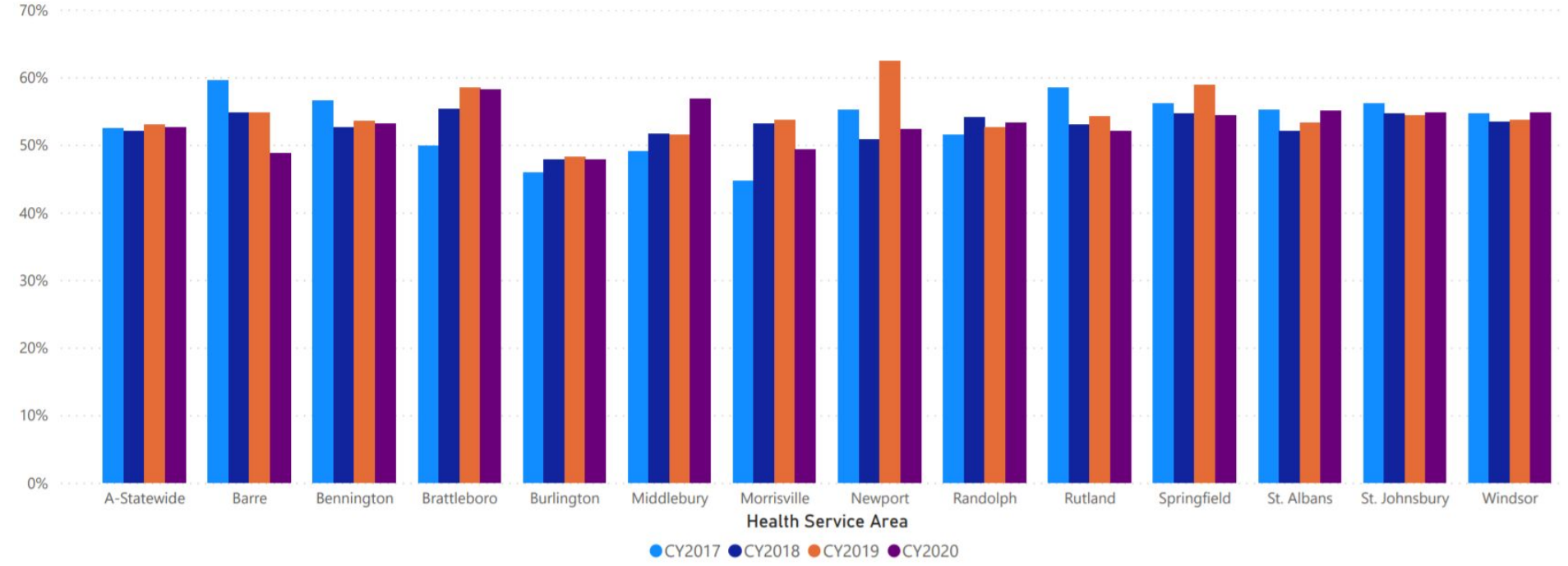
Those answering “always” to the composite access questions regarding specialities ranges from 48% (Burlington) to 58% (Brattleboro), with a statewide average of 53%.

The majority of responses answered “always” or “usually” to the composite specialists question while a smaller fraction responded “never, sometimes”.



What Can Patient Surveys Tell Us About Access to Specialists?

The chart below reflects those answering “Always” to the composite question about availability and experience of specialists between 2017 and 2020. Some health service areas experienced an improving trend (i.e. Brattleboro) while others declined (i.e. Barre), but the statewide average remained stable.



Quantifying Wait Times in Vermont

Separate teams measured wait times for specialty services using **three independent methods:**

Claims Data Analysis

Analysis of VHCURES claims data from 2016-2020 to calculate wait time between PCP referral and specialist visit

Secret Shopper Survey

Phone calls were made to assess next available appointment at >90% of Vermont specialty practices

Primary Care Chart Audit

Chart review to assess patients' actual wait times for specialty care in 2021

Claims Data Analysis

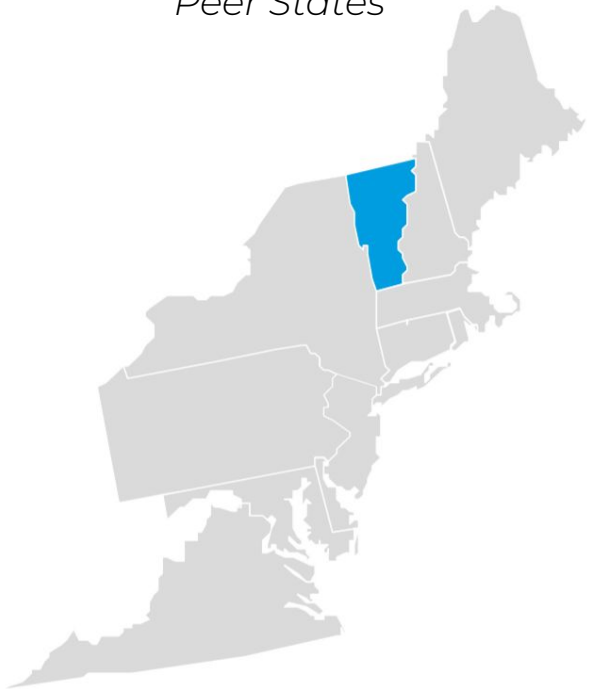
Claims Data Analysis

Summary

Oliver Wyman analyzed the Vermont Health Care Uniform Reporting and Evaluation System (VHCURES) data from 2016-2020 in an attempt to calculate healthcare access for a subset of patients – those with **chronic conditions**, such as asthma, anxiety and heart disease

- Wait times were assessed as the time between when a patient saw their PCP for a specific diagnosis and when they saw a specialist for the same diagnosis
- Wait times were included only for PCP and specialty appointments that clearly linked (e.g., they had to have the same diagnosis code grouping)
- Peer states were selected using propensity matching for the VHCURES population to ensure peer members were of similar demographics, chronic condition prevalence, and mix

Peer States

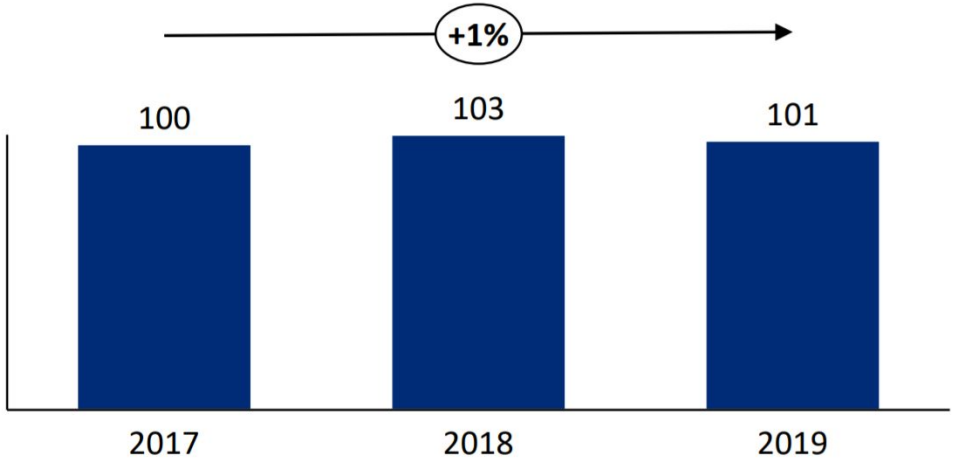


Note: Not all claims on behalf of Vermonters are included in VHCURES data. For example, self-insured patients are under-represented. See Appendix for more detailed methodology.

Claims Data Analysis

For the subset of patients examined, Oliver Wyman found the average number of days between a PCP and follow-up Specialist visit totaled **approximately 100 days** for 2017 through 2019

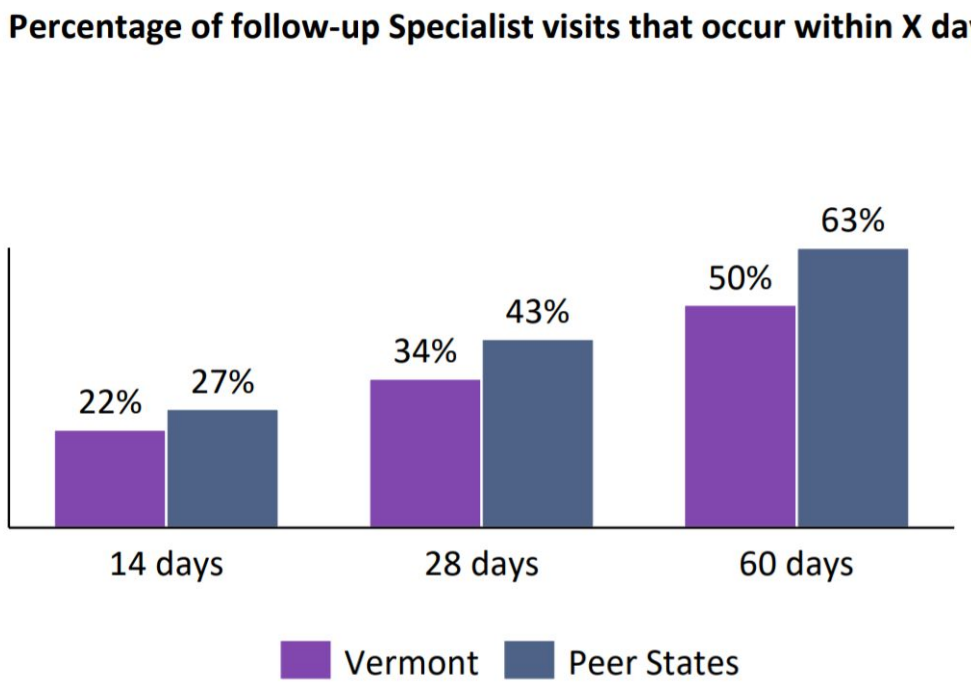
Average days between PCP and follow-up Specialist visit, Vermont



Note: Not all claims on behalf of Vermonters are included in VHCURES data.
For example, self-insured patients are under-represented. Data reported here excluded 2020 to avoid including the impact of COVID-19 pandemic.

Claims Data Analysis

Vermont had longer wait times than peer states



Half of Vermont *specialist appointments were* ***not scheduled*** *within 2 months, as opposed to about* ***one-third for peer states***

Note: VHCURES data normalized using patients with chronic conditions; Peer states: NH, ME, MA, CT, RI, NY, PA, NJ, DE, MD, VA

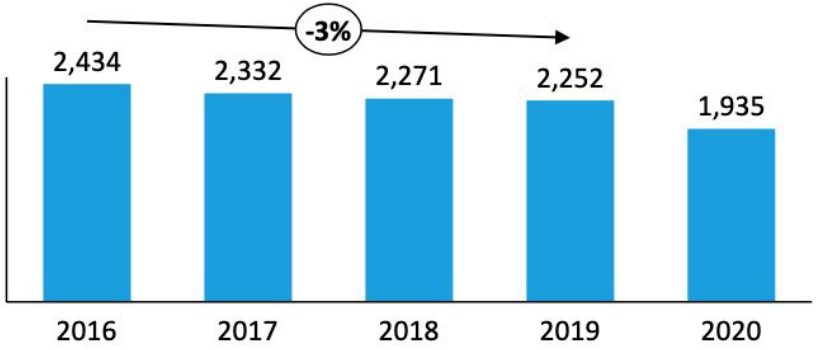
Vermonters Now See Fewer Specialists

Specialist utilization has decreased in recent years and PCP utilization has remained steady

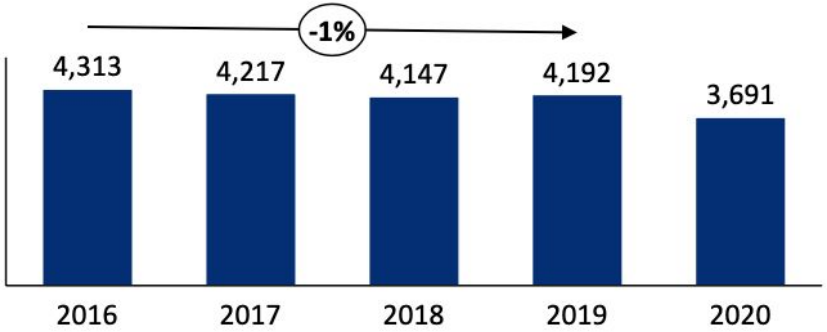
Specialist utilization decreased by 3% from 2016 to 2019.

PCP utilization has remained steady since 2016.

Specialist utilization per 1K chronic members, Vermont



PCP utilization per 1K chronic members, Vermont



Sources: Oliver Wyman analysis of VHCURES data. Utilization is defined as the number of physician visits.

Secret Shopper

Secret Shopper Summary

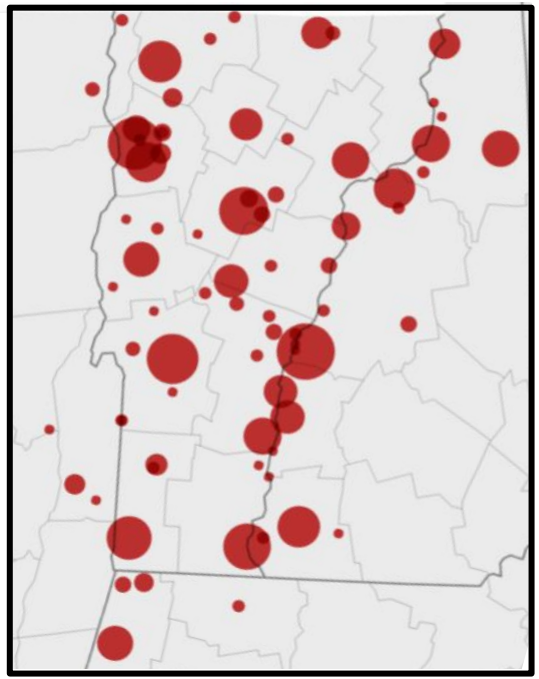
Over 1000 calls were made to specialty clinics in Vermont and contiguous counties asking for the next available appointment.

- Over 400 unique specialty practices were called, representing approximately 90% of Vermont specialty providers
- Each clinic was called at least twice, once for callers assigned Medicaid insurance and once for callers with Blue Cross Blue Shield of Vermont commercial insurance
- Callers collected data for 21 specialities

The project was designed to replicate as closely as possible the experience of a **Vermonter seeking to make a new patient appointment** with a specialist for a non-emergent medical issue.

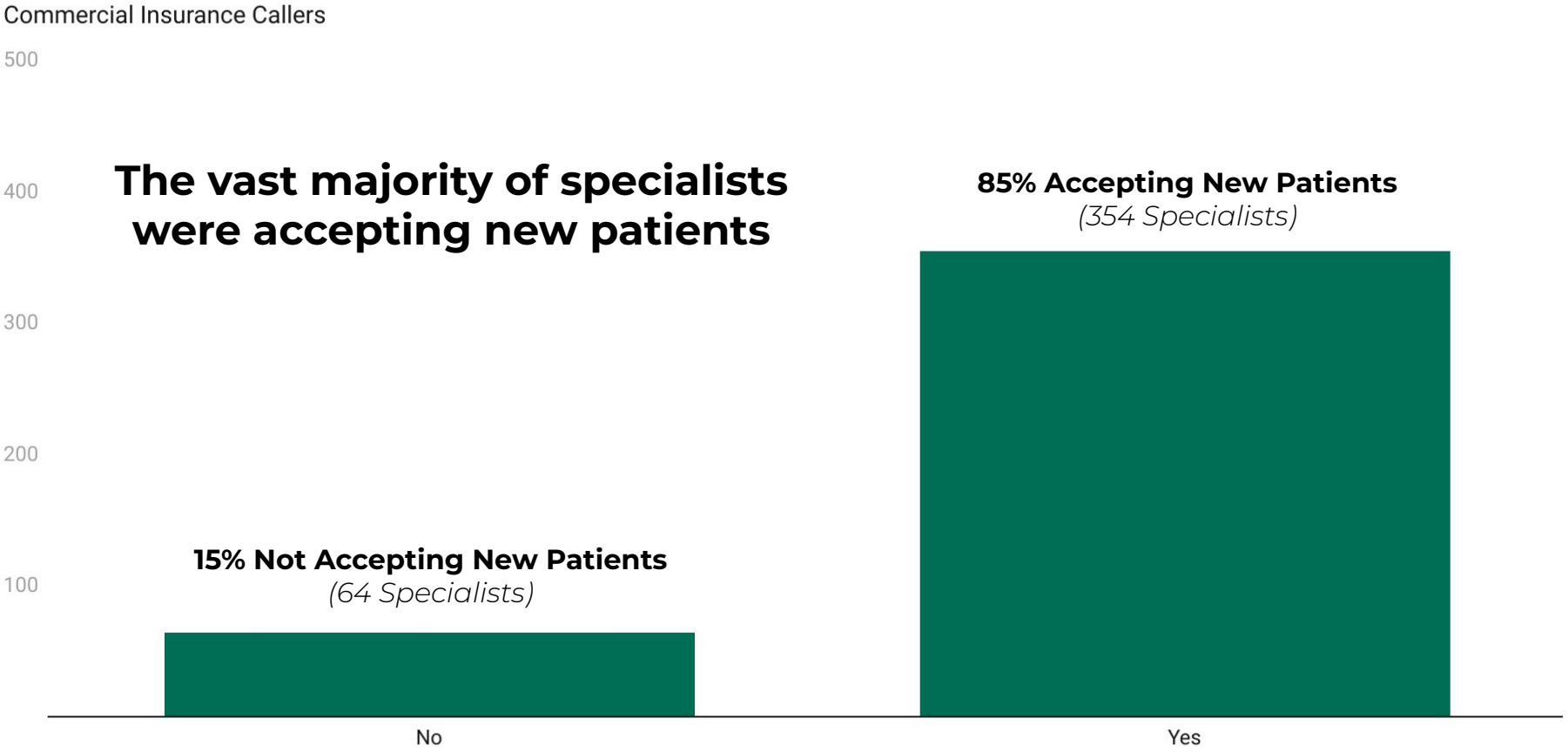
The survey was designed after the semi-annual Survey of Physician Appointment Wait Times conducted by Merritt Hawkins that assesses wait times for mid-sized and large-sized metro areas across the United States.

Call Distribution

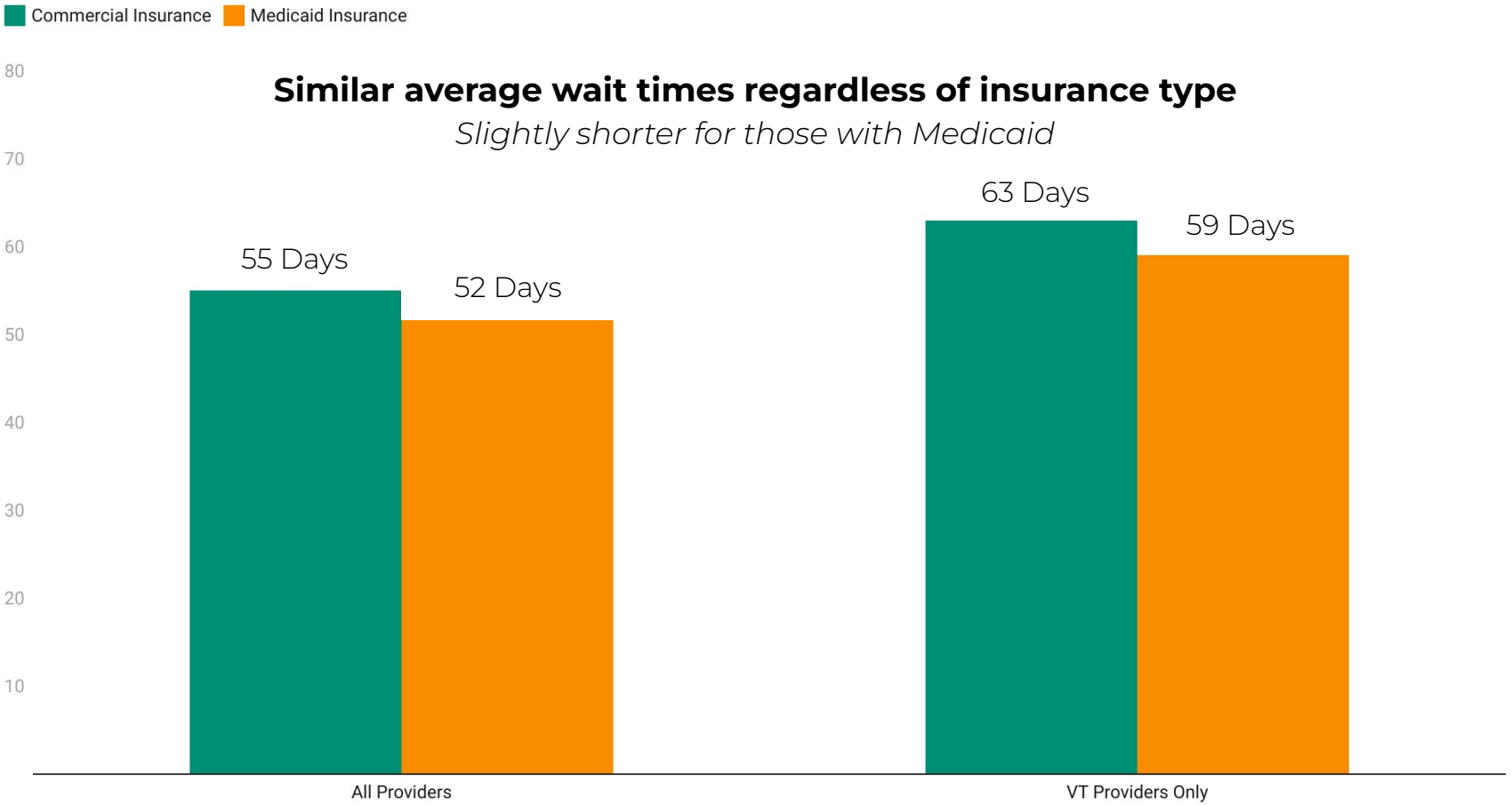


Note: see Appendix for survey considerations and Merritt Hawkins 2017 report

Secret Shopper: Specialist Providers Accepting New Patients



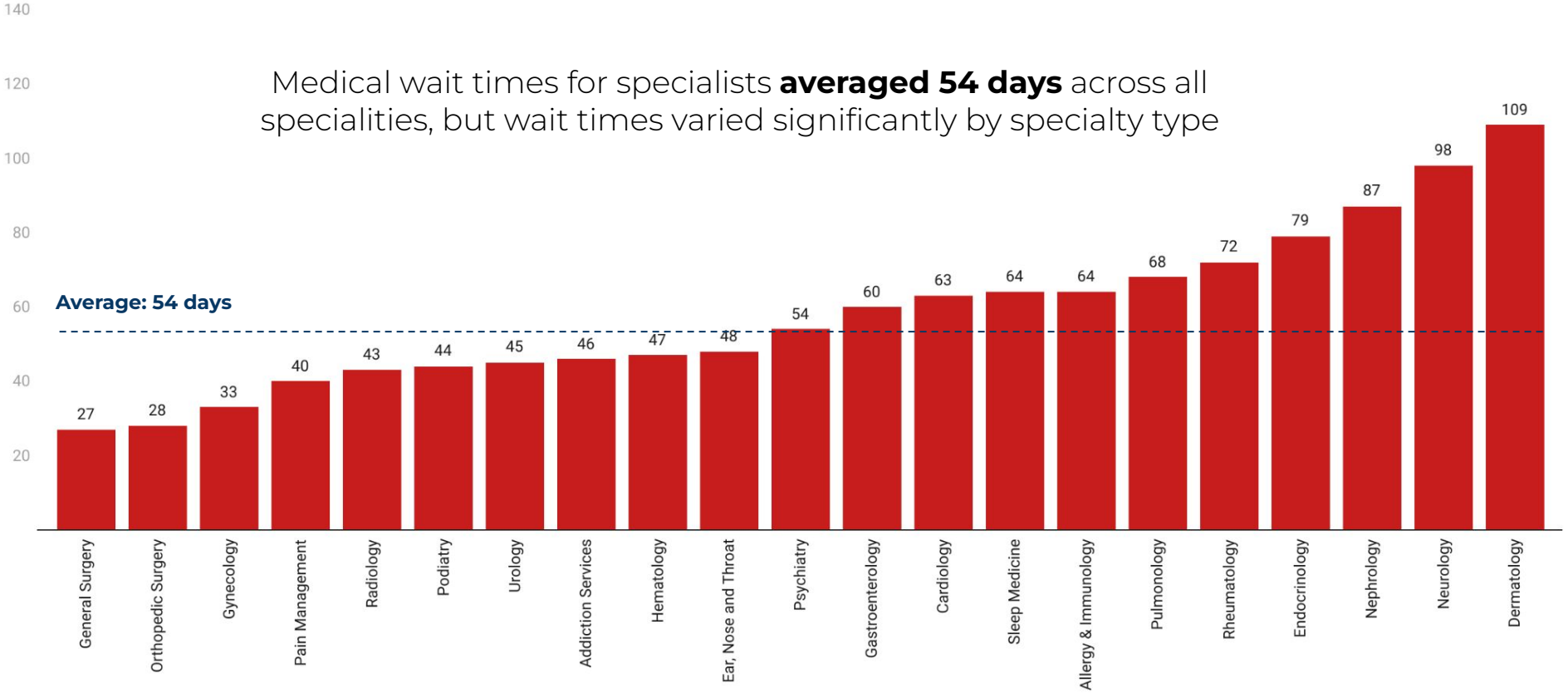
Average Wait Times by Primary Insurance Type



Source: *See Note 1*

Secret Shopper: Average Wait Time For All Specialists

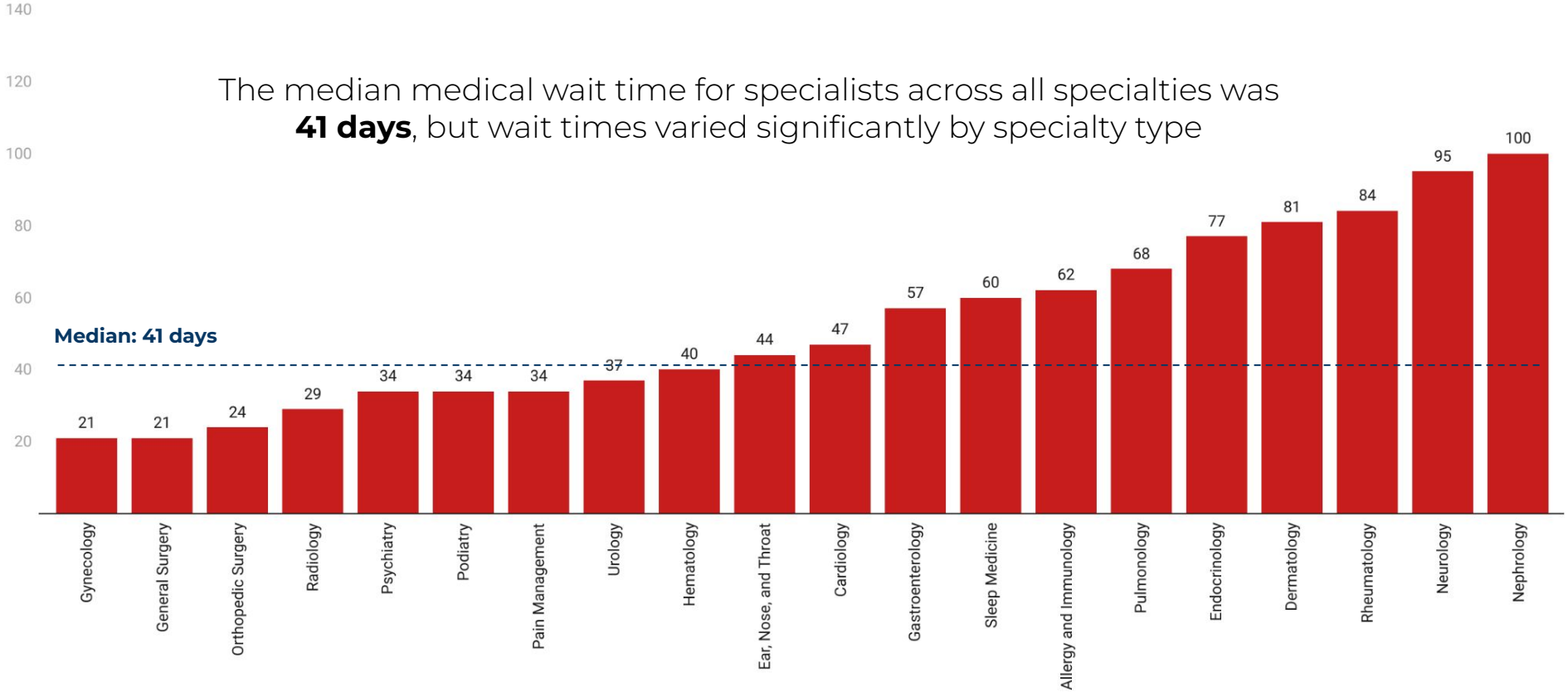
Medical wait times for specialists **averaged 54 days** across all specialities, but wait times varied significantly by specialty type



Source: *See Note 2*

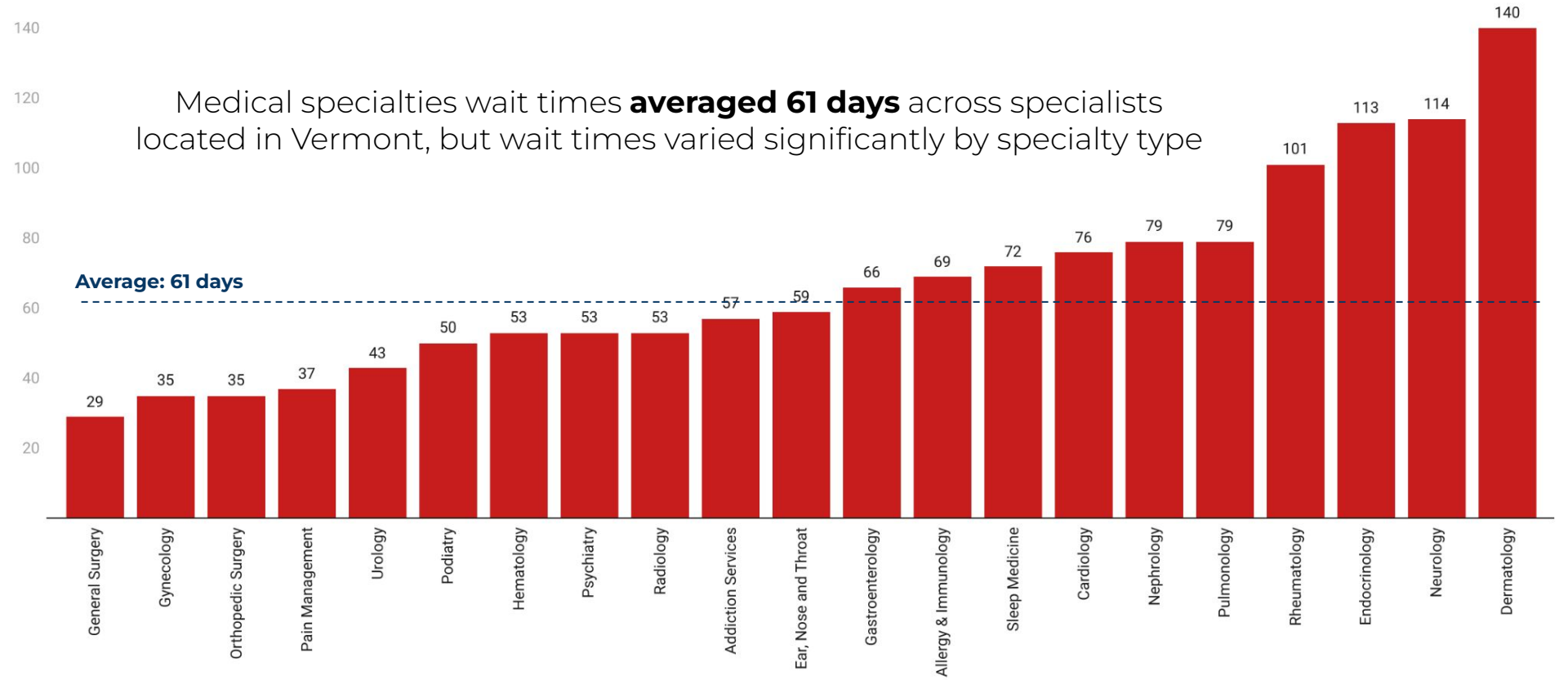
Secret Shopper: Median Wait Time For All Specialists

The median medical wait time for specialists across all specialties was **41 days**, but wait times varied significantly by specialty type



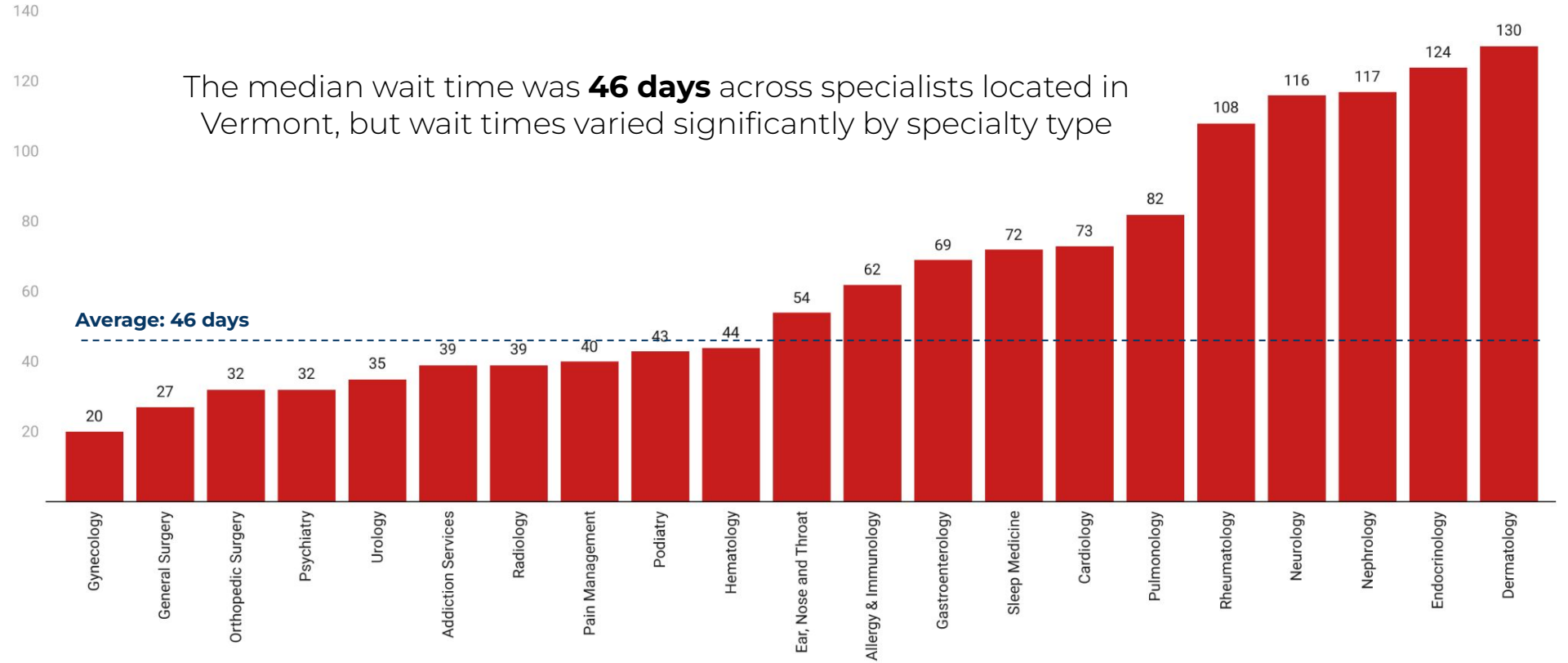
Source: *See Note 2*

Secret Shopper: Average Wait Times For Specialists Located In Vermont



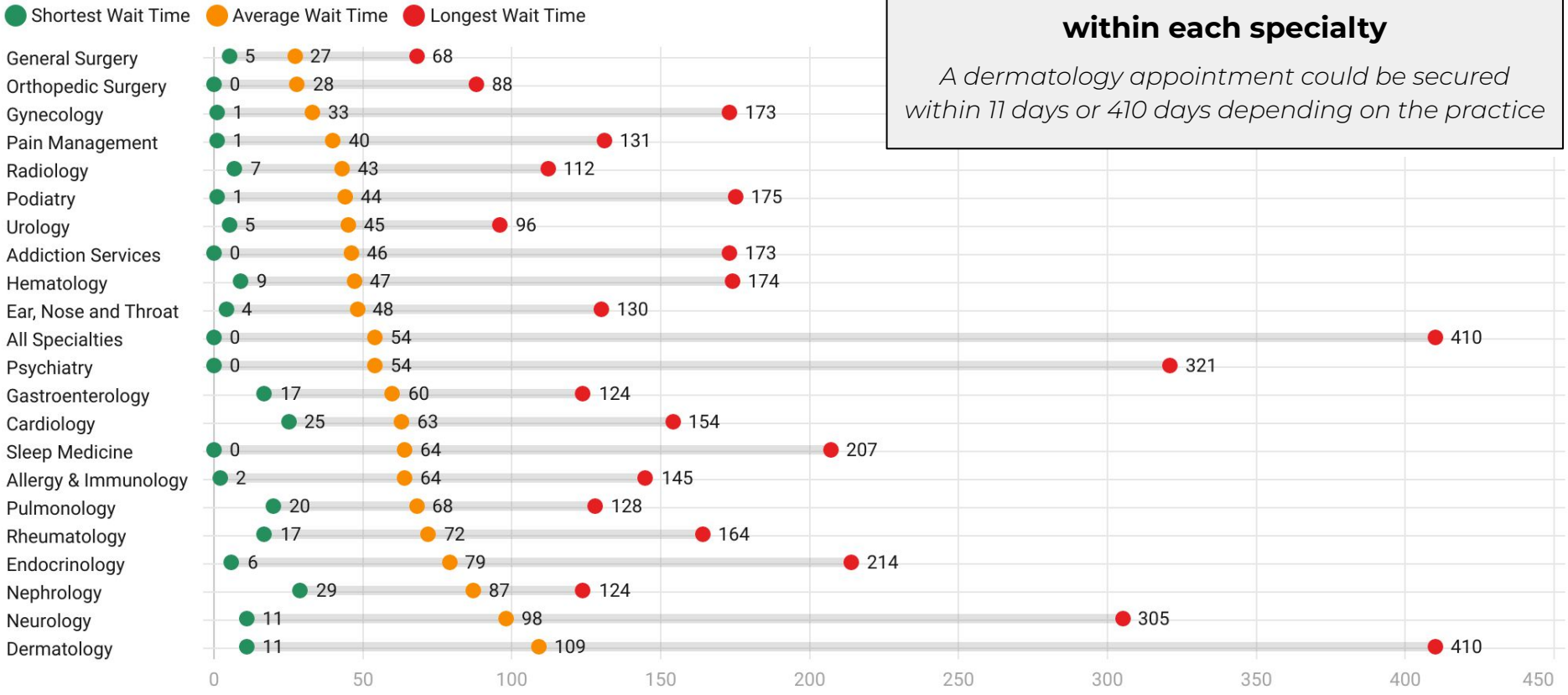
Source: *See Note 3*

Secret Shopper: Median Wait Times For Specialists Located In Vermont



Source: *See Note 3*

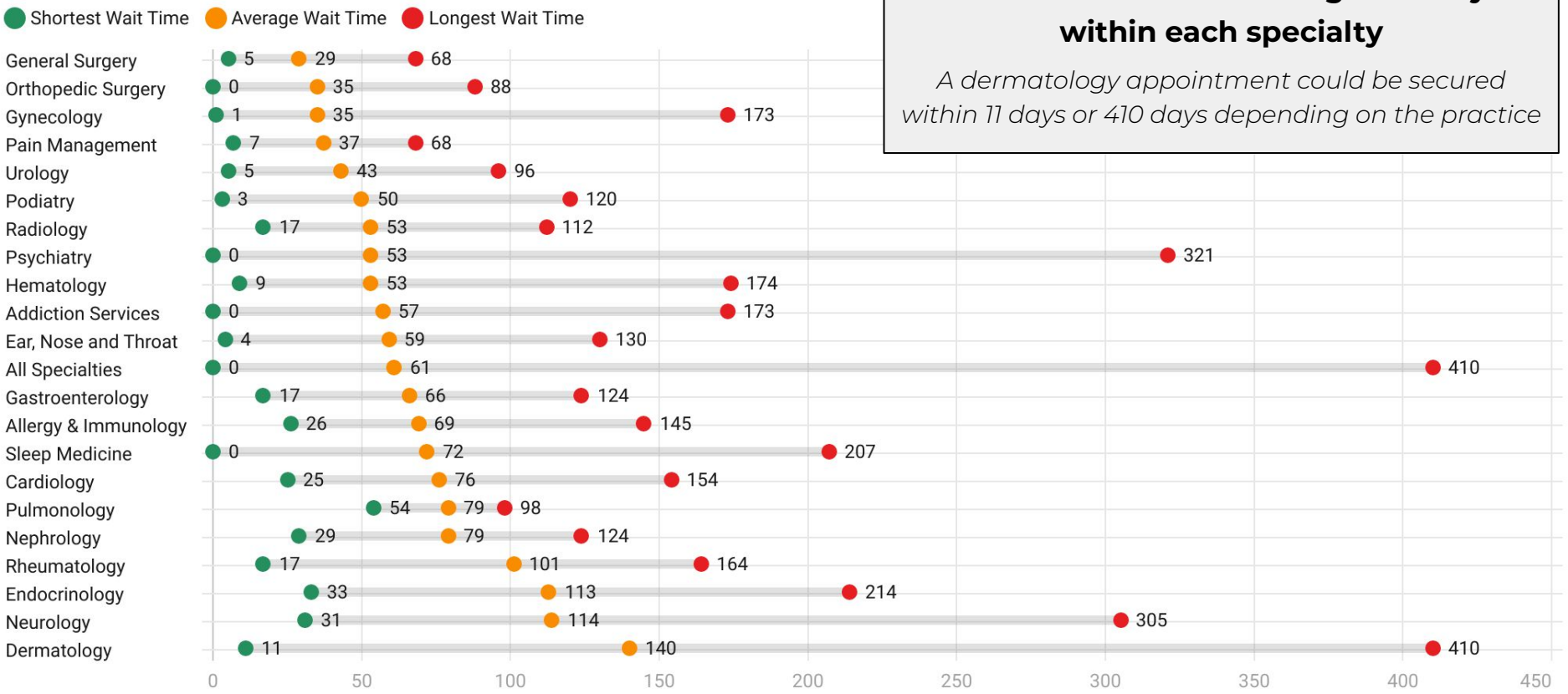
Wait Time Ranges For All Specialists



Wait times also varied significantly within each specialty

A dermatology appointment could be secured within 11 days or 410 days depending on the practice

Wait Time Ranges For Specialists In Vermont

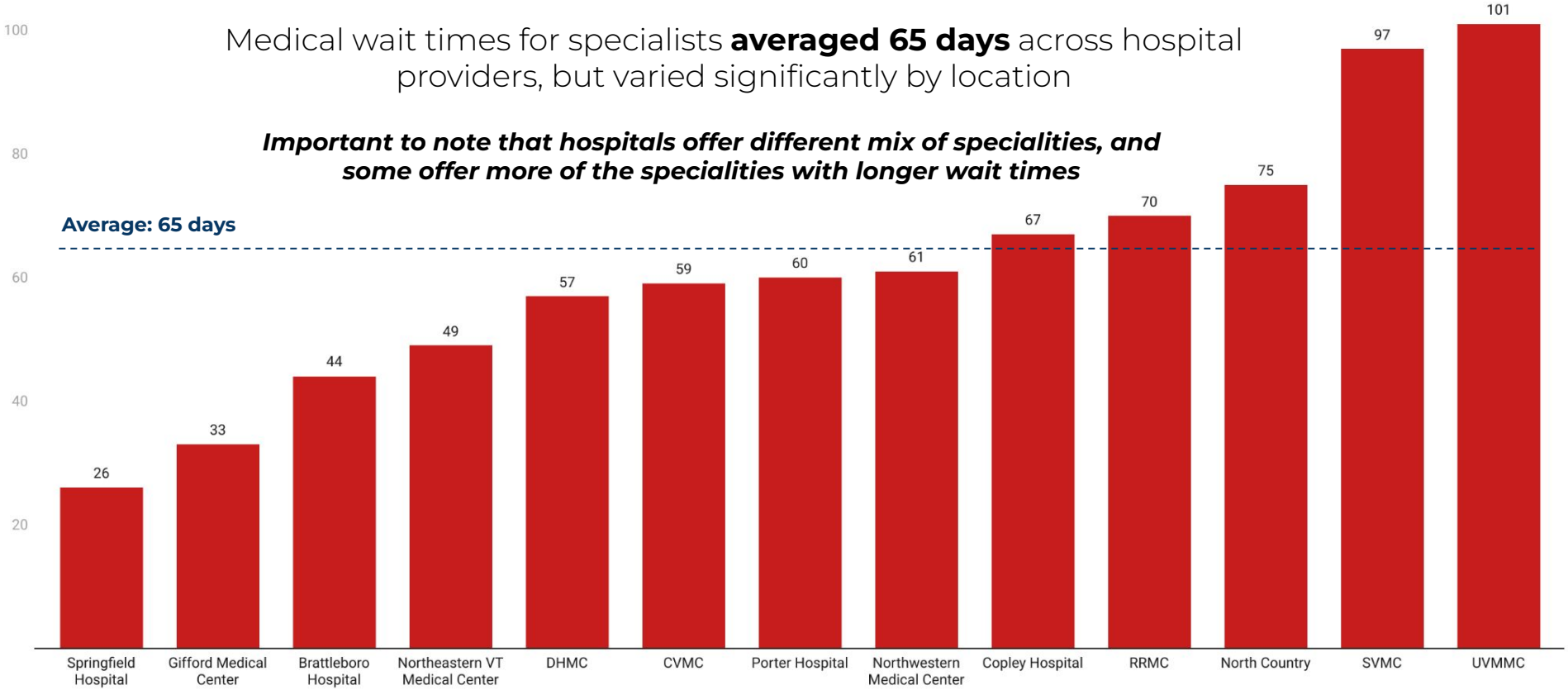


Wait times also varied significantly within each specialty

A dermatology appointment could be secured within 11 days or 410 days depending on the practice

Secret Shopper: Wait Time for Specialist Appointment by Site

Average wait time in days



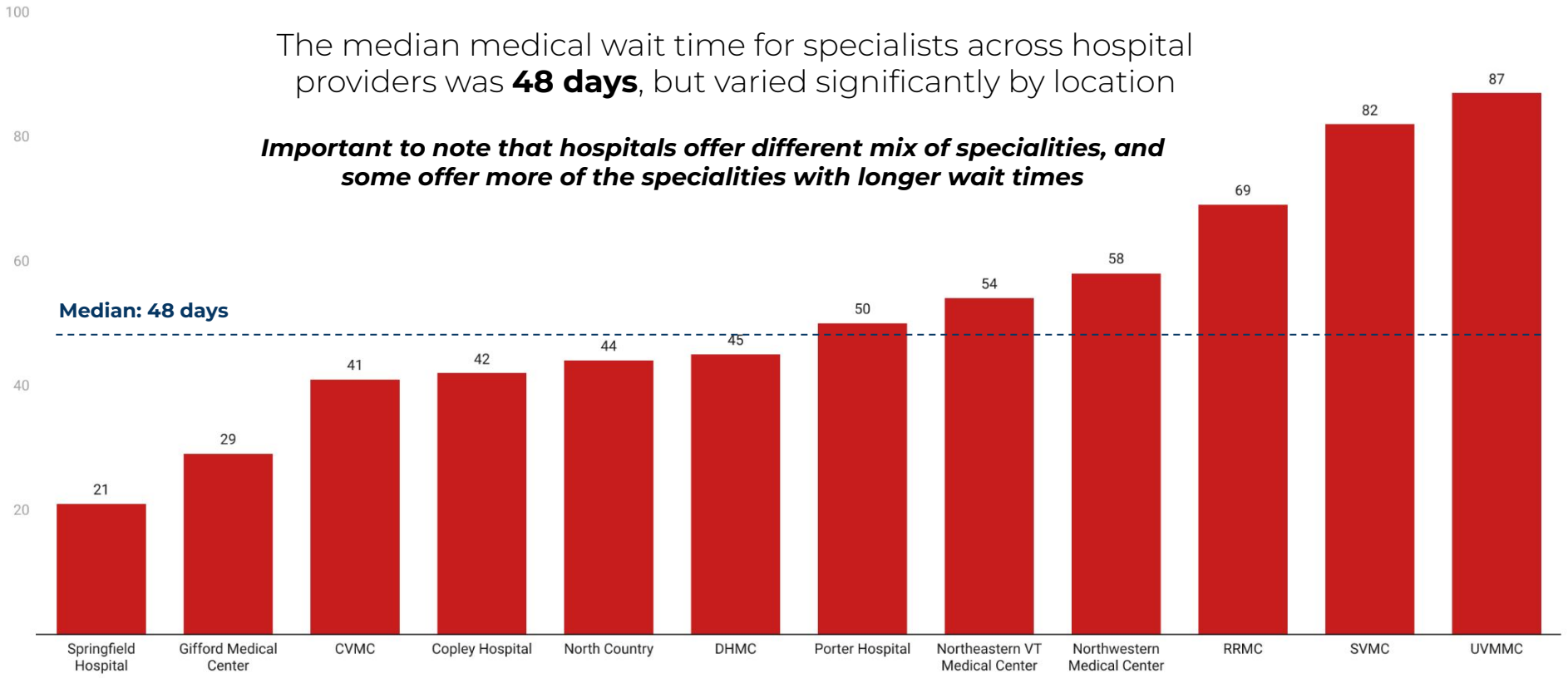
Source: *See Note 4*

Secret Shopper: Wait Time for Specialist Appointment by Site

Median wait time in days

The median medical wait time for specialists across hospital providers was **48 days**, but varied significantly by location

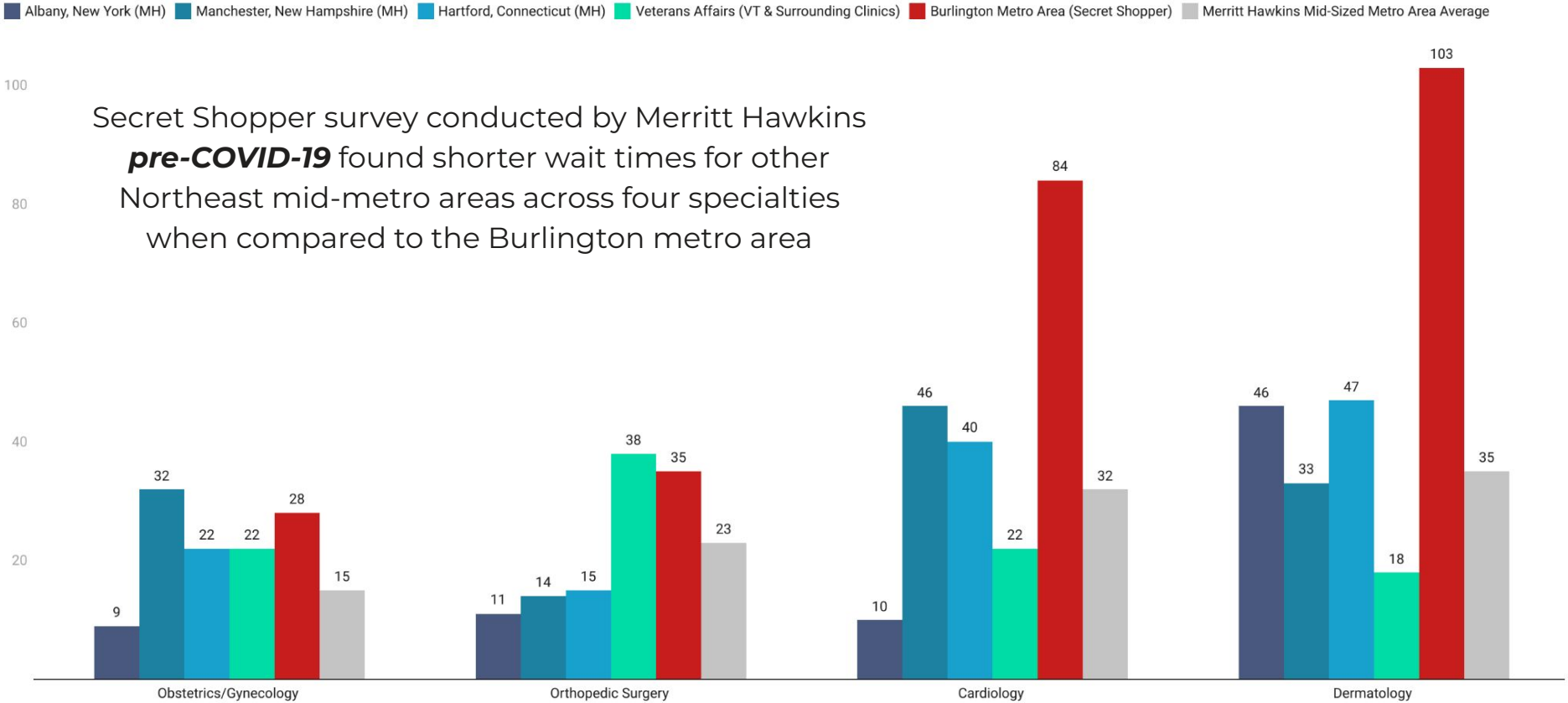
Important to note that hospitals offer different mix of specialities, and some offer more of the specialities with longer wait times



Source: *See Note 4*

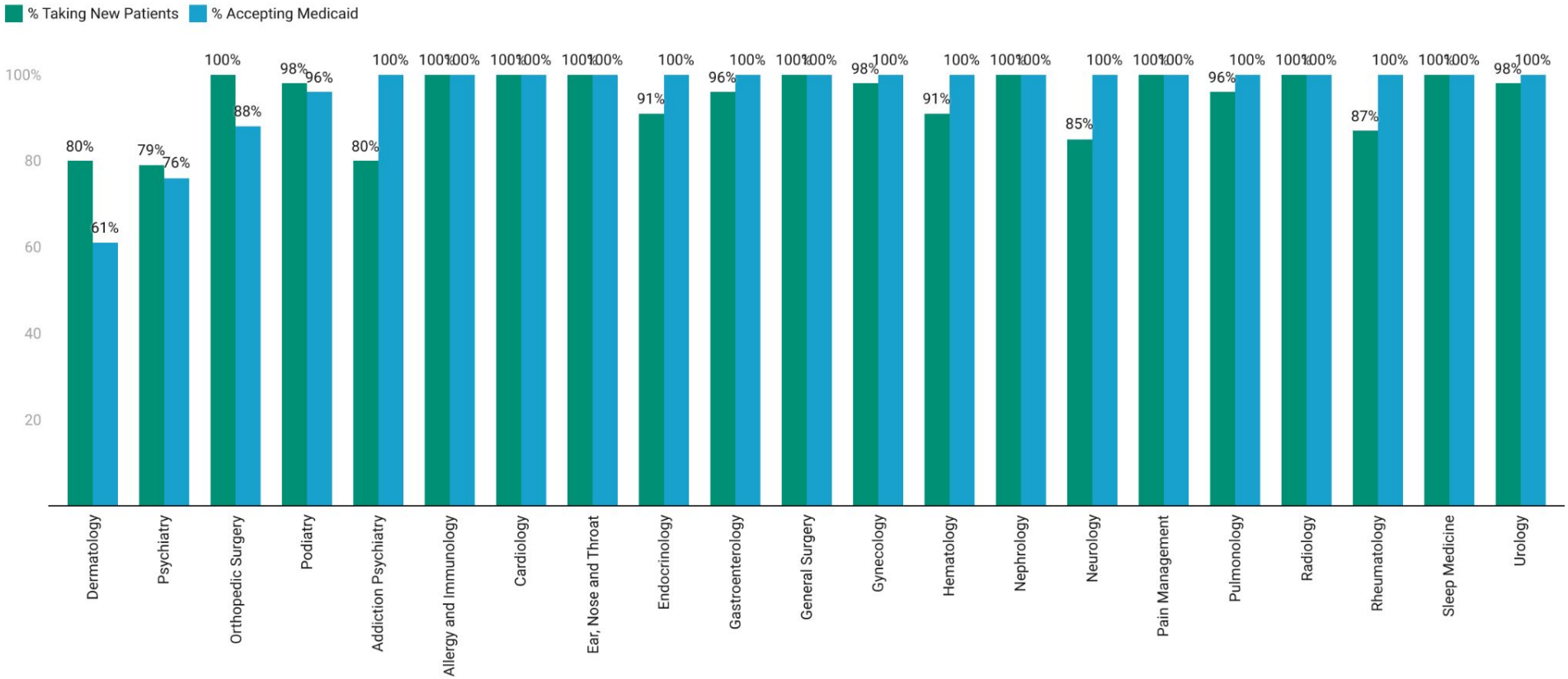
Wait Times by Area: Mid-Sized Metro Areas

Average wait time in days across Cardiology, Dermatology, Orthopedic Surgery, & Obstetrics/Gynecology for 2017 Merritt Hawkins Survey (MH) & Vermont Secret Shopper (SS)



Source: *See Note 5*

Secret Shopper: Percent of Practices Accepting New Patients & Medicaid by Specialty



Source: *See Note 6*

Raw Data For All Specialists

Specialty	No of Appointments	Average Wait Time	Median Wait Time	Shortest	Longest
Addiction Services	20	46	30	0	173
Allergy & Immunology	10	64	62	2	145
Cardiology	49	63	47	2	154
Dermatology	33	109	81	11	410
Ear, Nose and Throat	25	48	44	4	130
Endocrinology	28	79	77	6	214
Gastroenterology	25	60	57	17	124
General Surgery	50	27	21	5	68
Gynecology	61	33	21	1	173
Hematology	20	47	40	9	174
Nephrology	6	87	100	29	124
Neurology	35	98	95	11	305
Orthopedic Surgery	49	28	24	0	88
Pain Management	26	40	34	1	131
Podiatry	48	44	34	1	175
Psychiatry	73	54	34	0	321
Pulmonology	25	68	68	20	128
Radiology	35	43	29	7	112
Rheumatology	12	72	84	17	164
Sleep Medicine	25	64	60	0	207
Urology	40	45	37	5	96
Total	**695**	**54**	**41**	**0**	**410**

Raw Data For Specialists Located in Vermont

Specialty	No of Appointments	Mean Wait Time	Median Wait Time	Shortest	Longest
Addiction Services	12	57	39	0	173
Allergy & Immunology	8	69	62	26	145
Cardiology	30	76	73	25	154
Dermatology	21	140	130	11	410
Ear, Nose and Throat	13	59	54	4	130
Endocrinology	11	113	124	33	214
Gastroenterology	13	66	69	17	124
General Surgery	29	29	27	5	68
Gynecology	42	35	20	1	173
Hematology	15	53	44	9	174
Nephrology	4	79	117	29	124
Neurology	23	114	116	31	305
Orthopedic Surgery	27	35	32	0	88
Pain Management	11	37	40	7	68
Podiatry	31	50	43	3	120
Psychiatry	65	53	32	0	321
Pulmonology	14	79	82	54	98
Radiology	24	53	39	17	112
Rheumatology	6	101	108	17	164
Sleep Medicine	12	72	72	0	207
Urology	27	43	35	5	96
Total	**438**	**61**	**46**	**0**	**410**

Raw Data for Specialty Appointments By Hospital

Specialty	No of Appointments	Mean Wait Time	Median Wait Time	Shortest	Longest
Brattleboro Hospital	18	44	39	0	111
Copley Hospital	11	60	42	0	140
CVMC	25	50	41	13	50
DHMC	41	57	45	2	174
Gifford Medical Center	18	33	29	7	115
North Country	16	75	44	20	207
Northeastern VT Medical Center	17	49	54	7	95
Northwestern Medical Center	22	61	58	5	113
Porter Hospital	16	60	50	5	165
RRMC	21	70	69	12	173
Springfield Hospital	19	26	21	4	76
SVMC	23	97	82	5	410
UVMMC	42	101	87	1	305
Total	**289**	**65**	**48**	**0**	**410**

Secret Shopper Source Notes

Note 1: All providers included 348 Medicaid insurance calls and 348 commercial insurance calls where the secret shopper was able to receive the next available appointment; Vermont providers only included 220 Medicaid insurance calls and 216 commercial insurance call where the secret shopper was able to receive the next available appointment.

Note 2: Does not include time required to assess referral and schedule appointment with patient; Includes all practices in Vermont and contiguous counties; Average wait time in mean.

Note 3: Does not include time required to assess referral and schedule appointment with patient; Average wait time in mean; Measures Vermont-based practices only; Sample size of 439 appointments.

Note 4: Does not include time required to assess referral and schedule appointment with patient; Springfield (13 specialties surveyed), Gifford (8), Brattleboro (9), NVRH (9), DHMC (21), CVMC (15), Porter (8), Northwestern (11), Copley (6), RRMC (11), North Country (9), SVMC (11), UVMMC (19, includes Tilley Dr. location); Note hospitals offering more advanced services may have longer wait times; Average higher when excluding small clinic sites.

Note 5: 2017 Merritt Hawkins Survey of Mid-Sized Metro Areas (494 samples, populations range from 88,000 to 143,000); Veterans Affairs (9); Vermont 2022 Secret Shopper Survey (33 samples, Burlington metro area population of 225,562 [Chittenden, Grand Isle, Franklin Counties -- 2020 US census]).

Note 6: Vermont Secret Shopper Vermont; Measures acceptance rates for all practices surveyed (includes Vermont and contiguous counties).

Primary Care Chart Audit

Primary Care Chart Audit

Summary

The Blueprint for Health program worked with quality improvement facilitators and primary care practices to collect information on specialty wait times

- Practices conducted a chart review to calculate the length of time between when a referral was made for specialty services and when the specialty appointment took place, so this analysis represents exact wait times for specialty care
- The analysis included ~47% of 169 total Blueprint for Health Practices

Considerations

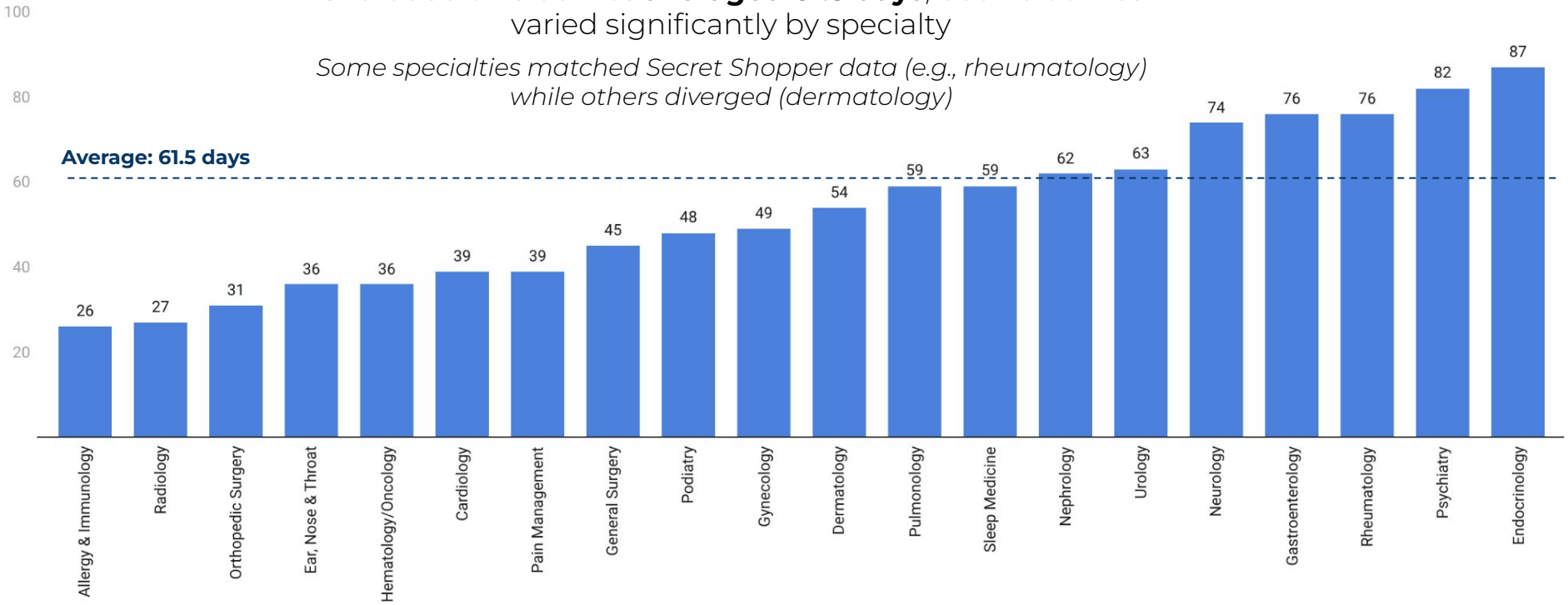
- Referrals for which a scheduled or actual appointment date was not available were not included in the sample.
- Certain specialties, such as orthopedics, were overrepresented and there were small sample sizes of referrals to some specialties, including radiology, pain management, and nephrology
- A significant number of referrals were for patients with commercial insurance and placed from primary care practices in Burlington
- The practices identified the first 30 referrals made by each practice, starting from January 1, 2021, to a specialist, thus the majority of records date from Q1 2021

Wait Time by Specialty: Blueprint for Health

Average wait time in days

Chart audit wait times **averaged 61.5 days**, but wait times varied significantly by specialty

Some specialties matched Secret Shopper data (e.g., rheumatology) while others diverged (dermatology)



Source: Blueprint Chart Audit—2,327 patient records reviewed during 2021 (primarily first quarter)

Key Findings

Wait times appear long in Vermont for certain specialties, across multiple methods of analysis and time periods

- For approximately half of specialties, wait times are over 2 months
    - *No available data to assess current wait times for clinically appropriate care*
- Wait times were long prior to the COVID-19 pandemic
    - *Claims data showed an average of 100+ days between PCP and follow-up specialist visits for chronically ill patients between 2017 and 2019*
- Wait times vary significantly by and within specialties
    - *Dermatology, neurology, psychiatry and endocrinology services have the longest waits, depending on analysis*
- Metrics to assess wait times, such as 1st and 3rd next available appointments, did not not always reflect actual patient experience of accessing care

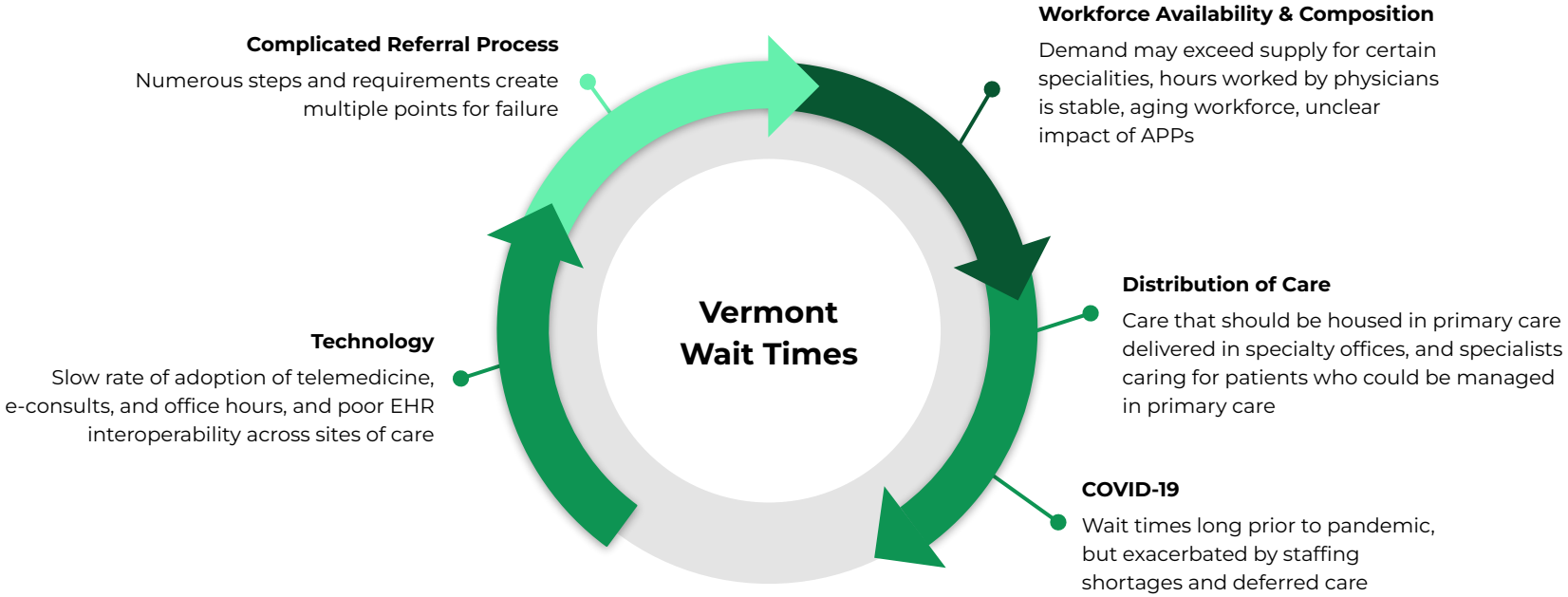
Wait times are similar across all insurance types

- Wait times are not longer for patients with Medicaid insurance
    - However, certain specialties accept Medicaid insurance at lower rates

Possible Causes

Some Potential Factors Influencing Wait Times

Long wait times for Vermonters are a complex problem with multiple causes, requiring a coordinated, multi-faceted response. Addressing a single factor in isolation will not improve wait times.



Workforce Availability & Composition

The **number of clinical hours worked by specialists has not changed** in the last several years. However, demand for certain speciality services may be increasing, suggesting the number of specialty providers may need to increase for some specialties (see Oliver Wyman analysis).

There is no agreed-upon national benchmark for number of specialists per capita, and thus it is not clear whether there are sufficient specialty providers in Vermont.

- Analyses in this report did not provide conclusions on advanced practice providers (APPs), such as NPs and PAs and whether there is adequate supply of these members of the specialty care team
- Aging physicians in certain specialties may present future workforce challenges
    - From 2010 to 2020, the percentage of clinical FTEs represented by physicians age 65 and older doubled from 8% to 18%
- Offices require sufficient workforce to manage appointments, triage referrals

Increasing **physician supply alone** may not improve patient wait times.

- Wait times will only decrease if the increase in supply is not matched with higher demand for services. Historically, higher supply in health systems has sometimes led to increased referrals and procedures (supply-induced demand).
    - In fact, wait times are often *longer* in regions with *more* specialists per capita and physicians working in regions with the highest number of specialists report the most trouble obtaining specialty care

Impact of COVID-19

Wait Times were a Documented Challenge Prior to the Pandemic

- Historical state claims data show wait times in Vermont for specialty services appear to have been high since at least 2017
    - Vermonters also reported difficulty accessing services before the pandemic as reported in local media and supported by Oliver Wyman pre-COVID claims data analysis

- Oncoming “tsunami” of delayed care
    - Health care providers warn the healthcare system should expect a “tsunami” of delayed care as the pandemic subsides
    - This means existing issues within the current system will lead to even longer wait times for more patients seeking care in the coming months
    - As part of ongoing pandemic recovery, effort should be made to study the long-term ways COVID-19 has impacted Vermont’s health system

- The Secret Shopper survey and Blueprint primary care practice chart audit were conducted during the pandemic, with Secret Shopper during the recent overlapping Delta and Omicron surges
    - In particular, Omicron contributed to workforce shortages that could impinge on normal operations and potentially on the availability of new appointments for scheduling
    - During this time, the healthcare workforce has experienced unprecedented decline
    - Claims data established lengthy waits for care for certain patients before the pandemic

Conclusion

Long waits for some specialty services **existed prior to the COVID-19 pandemic** and **have likely been exacerbated** by staffing shortages, new demands for care, and demand for previously deferred care.

Complicated Referral Process

- There are multiple steps in the specialist referral process, **any one of which can add length and complexity** to getting an appointment
- To obtain specialty care, patients must usually **first be established with a primary care provider** (PCP)
- The chart below describes an ideal patient flow. As our study uncovered, there are **breakdowns at multiple points** across this system

PCP Visit

Primary Care Provider (PCP) transmits referral to specialist office

Referral Triage

If necessary, lab work & imaging is scheduled and completed prior to appointment. Specialists then review referral to determine whether patient is appropriate to be seen

Specialist Outreach

Specialist office reaches out to patient to schedule appointment

Scheduling

Patient gets scheduled for new patient appointment

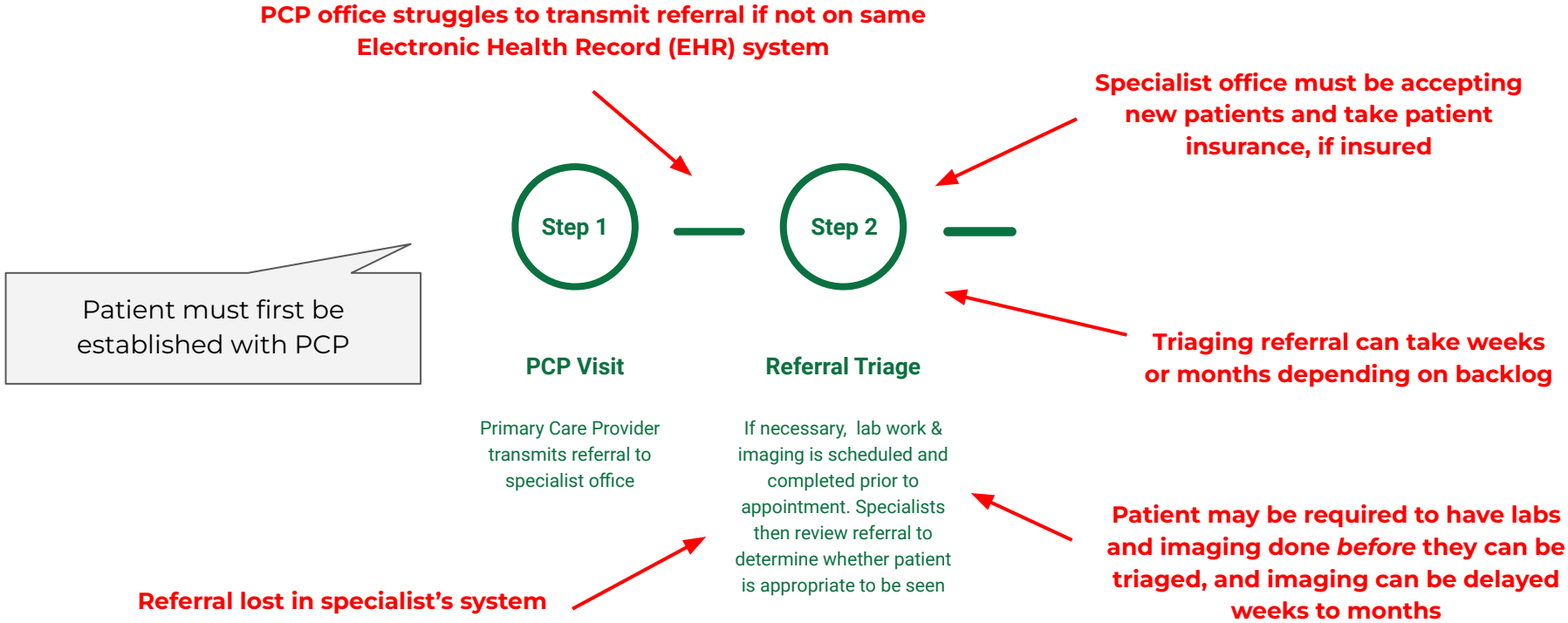
Specialist Visit

Patient seen by specialist

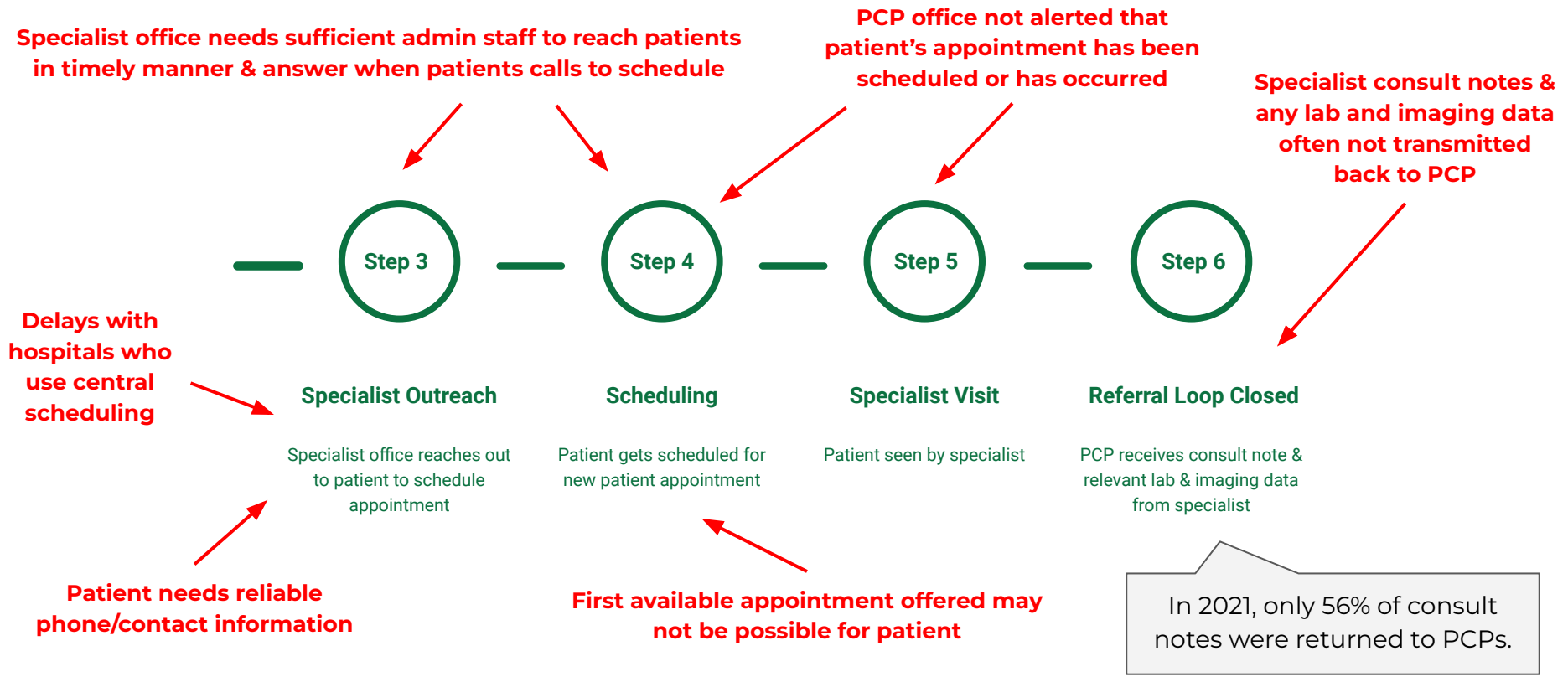
Referral Loop Closed

PCP receives consult note & relevant lab & imaging data from specialist

Breakdowns in Referral Process: Steps 1 & 2



Breakdowns in Referral Process: Steps 3 to 6



Distribution of Care Between Providers

Primary care doctors may be referring to specialists too frequently.

- Provider focus groups suggested that some patients could be managed in primary care, but are being seen by specialists
- PCPs report patients are requesting to see specialists – more than they have in the past – often in scenarios when the PCP otherwise would not have referred the patient

> *"Our specialists have been seeing more and more referrals than in the past for things that would have been handled by primary care."*

Specialists may continue to follow too many patients or see patients too often.

- Specialists see some patients who no longer require specialty care and could be returned to their PCP for further management

> *"If we had specialists really doing specialty care for follow-ups, releasing people who needed a question answered back to their primary care provider, they would have a whole lot more availability."*

- Specialists may see patients more frequently than medically necessary (for example, every 3 months as opposed to every 6 months), leading to unnecessary care and taking up appointment slots that could be available for other patients

Oliver Wyman Analysis indicated that the split between PCP and Specialist is weighted more heavily towards PCP in Vermont than in peer group comparison states (NH, ME, MA, CT, RI, NY, PA, NJ, DE, MD, VA)

Technology Improves Efficiency of Specialty Care

Increased use of telemedicine, e-consults, and office hours can increase efficiency and decrease wait times

An **e-consult** is when a provider asks a specialist a specific clinical question about a patient using the electronic health record without requiring the patient to attend a face-to-face visit with the specialist.

"Office hours" are dedicated blocks of time when a specialist is available to answer real-time clinical questions from another provider.

E-consults, which have been shown to reduce wait times and improve patient satisfaction,[1] are used in health systems nationally, but **have not been widely adopted by providers in Vermont.**

- Recent **Vermont legislation included a funding mechanism** for specialists to receive reimbursement for providing asynchronous provider-to-provider clinical advice
- A remaining **barrier for widespread use of e-consults and office hours is the challenge of interoperability of different electronic health records** (a specialist requires access to the patient's chart to effectively answer consult questions)

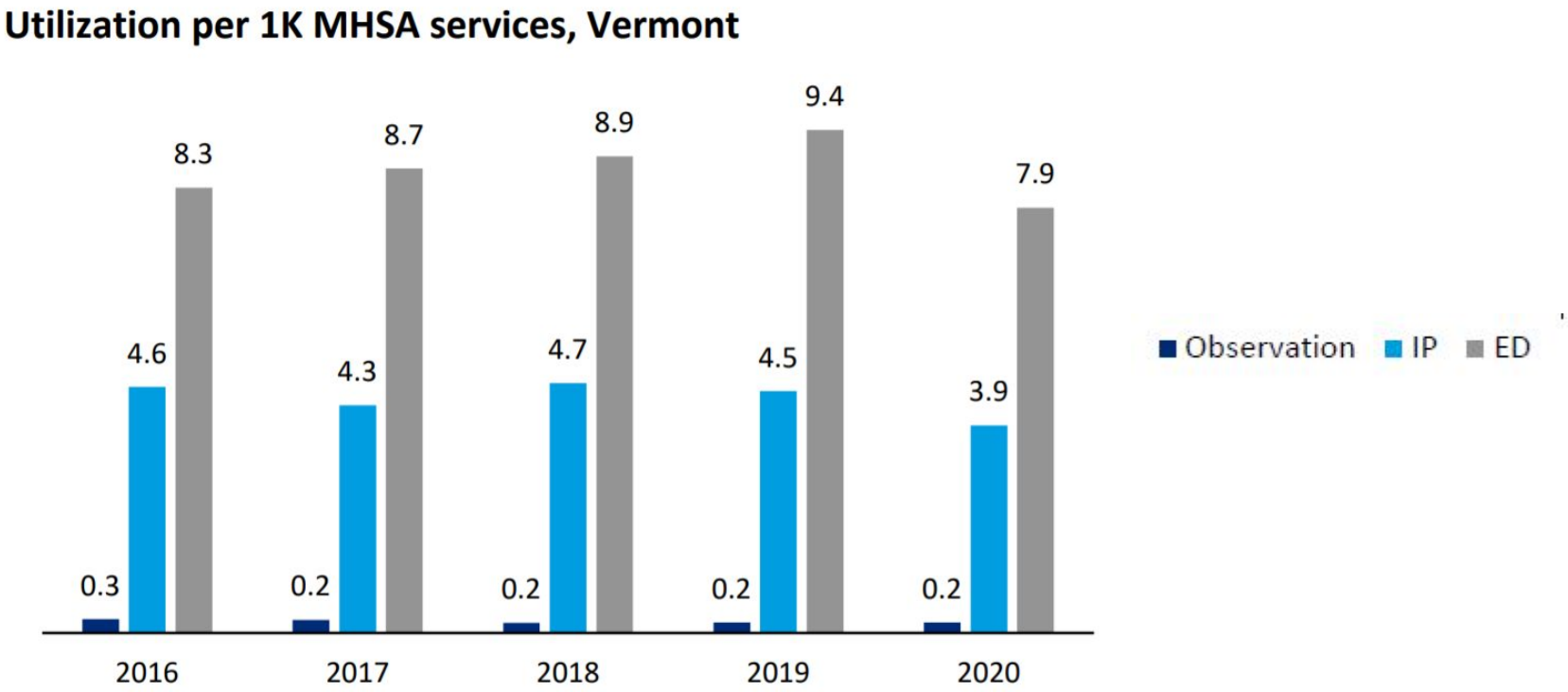
Source: (1) Barnett ML, Yee HF Jr, Mehrotra A, Giboney P. Los Angeles Safety-Net Program eConsult System Was Rapidly Adopted And Decreased Wait Times To See Specialists. Health Aff (Millwood). 2017 Mar 1;36(3):492-499. doi: 10.1377/hlthaff.2016.1283. PMID: 28264951.

Mental Health

Mental Health & Substance Use Disorder Treatment

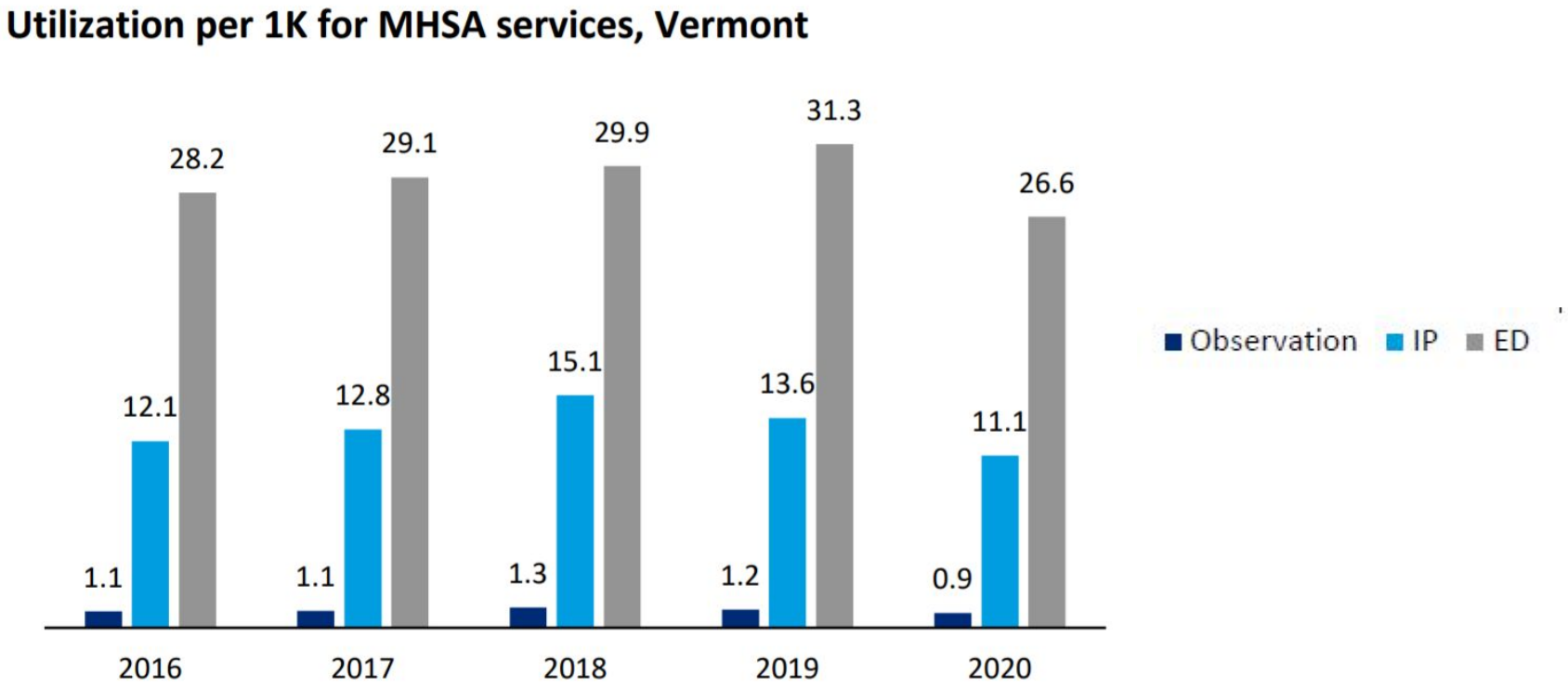
- We heard from participants in public forums about significant difficulty accessing mental health treatment, including for inpatient psychiatric care, psychiatry care for children and eating disorder treatment
- Providers noted that the mental health workforce cannot meet the demand for care and that current licensing requirements are limiting
- Medicare restricts credentialing to Licensed Social Workers and PhD Psychologists, further limiting access to mental health care for Medicare beneficiaries
- Providers indicated that telehealth modalities were very effective for a majority of patients

Utilization per 1K MHSA Services Over Time: Commercial



Notes: Mental Health Substance Abuse (MHSA), Inpatient (IP), Emergency Department (ED)

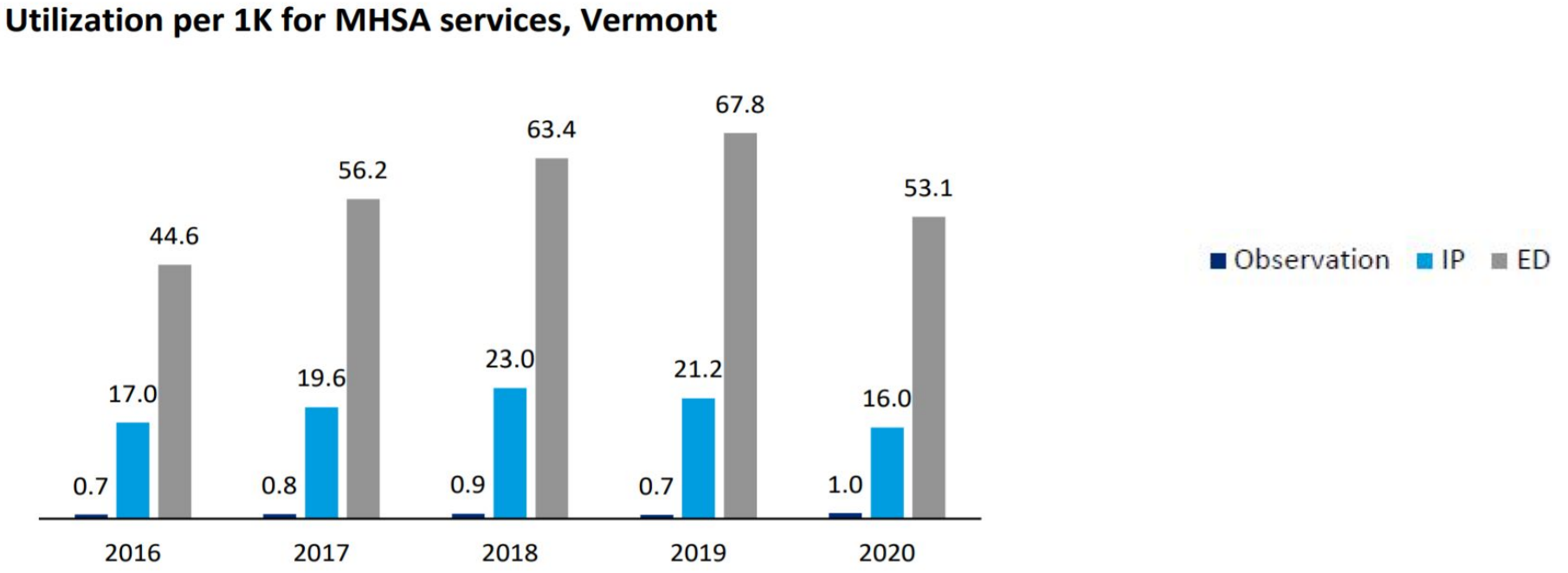
Utilization per 1K MHSA Services Over Time: Medicare



Notes: Mental Health Substance Abuse (MHSA), Inpatient (IP), Emergency Department (ED)

Utilization per 1K MHSA Services Over Time: Medicaid

Prior to COVID-19, there was growing utilization of the Emergency Department for Mental Health and Substance Abuse Services across all payer types, particularly for Medicaid-insured patients



Notes: Mental Health Substance Abuse (MHSA), Inpatient (IP), Emergency Department (ED)

Recommendations

Mental Health Recommendations

- Conduct complete mental health and substance use disorder services access assessment
- Implement Health Care Workforce Development Strategic Plan recommendations specific to mental health and substance use disorder services including:
    - Evaluating opportunities to address barriers to licensure
    - Request Medicare reimbursement for Licensed Alcohol and Drug Abuse Counselors, Licensed Clinical Mental Health Counselors, Licensed Psychologists, Licensed Psychiatric Nurses, and Licensed Marriage and Family Counselors
    - The Department of Mental Health (DMH) in collaboration with the Vermont Association of Hospitals and Health Systems (VAHHS) should study the potential to establish and offer a statewide telepsychiatry program in Vermont emergency departments

Recommendations for New Initiatives

- **Tracking & Reporting:** The Department of Financial Regulation will request statutory authority from the Vermont Legislature to track and publicly report wait time metrics for providers across Vermont on a regular basis
    - Tracking and reporting should include both hospitals and independent providers
- **Hospital Review of Wait Times:** Hospitals either establish a Board-level committee or designate a Board member responsible for participating in monitoring wait times at their facility and continuous improvement in patient access
- **Coordination:** Hospitals and independent providers should regularly collaborate to share information and successful strategies designed to improve wait times

Recommendations for Continued Action

- **Further Study:** AHS, GMCB, DFR continue the study to include:
  - Access to primary care
  - Access to mental health and substance use treatment
  - Review improvements to regulatory framework
  - Determine the barriers for private practices accepting Medicaid

- **Workforce Development:** State agencies will prioritize implementation of the Workforce Development Strategic Plan
  - Key examples: explore establishing Physician Assistant Program, employ supply and demand modeling, expand telehealth coverage and make telebilling requirements clear

- **Quality Improvement Supports:** The Blueprint for Health will support quality improvement activities to promote referral best practices & care distribution between primary and specialty care

- **Payment Reform:** Continue shift from fee-for-service reimbursement model to fixed-prospective payments in Vermont

Appendix

Appendix

Full list of supplementary report materials available at Vermont Wait Times report webpage (LINK).

Documents

1. Merritt Hawkins Material
    - 1.1: 2017 Merritt Hawkins National Wait Times Survey
2. Public Transcripts
    - 2.1: Wait Time report Public Forum 1 -- October 28, 2021
    - 2.2: Wait Time report Public Forum 2 -- November 4, 2021
3. Media
    - 3.1: “The Doctor Won’t See You Now: Patients Wait Months for Treatment at Vermont’s Biggest Hospital”, Colin Flanders, *Seven Days*, September 1, 2021

Vermont Health Care System Background

Vermont's Hospital System consists of 14 non-profit hospitals and network of health care systems spread throughout Vermont including:

- 8 critical access hospitals
- 5 mid-size rural hospitals
- 2 academic medical centers (1 in NH)
- A Veterans Administration hospital
- 5 designated psychiatric inpatient facilities
- 12 Federally Qualified Health Centers
- Blueprint Primary Care and all Primary Care
- DDA/SSA/SUD
- Private MH/SUD Providers

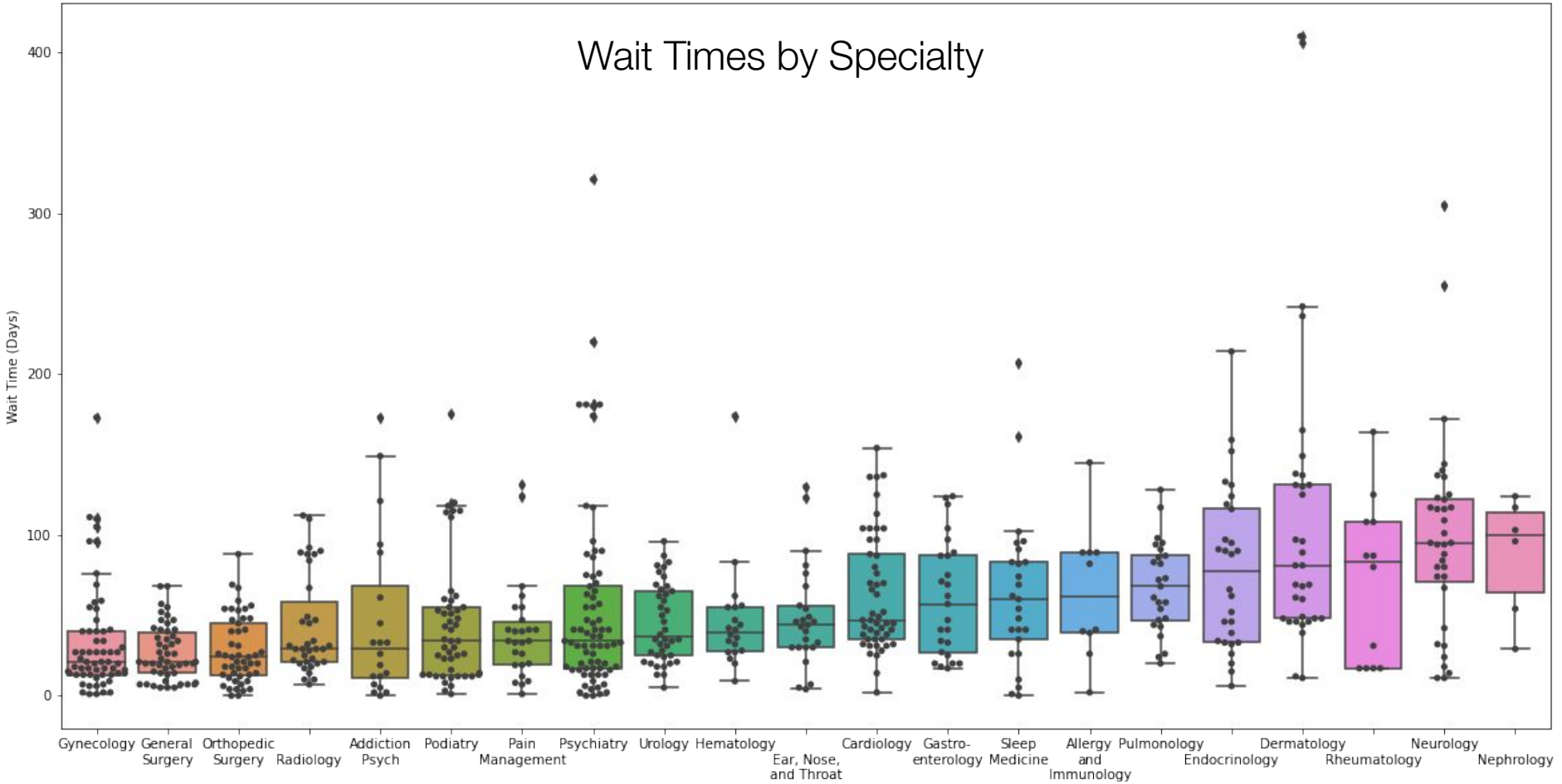
There is one statewide Accountable Care Organization (ACO) which includes 13 of the 14 hospitals in the state. The community of providers includes:

- Independent primary care
- Independent specialty care
- Federally Qualified Health Centers
- Home Health and Hospice
- Skilled Nursing Facilities
- Designated Mental Health and Specialized Services Agencies
- Support and Services at Home
- Area Agencies on Aging

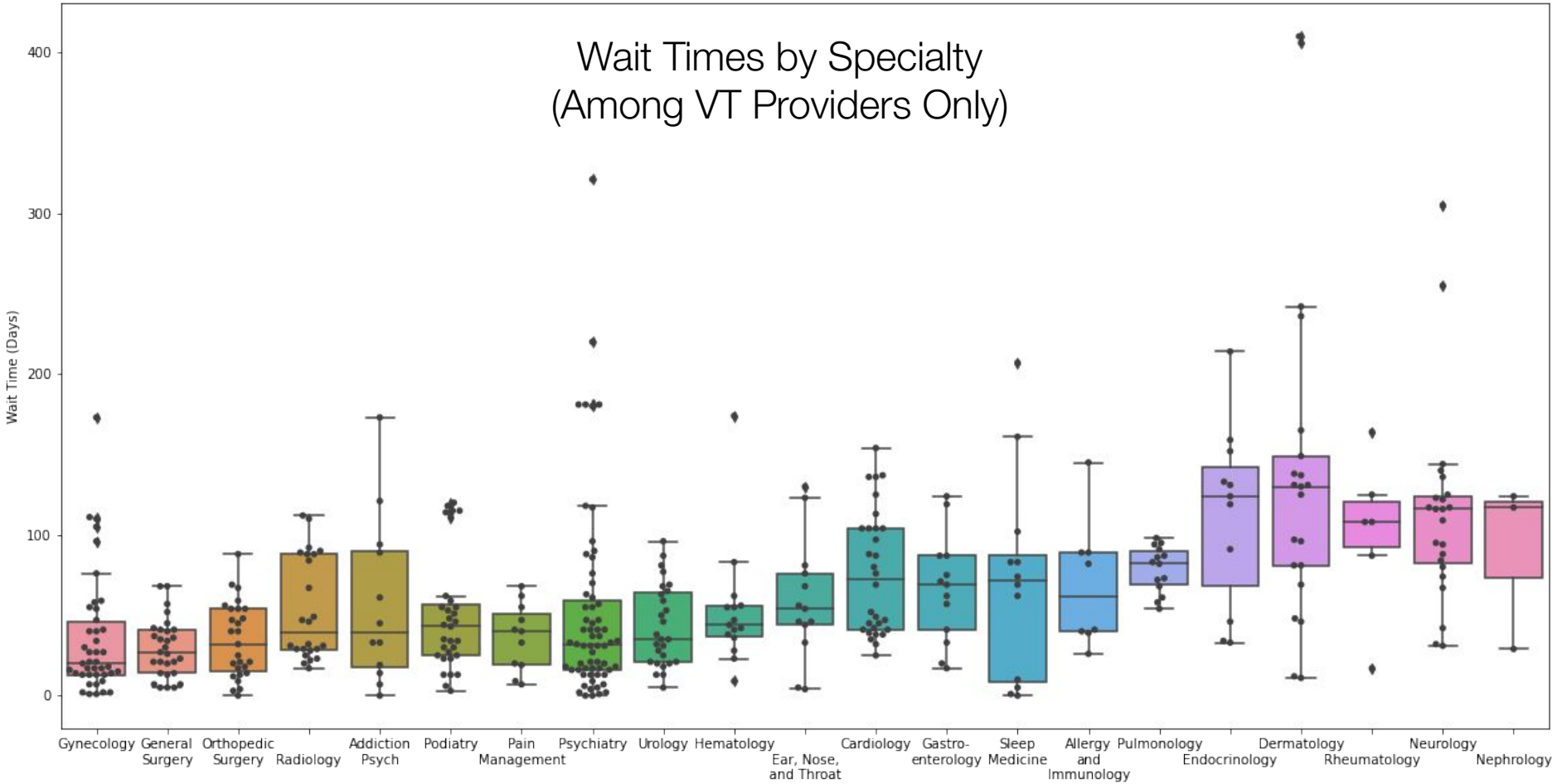
“Secret Shopper” Limitations

- No historical Vermont data to compare
- Time frame (December 2021 to January 2022) could lead to slightly longer wait times as survey was conducted around the holidays (~92.5% of calls were made in December 2021 and ~7.5% of calls were made in January 2022)
- Appointment availability is dynamic and can shift rapidly
- Data does not include time needed to triage the referral and schedule with the patient – thus **these estimates may be a significant under-estimation** of the actual wait time between when a referral is placed and when an appointment is scheduled
    - This can potentially add weeks or even months to wait times
- Vermont secret shopper callers had above-average knowledge of medical system and health literacy
- Sample size was small for certain specialities (e.g., nephrology, endocrinology), and when narrowing data by both site and specialty
- Merritt Hawkins data comparison considerations:
    - Merritt Hawkins most recent data was conducted in 2017—before the Covid-19 pandemic
    - MH survey found wait times increased every survey year, so it is expected that current wait times would eclipse those from 2017
    - MH only surveyed large and medium-sized metro areas (no rural areas)
    - MH surveyed four specialty areas and primary care versus Vermont’s survey of 21 specialty areas

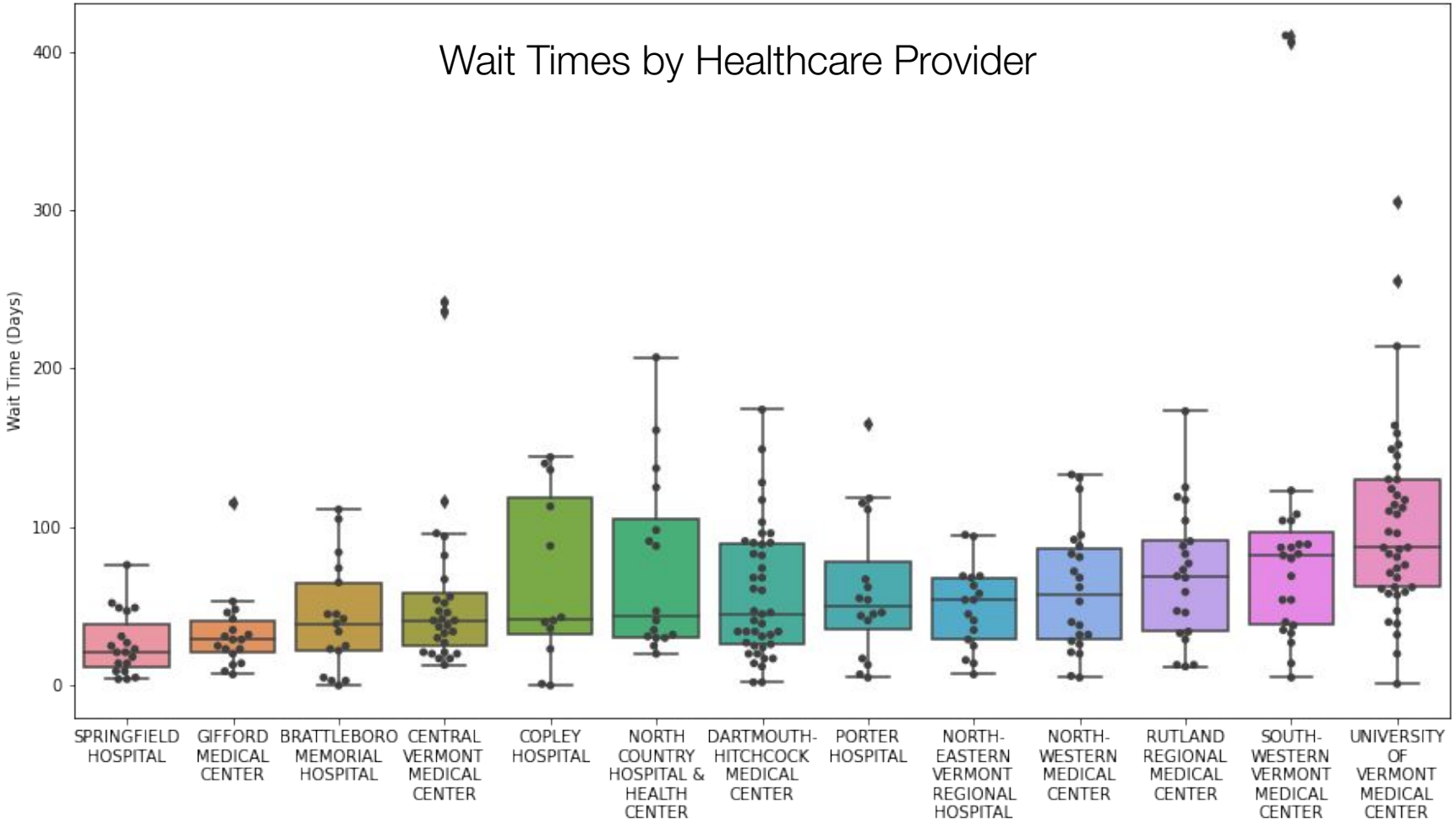
Wait Times by Specialty



Wait Times by Specialty
(Among VT Providers Only)



Wait Times by Healthcare Provider

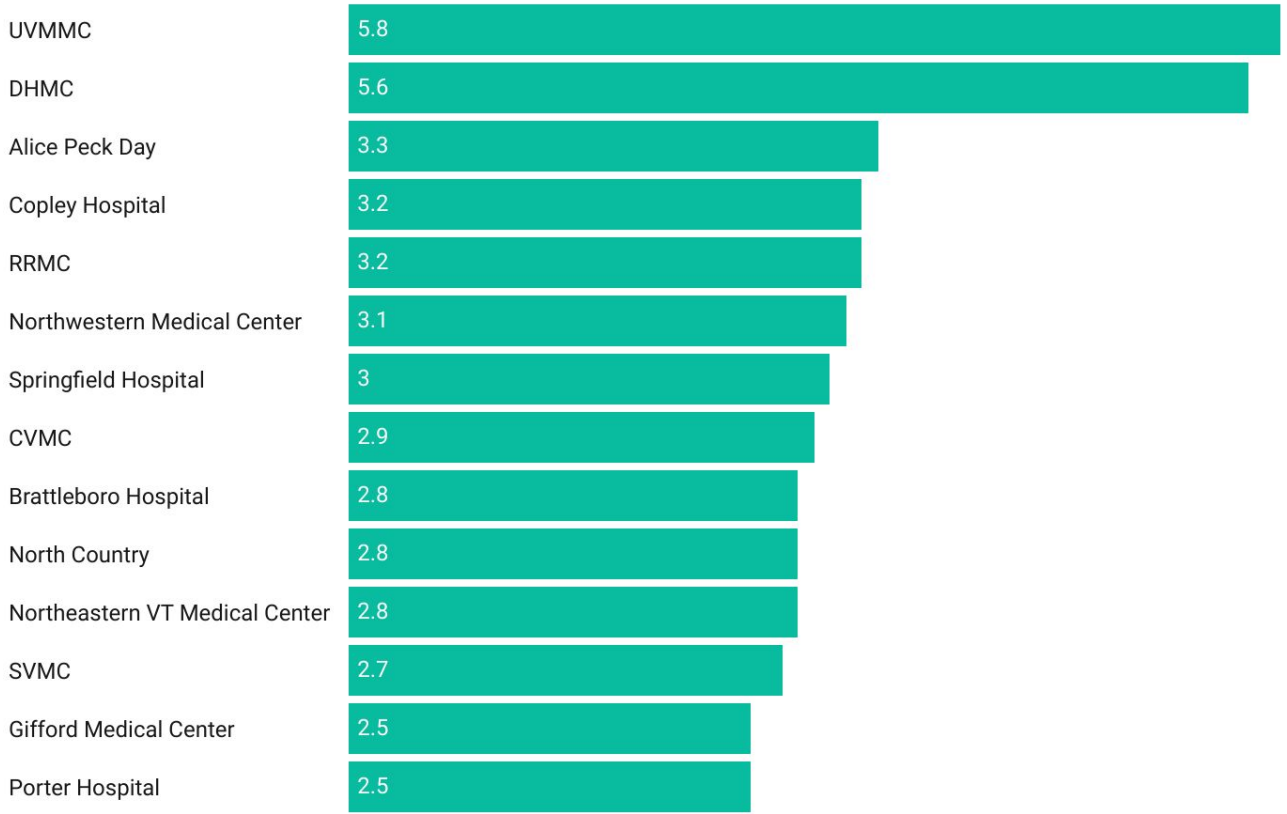


Secret Shopper: Standardized Non-urgent Diagnoses

Addiction / Addiction Psychiatry	Family member with alcoholism and aggressive behavior
Allergy and Immunology	Worsening asthma symptoms- need skin testing
Cardiology	A heart check-up
Dermatology	Routine skin exam to detect possible carcinomas/melanomas
Ears Nose and Throat	Recurrent dizziness
Endocrinology	Elevated blood sugar (fasting sugar over 160)
Gastroenterology (includes Colonoscopy)	Time for first colonoscopy at age 60- no family history of colon cancer
General Surgery	Hernia- not large, but enlarges when I lift something
Gynecology	Routine "well-woman" gynecological exam
Hematology	Anemia
Nephrology	Glomerular filtration rate (GFR) trending down -- PCP recommends nephrologist
Neurology	Severe headaches of long duration- pulsatile with some flashing lights in the eyes
Orthopedic Surgery	Injury/pain in knee
Pain Management	Persistent shoulder pain
Podiatry	Bunion interfering with putting shoes on
Psychiatry	Anxiety attacks
Pulmonology	Wheezing when walking
Radiology	Referral for mammogram
Rheumatology	Pain in hands in the morning and stiff fingers.
Sleep Medicine	Partner complains of my snoring
Urology	Difficulty with urination- smaller stream, less force

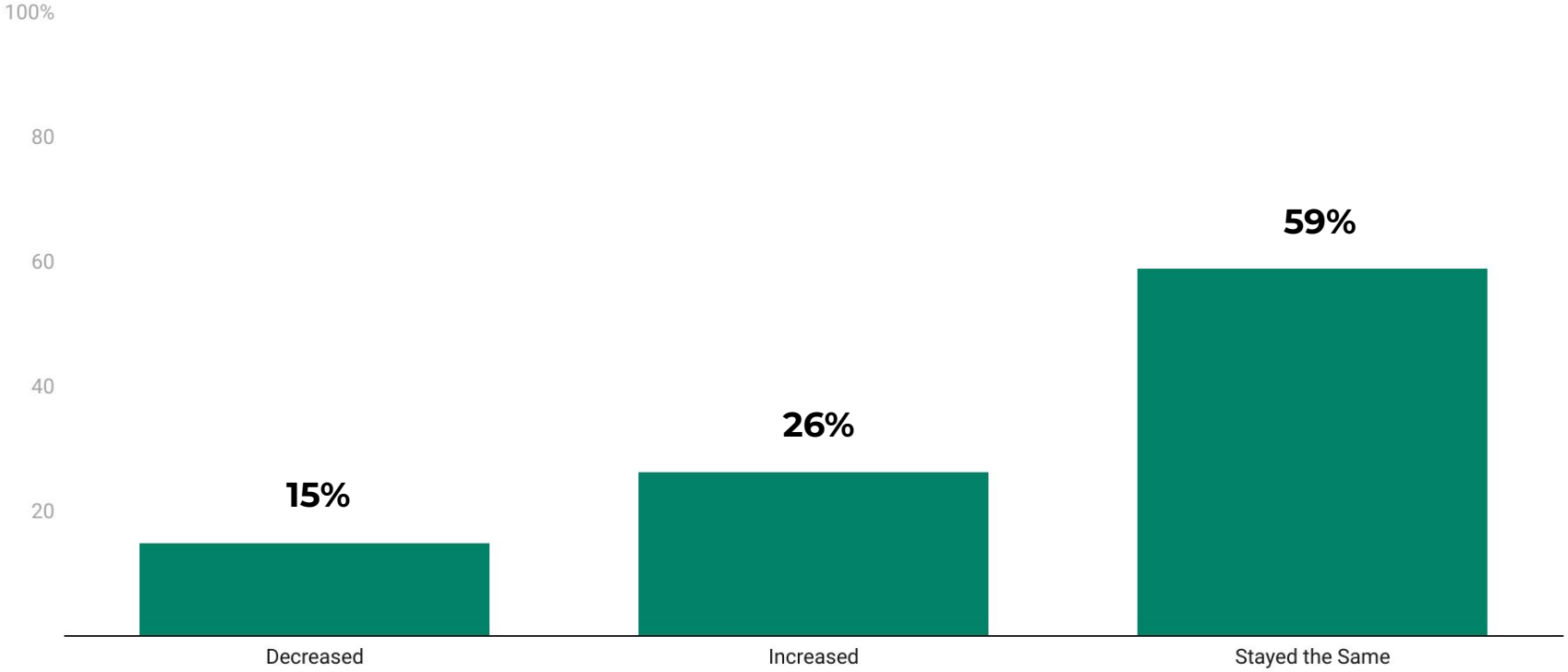
Average Time to Make Appointment

Average phone time in minutes



Vermont Physician Reporting on Time in Practice

As a result of the pandemic, the total number of hours you spend in practice (clinical and administrative) has on average:

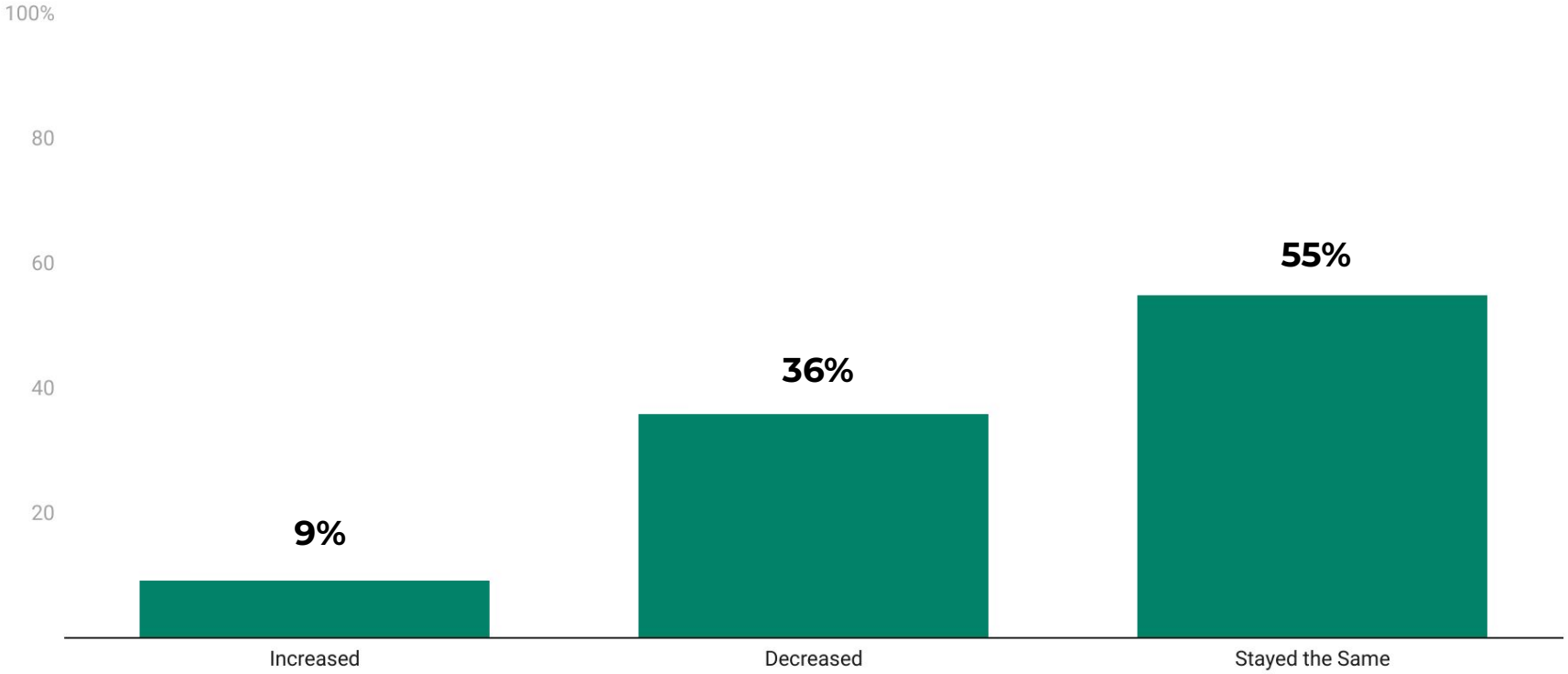


Survey based on 2,097 respondents

Source: VDH 2020 Provider Survey • Created with Datawrapper

Vermont Physician Reporting on Patient Volume

As a result of the pandemic, the total number of patients you see in a day on average has:

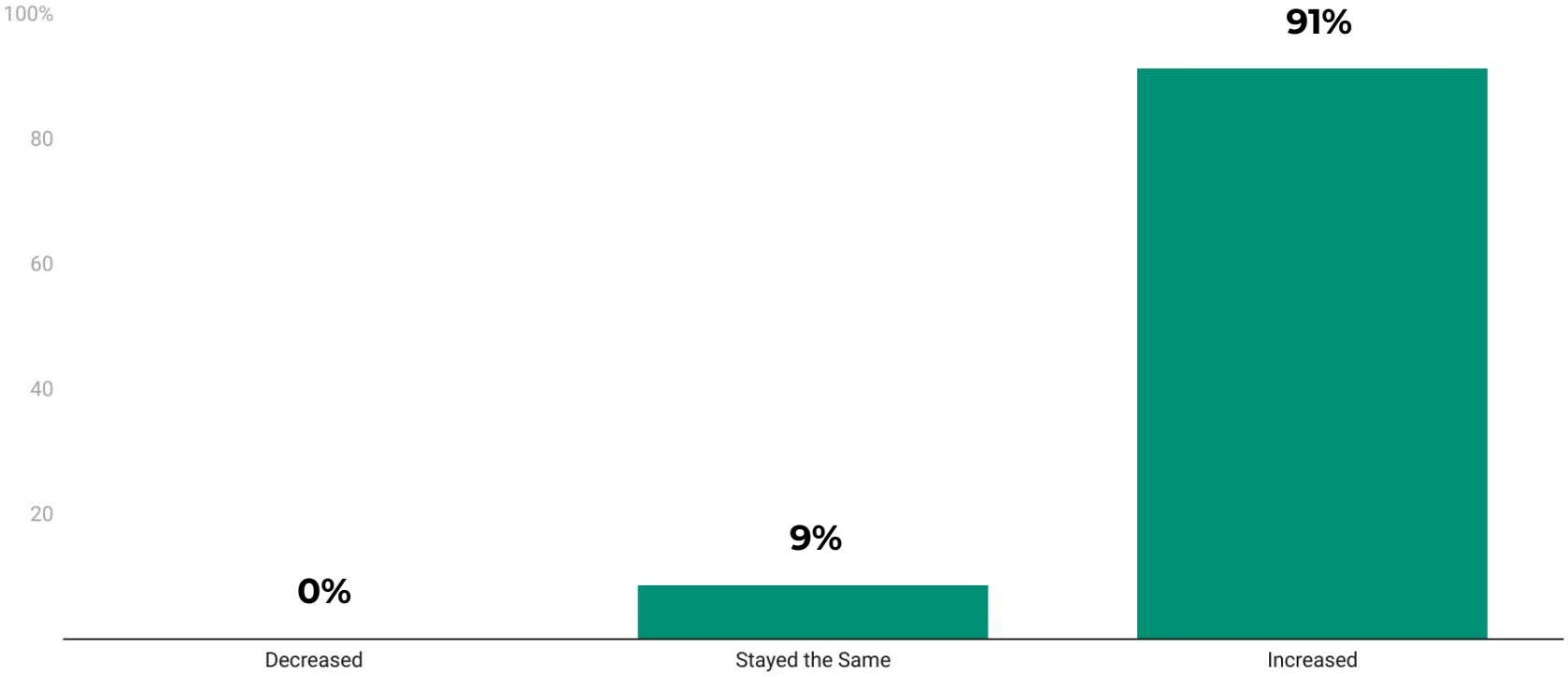


Survey based on 2,043 physician respondents

Source: VDH 2020 Provider Survey • Created with Datawrapper

Vermont Physician Reporting on Use of Telemedicine

As a result of the pandemic, the percentage of patients who you treat using telemedicine has:



Survey based on 2,097 respondents

Source: VDH 2020 Provider Survey • Created with Datawrapper

Acknowledgements

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- Sarah Lindberg, Green Mountain Care Board

OliverWyman

VERMONT

VERMONT PROVIDER WAIT TIMES EVALUATION

Identifying actionable insights for state decisioning

February 4, 2022

Tammy Tomczyk FSA, MAAA, FCA | Tom Cavin FSA, MAAA, CERA | Peter Scharl FSA, MAAA | Corryn Brown, FSA, MAAA

A business of Marsh McLennan

ACTUARIAL CONSULTING

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CONTENTS

EXECUTIVE SUMMARY

In response to reports of lengthy wait times for medical appointments, the State of Vermont launched an interagency evaluation into health access across the state. As part of its evaluation, the State assembled a team to study excessive wait times and report its findings and recommendations to the Vermont Legislature.

The State of Vermont engaged Oliver Wyman Actuarial Consulting to assist in their evaluation by conducting a series of analyses. This set of analyses aimed to examine access to patient care, including the supply of physicians relative to patient demand, by specialty category. It also examined how care patterns for certain services have changed over time, and whether site appropriateness of care is being impacted for other services.

Based on our analysis, we have drawn the following conclusions and identification of areas for potential further analysis that the State may wish to consider:

1. Vermont appears to be experiencing demand for services of certain specialty providers that exceeds current supply, and for some specialties (e.g., Cardiovascular Disease, Rheumatology, Dermatology) this deficit is projected to grow due to the aging population, absent an increase in supply. This analysis considered matching to well-managed populations to adjust for potential censoring of current demand in Vermont. As a result of comparing to well-managed populations, we expect that these deficits may require additional providers vs. being able to be addressed through utilization management alone.
2. The aging of the physician population is likely to adversely impact the supply to clinical FTEs available in the future. Analyzing information from the Vermont Division of Health Surveillance shows the percentage of clinical FTEs represented by physicians age 65 and older doubled over the last decade, from 8% in 2010 to 18% in 2020. Many of these physicians will likely retire over the next decade. In addition, the survey showed that the average number of clinical hours worked decreases with age and ten years ago roughly 36% of all clinical FTEs were in the 45-54 age range and today this age range represents 20% of all clinical FTEs, while the 55-64 age range now represents the largest share of clinical FTEs. As this shift continues and the average number of clinical hours worked decreases for this population, additional pressure on supply is likely continue.
3. Accessibility and balance of utilization between PCPs and Specialists is a continuing concern for Vermont residents. Our analysis had three key findings in this area. First, Vermont residents with chronic conditions are utilizing PCPs and Specialists at a decreasing rate over the period analyzed. Second, Vermont residents with medium and high-cost chronic conditions utilize PCPs at a significantly increased rate and specialists at significantly decreased rate, relative to a matched cohort of individuals in Peer States. While we can't conclude that Vermont residents aren't simply using PCPs at a higher rate due to being more well-managed, our analysis methodology does try to isolate this. Our Peer State populations were specifically selected from the top 50% of managed areas in the northeast region based on Oliver Wyman's Congruence predictive model. Because our method intends to normalize and match against a managed cohort, our analysis suggests there may be an under-utilization of Specialists in Vermont. Third, we evaluated the time between a PCP visit and subsequent specialist visit for Vermonters with one or more chronic conditions relative to their counterparts in Peer States. We found that Peer States consistently saw a larger share of the population obtain follow-up visits with a specialist within the timeframes examined relative to Vermont, providing further evidence of a potential lack of accessibility to specialists in Vermont.

EXECUTIVE SUMMARY

5. Vermont is experiencing a decline in availability of clinical FTEs in family practice and pediatric care. Considering Vermont residents utilize PCPs at a significantly higher rate for populations with higher cost chronic conditions, this dynamic may impact the accessibility to quality care, particularly as the population ages.
6. In some areas of the State, Vermonters may be unable to access providers of certain specialties within 60 minutes driving time. In addition, in many areas of the state Vermonters may be unable to access a primary care physician within 30 minutes driving time. These accessibility concerns are particularly prevalent in the Northeast Kingdom.
7. Analysis suggests that access issues may exist for inpatient mental health and substance abuse (MHSA) services for Vermont residents. Specifically, the lack of availability of statewide beds and treatment for MHSA is a reasonable hypothesis. Emergency Department (ED) visits for MHSA conditions have increased, with time between visits for ED utilizers decreasing. The Commercial population has observed an increase in average length of stay and a decrease in MHSA readmissions while the exact opposite trend is observed in lower reimbursement coverage types such as Medicare and Medicaid.
8. Our analysis doesn't appear to support an initial hypothesis that Diagnostic Imaging was experiencing accessibility issues, leading to increased utilization of the ED for these services. The trend in utilization of Diagnostic Imaging services in the ED and Non-ED settings is flat across the observation period. However, when we compare Vermont experience to that of Peer States for a propensity matched cohort (i.e., matched on demographics, chronic condition prevenance, and mix), Vermont residents do utilize significantly more Diagnostic Imaging services in these categories. From this we conclude that excess utilization may exist.
9. When reviewing low value care, we were able to readily identify up to 1.5% of all imaging spend as potentially unnecessary.
10. Overall accessibility concerns in Vermont encouraged us to look for a 'crowd out effect' where we may see Vermont residents utilizing an increasing share of out-of-state care, however our analysis didn't support this. Over the period studied, shoppable surgeries and E&M services showed a consistently flat trend with no uptick in out-of-state utilization.

EXECUTIVE SUMMARY

Areas for Potential Further Consideration and Policy Interventions.

Given the shortage of certain specialty providers in the State of Vermont and nationally, along with accessibility issues and the likelihood that these shortages may grow as the population in general ages and demands more care. The current physician supply in Vermont is aging and retiring at a greater rate than new physicians are entering practice. Further research focused on policies that increase the availability of advance practice professionals (APPs) through training, regulation, and state incentives may be considered. APPs may serve as a reasonable solution to provider shortages as they can provide certain care under the supervision of a physician and may be easier to attract relative to physicians.

Further, economic pressure on providers resulting from an aging population and therefore a higher share of the State's population being on Medicare in the future may drive the need to explore ways to deliver care at lower cost points as average reimbursement levels decrease. These costs may otherwise be shifted to the commercial markets but the disproportionate increase in commercial reimbursement is likely unstainable. It's with this reimbursement reality that APPs can play a significant role in the effort to align decreasing reimbursement with costs.

The potential lack of access to certain types of providers in rural areas that cannot easily access UVM or Dartmouth lends itself to further consideration of policies around telehealth to remove barriers for critical access specialties and alleviating near term access issues. Increased access to primary care, post-discharge follow-up care, and chronic care management of ambulatory care sensitive conditions through telehealth may reduce overall costs by reducing readmissions and avoidable ED visits for rural communities. In some cases, using telehealth to provide certain specialty services through a provider-to-provider model may be more feasible for rural healthcare facilities than staffing those rural facilities with specialty and subspecialty providers.

1

CONTEXT FOR ANALYSIS

KEY DATA SOURCES UTILIZED

Data Source	Description of Data Source	Data Used and Use
VHCURES	All-payer claims database maintained by the Green Mountain Care Board	• 2016 to 2020 enrollment and medical claims data for the Commercial, Medicare, and Medicaid population
IBM Watson MarketScan® Commercial Database (MarketScan)	Full medical and prescription drug claims records for roughly 30 million commercially insured lives	• 2019 enrollment and medical claims data used to develop a regional peer state propensity matched managed/well managed cohort to benchmark against the VHCURES commercial population as well as use for identification of potential censoring
Medicare 5% Limited Data Set (LDS)	Full view of claims records for random 5% of all Medicare FFS beneficiaries	• 2019 enrollment and medical claims data used to develop a regional peer state propensity matched cohort from the same geographic areas from which the Commercial population was drawn from Marketscan to benchmark against the VHCURES Medicare population as well as use for identification of potential censoring
Vermont Provider Survey Data	Provider level data indicating age, gender, practice location, specialty types, hours worked, and work setting	• 2010, 2014, 2016, 2018, and 2020 data • 2020 data is considered “raw” (due to timing limitations) while other years use fully scrubbed data sets
Definitive Healthcare Data	Profiles on hospitals, physicians, health systems, long term care facilities and other providers	• Used to extract a census of physicians by specialty and advance practice professionals (APPs) in Vermont by geographic region in 2020 • Used to determine the number physicians by specialty and APPs affiliated with Dartmouth in 2020

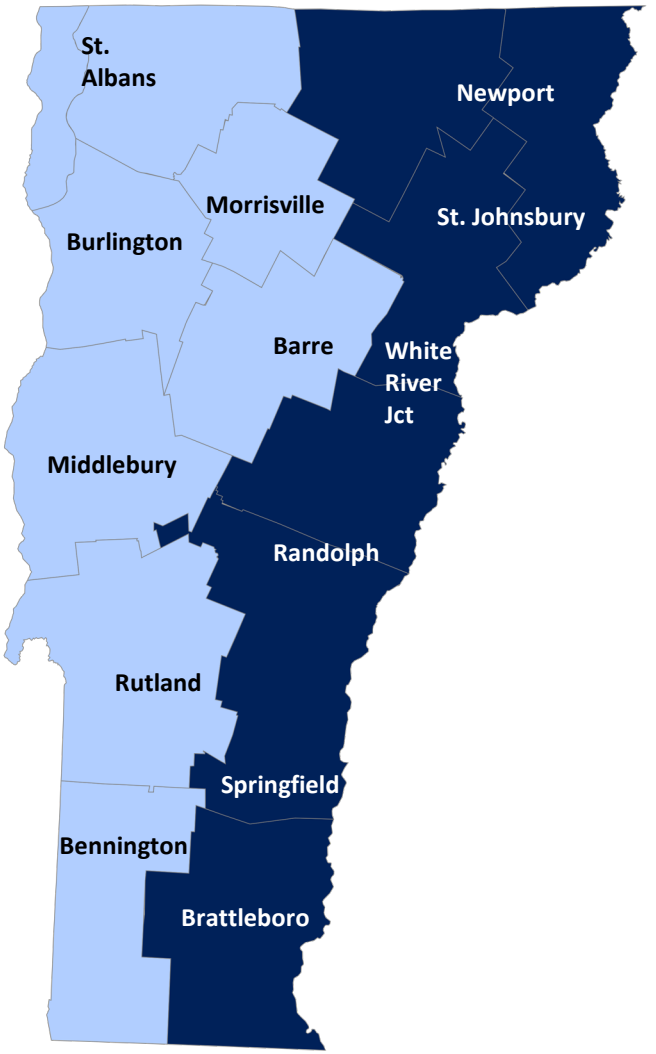
KEY DATA SOURCES UTILIZED

Data Source	Description of Data Source	Data Used and Use
MGMA DataDive	Comprehensive national provider survey and benchmarking data with numerous KPIs	• 2020 work RVUs by specialty for the Eastern region
American Community Survey Public Use Microdata Sample	An ongoing survey conducted by the US Census Bureau that provides vital information about the nation's population on a yearly	• 2019 PUMS data used as an input in sizing the Vermont market by age cohort, gender, and coverage type (i.e., Commercial, Medicare, Medicaid, Uninsured, Other)
US Census Bureau Population Projections	Estimates of the population for future dates consistent with the most recent decennial census and produced using the cohort-component method	• 2020 and 2025 projections of Vermont residents by age and gender, used as an input in sizing the Vermont market by age cohort, gender, and coverage type (i.e., Commercial, Medicare, Medicaid, Uninsured, Other)
ACA Carrier and Medicaid Provider Listings	Listing of all ACA and Medicaid contracted providers along with addresses and provider specialty	• Used to assess access to patient care by provider specialty category based on driving distance
National Health Expenditures	Comprehensive assessment of national health spend by major service category and population	• Used to develop the relativity of spend for uninsured as compared to commercial insureds
American Medical Association Benchmarking	Annual comprehensive survey to physicians in the U.S. which benchmarks various aspects of practice operation including patient mix	• Used to determine the mix of patients expected by specialty to establish the share of uninsured

HSA REGIONS

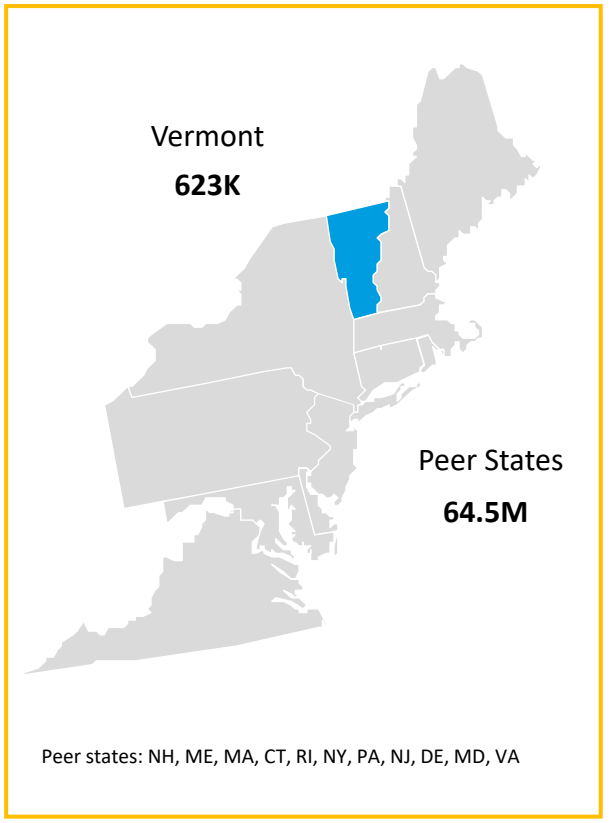
VT HSA	HSA Region
Barre	Western
Bennington	Western
Burlington	Western
Middlebury	Western
Morrisville	Western
Rutland	Western
St. Albans	Western
Brattleboro	Eastern
Newport	Eastern
Randolph	Eastern
Springfield	Eastern
St. Johnsbury	Eastern
White River Junction	Eastern

- HSA Regions were determined to closely mirror hospital referral regions
- Input from the State was provided to ensure the assignment of HSAs to the Western and Eastern Regions aligned with expectations while maintaining credibility within the regions



BENCHMARKING ACCESS AND CARE PATTERNS

Benchmarking was performed for the Commercial and Medicare coverage types for several of the analyses to determine whether there were any discernable differences in Vermont



1

Region

- From our experience, distinct care patterns emerge regionally based on SDOH, cultural medical consumptions, and historical access to care
- Utilizing a regional benchmark eliminates the need to normalize for these differences or alternately have them influence any comparisons

2

Managed Care and Access

- Using Oliver Wyman's Congruence model, areas where care has been previously identified as either managed or well managed were selected from the set of regional peer states
  - Level of managed care was determined through a comparison of total cost of care based on claims normalized for differences in risk and provider reimbursement
  - The federal Health Resources and Services Administration's Index of Medical Underservice (IMU) index was also used to normalize for access in analytics and modelling
  - 143 total CBSAs were reviewed, with outliers and CBSAs of low credibility being excluded

3

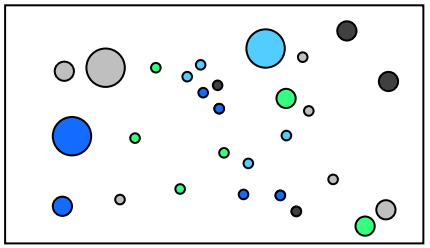
Peer Member Selection

- Propensity matching was performed using the VHCURES population to ensure the set of peer members were of similar demographics, chronic condition prevalence, and mix
- The matching process was performed separately for the Western and Eastern Regions to allow for Vermont regional benchmarking

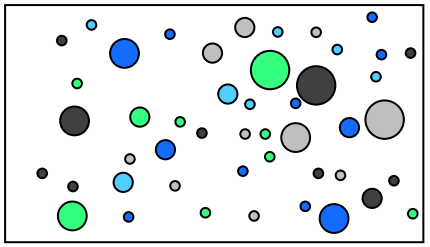
OLIVER WYMAN DEPLOYS PROPENSITY MATCHING PROCESS TO ENSURE POPULATIONS ARE COMPARABLE ON OBSERVABLE CHARACTERISTICS

Widely Varying Populations

Vermont Full Population Covered in VHCURES

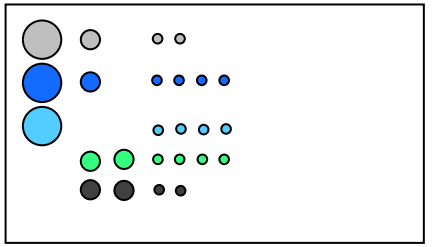


Peer States Well-Managed Population

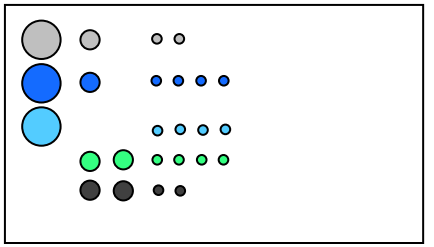


Propensity Matching Process for Comparable Populations

Vermont Full Population Covered in VHCURES



Peer States Propensity Matched Population



Suitable for Benchmarking

Controlling for Demographics

While most analysis methods will match age groups and gender, this method considers additional demographic characteristics where available such as geographic considerations for Urban/Rural

Controlling for Risk & Conditions

Evaluating specific claim patterns (i.e., specialty utilization) requires similar risk and consumption profiles. Propensity scoring allows OW to ensure a match on condition prevalence and overall risk between groups.

Interactions and Consumption

The interaction between recent utilization, conditions, risk, and demographics may be used when needed to ensure an appropriate match. When applicable this ensures varying behavior of health consumption are captured (e.g., a high-risk diabetic with recent admission vs. a moderate-risk diabetic with no recent admissions).

DARTMOUTH PROVIDERS

Identification of providers affiliated with Dartmouth-Hitchcock Medical Center that are accessible to Vermont residents

- Given the proximity of Dartmouth Hitchcock Medical Center (Dartmouth) to the New Hampshire and Vermont border, and the number of Vermonters that seek care at Dartmouth, additional consideration was given to how services rendered by these providers were accounted for in some of the analyses

- To identify Dartmouth providers, we took the following steps:
  1. Any provider in the master provider list with "Dartmouth" included in their legal organization name
  2. Any providers with a NPI that had primary hospital affiliation, physician group affiliation, or practice location of Dartmouth in the Definitive Healthcare Data
  3. Providers in the Definitive Healthcare data with a zip code of 03756

Out of State Care Analysis

- The results for this analysis were shown two ways; once where Dartmouth providers were considered "in state" and once where Dartmouth providers were considered "out of state"

Provider Access – Demand vs. Supply Analysis

- For the Eastern Region, the number of providers of each specialty type are presented separately for Vermont providers and Dartmouth providers to which Vermont residents were assumed to have access
  - It was assumed that Dartmouth is staffed such that 40% of the providers are available to deliver care to Vermont residents[1]

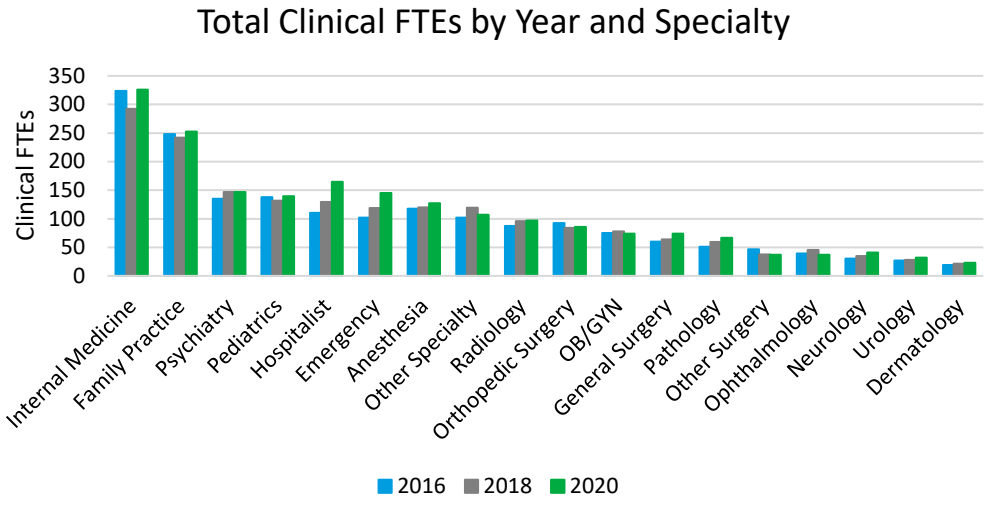
[1]This assumption was determined based on the percentage of Dartmouth-Hitchcock patients which are from Vermont (https://www.dartmouth-hitchcock.org/about/facts-figures)

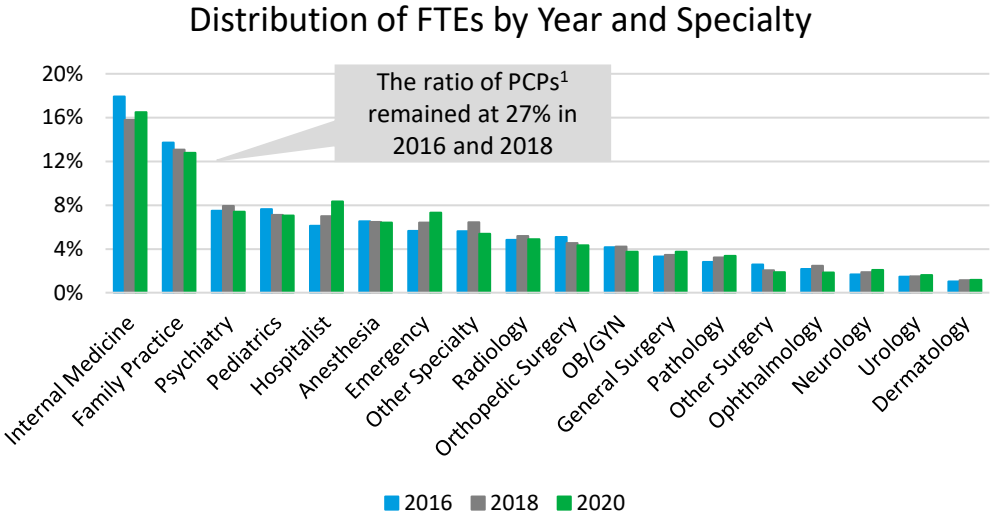
2

VERMONT PROVIDERS BY SPECIALTY OVER TIME

PROVIDER DISTRIBUTION BY SPECIALTY OVER TIME

Internal Medicine and Family Practice FTEs decreased by 12% and 5% respectively from 2016 to 2018, and this trend reversed in 2020 which may be an artifact of the COVID-19 pandemic demand



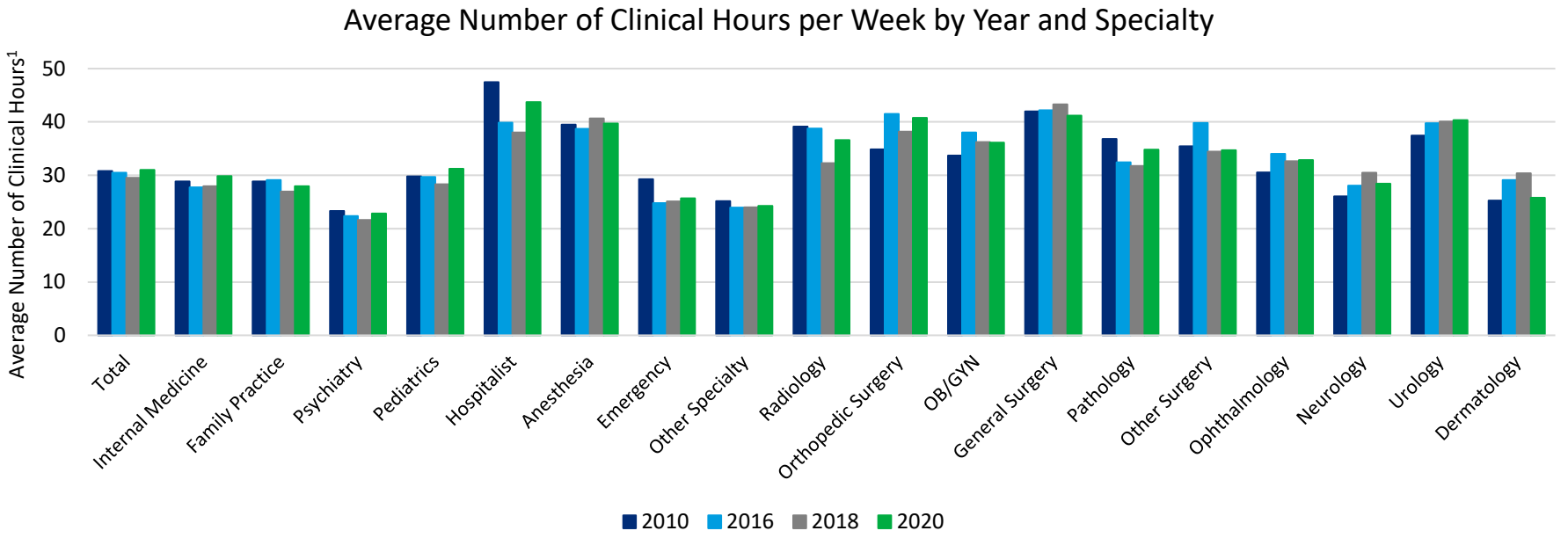


- The provider mix by specialty has remained fairly stable in recent years
  - The largest changes include an increase in Emergency physicians and Hospitalist in 2020
- In general, total clinical FTEs increased in 2020, reversing the downward trend in recent years
  - This may be a combination of COVID-19 leading to an increase in the average number of hours per week spent delivering care, as well as potential differences in the finalization of the 2020 data compared with prior years
- One clinical FTE is equivalent to 40 hours, and clinical hours worked as reported in the Vermont Division of Health Surveillance bi-annual survey were not capped in any way

Source: Bi-annual provider census data as provided by the Vermont Division of Health Surveillance which only captures data upon re-licensure, thus removing first-time licensees from the data, and only physicians are included as APPs are not captured in the data
1 Combines Family Practice, Pediatrics, ad OB/GYN

AVERAGE NUMBER OF CLINICAL HOURS WORKED PER WEEK BY SPECIALTY

Consistent decreases in average hours worked are observed in most specialties from 2010 to 2018, reversing to an increasing trend during the pandemic



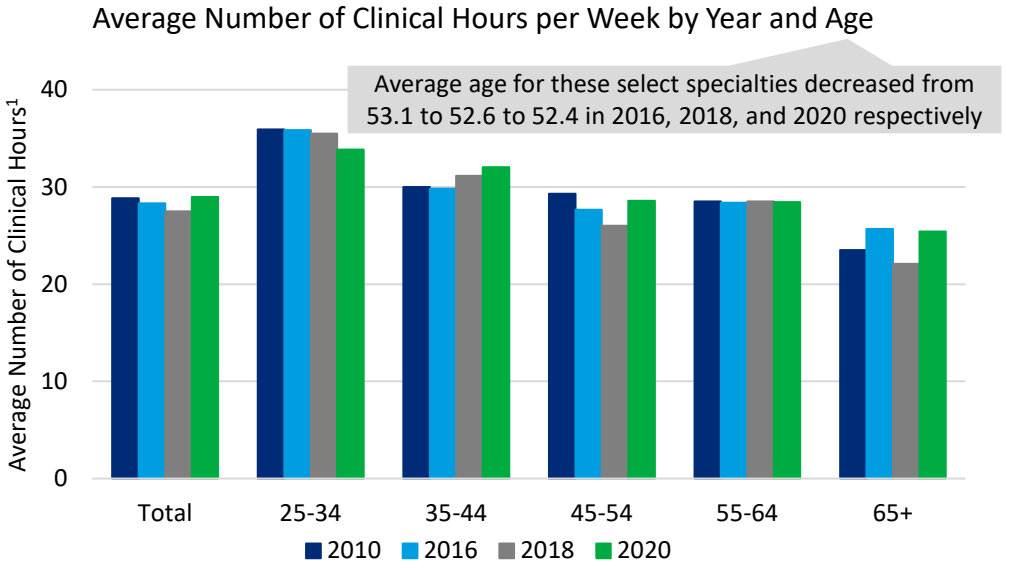
[1]No cap on the number of hours was applied; the 2014 survey provided did not include information on the number of hours worked per week, so it is not included above

- The average number or clinical hours had been steadily decreasing from 2010 to 2018
- In general, the average number of clinical hours reported increased in 2020, reversing the downward trend in recent years
  - This may be a combination of the impact of COVID-19, as well as potential differences in the finalization of the 2020 data compared with prior years

Source: Bi-annual provider census data as provided by the Vermont Division of Health Surveillance which only captures data upon re-licensure, thus removing first-time licensees from the data, and only physicians are included as APPs are not captured in the data

AVERAGE NUMBER OF CLINICAL HOURS PER WEEK BY PROVIDER AGE: INTERNAL MEDICINE AND FAMILY PRACTICE

The decline in FTEs across these two specialties in 2016 and again in 2018 appears to be driven by an average decline in clinical hours worked across all ages



- In general, the average number or clinical hours decreases as age increases
- In total, the average number of clinical hours reported increased in 2020, reversing the downward trend in recent years
  - This may be a combination of COVID-19 as well as potential differences in the finalization of the 2020 data compared with prior years
- One clinical FTE was equivalent to 40 hours, and reported clinical hours were not capped

[1]No cap on the number of hours was applied; the 2014 survey we received did not include hour information so it is not included above

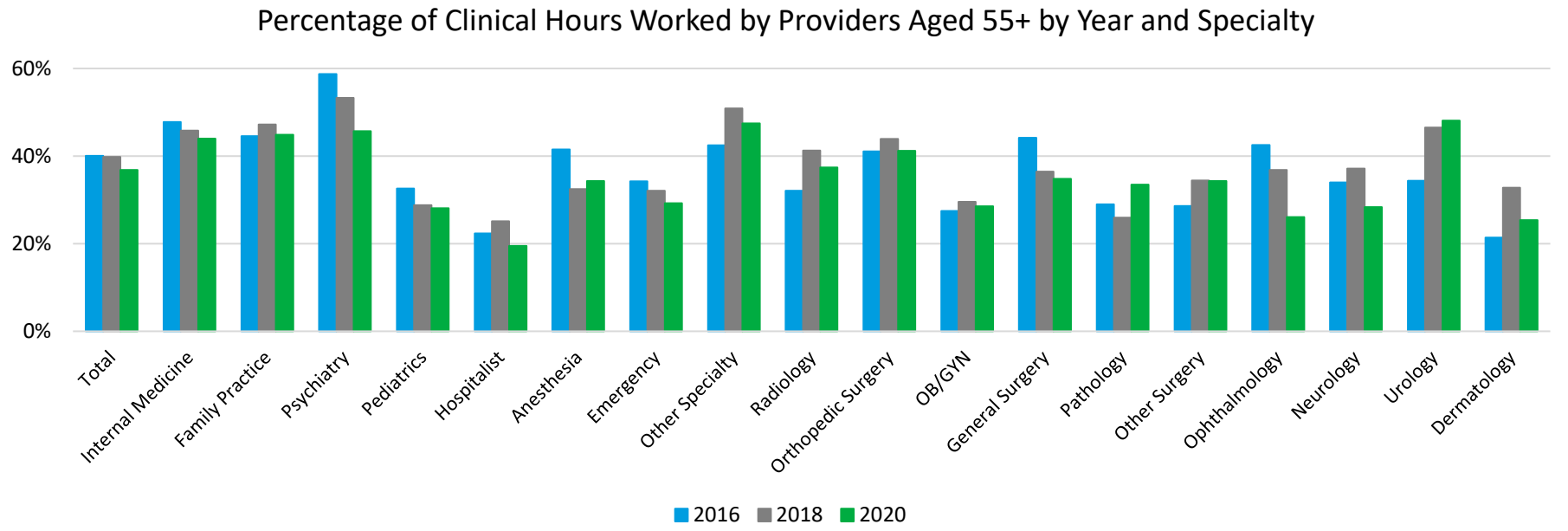
Count and percentage of FTEs by year and age (1 FTE = 40 hours)

Year	25-34	35-44	45-54	55-64	65+
2010	23	148	230	180	53
2016	30	109	148	196	89
2018	32	118	122	178	83
2020	37	148	124	166	103
2010	4%	23%	36%	28%	8%
2016	5%	19%	26%	34%	15%
2018	6%	22%	23%	33%	16%
2020	6%	26%	21%	29%	18%

Source: Bi-annual provider census data as provided by the Vermont Division of Health Surveillance which only captures data upon re-licensure, thus removing first-time licensees from the data, and only physicians are included as APPs are not captured in the data

PERCENTAGE OF CLINICAL HOURS WORKED BY PROVIDERS AGED 55+

The percentage of all clinical hours worked that was represented by providers age 55+ has been about 40%



[1]No cap on the number of hours was applied; the 2014 survey data provided did not include information on hours worked per week, so it is not included above

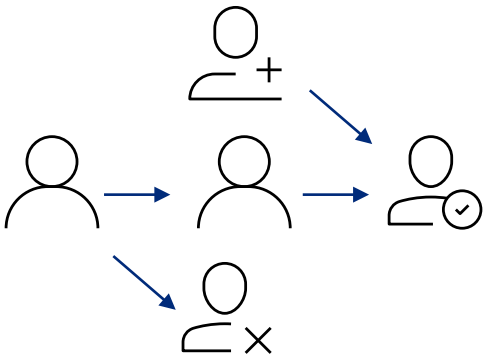
- The percentage of clinical hours worked by providers age 55+ decreased slightly in total, and in most specialties, in 2020
- The largest share of hours worked by providers age 55+ are in Psychiatry, Other Specialty, and Internal Medicine
- The smallest share of hours worked by providers age 55+ is Hospitalist, Dermatology, and OB/GYN
- Reported clinical hours were not capped

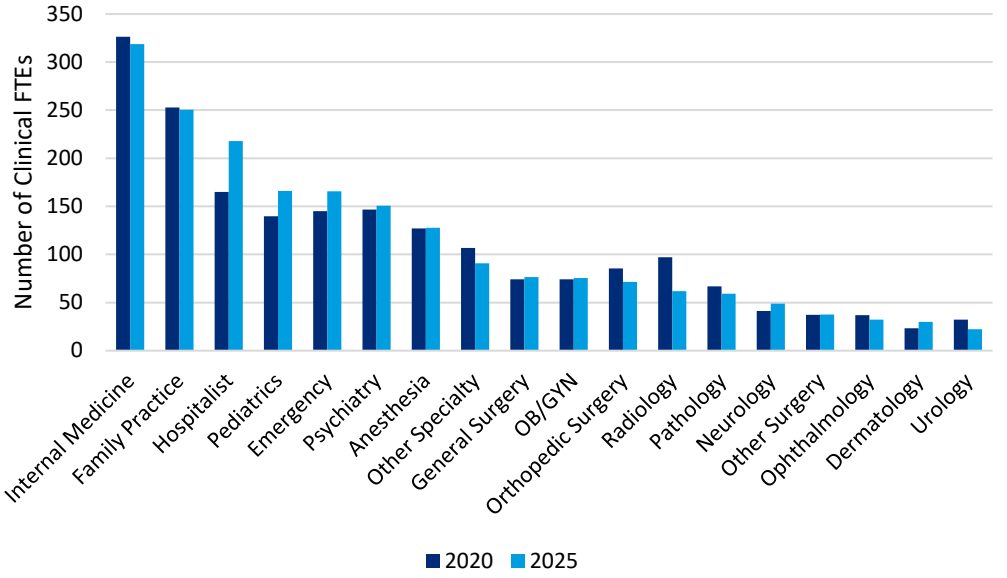
Source: Bi-annual provider census data as provided by the Vermont Division of Health Surveillance which only captures data upon re-licensure, thus removing first-time licensees from the data, and only physicians are included as APPs are not captured in the data

PROVIDER SUPPLY PROJECTION INTO 2025

Projections show a slight decrease in availability of licensed Internal Medicine and Family Practice physicians which suggests an under-supply of key physicians may develop as Vermont ages and population health demand grows

- 2020 clinical FTE information by specialty and age was adjusted for providers expected to enter (e.g., graduation, new to Vermont) and leave (e.g., retirement, moving) practice in Vermont
  - These projected changes were developed by applying historical changes by specialty and age, where possible
  - Where necessary, overall historical changes by age were applied to develop projections for certain specialties
  - One clinical FTE was equivalent to 40 hours
- In total, FTEs are projected to increase by 1% over 5 years using this simplistic approach
  - The largest percentage gains are in Hospitalist, Dermatology, and Neurology
  - The largest percentage losses are in Radiology, Urology, and Orthopedic Surgery





Source: Bi-annual provider census data as provided by the Vermont Division of Health Surveillance which only captures data upon re-licensure, thus removing first-time licensees from the data, and only physicians are included as APPs are not captured in the data

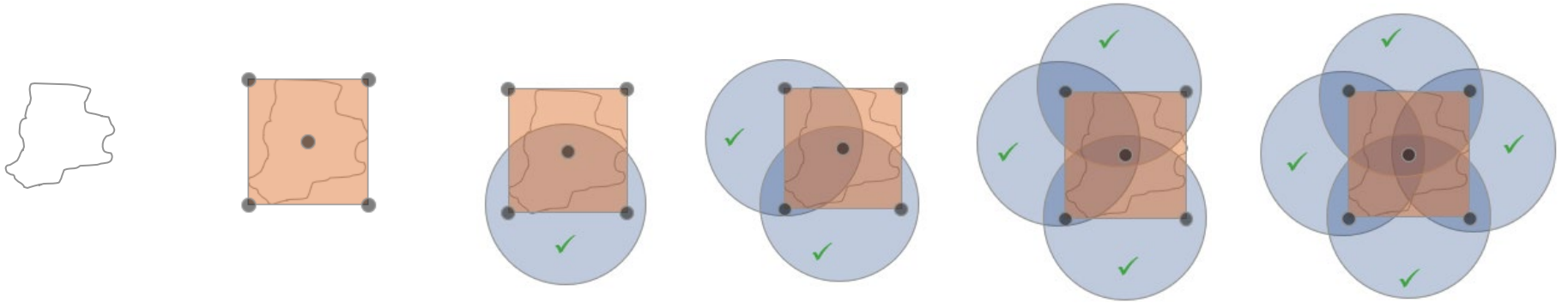
3

ACCESS TO PATIENT CARE

METHODOLOGY AND ASSUMPTIONS

OLIVER WYMAN'S ACCESSIBILITY TESTING PROCESS

EACH COUNTY WAS TESTED AT THE ZIP CODE LEVEL TO DETERMINE ACCESSIBILITY



1	2	3	4	5	6
Testing was done at the ZIP Code Level	We consider the 'box' around the zip codes, picking the combinations of min & max to determine the 'corners'	Testing only the centroid leaves portions of the ZIP code uncovered	Testing additional zip code coordinates helps ensure providers are within required distance for the entire ZIP code	Multiple combinations of zip code coordinates will result in complete coverage	Two adjacent corners with a centroid on all sides of the ZIP code is our testing rule

Our analysis produces state maps demonstrating access for a specific specialty:

- Facilities and Provider locations are pinpointed on the state map with a light blue dot
- Zip codes where members can access a provider within the specified driving time are colored dark blue
- Zip codes where at least some members cannot access a provider within the specified driving time are colored gray

ACCESSIBILITY ASSUMPTIONS

ACCESSIBILITY WAS DETERMINED BY THE FOLLOWING CONDITIONS

	Time (in minutes)	
Description	VT Urban	VT Rural
PCP	30	30
Allergy and Immunology	60	60
Cardiovascular Disease	60	60
Chiropractor	60	60
Dermatology	60	60
Endocrinology	60	60
ENT/Otolaryngology	60	60
Gastroenterology	60	60
General Surgery	60	60
Hematology	60	60
Gynecology (OB/GYN)	60	60
Infectious Diseases	60	60
Nephrology	60	60
Neurology	60	60
Neurological Surgery	60	60
Medical/Radiation Oncology	60	60
Oncology	60	60
Ophthalmology	60	60
Orthopedic Surgery	60	60
Pain Management	60	60
Physical Medicine & Rehabilitation	60	60
Plastic Surgery	60	60
Podiatry	60	60
Pulmonology	60	60

	Time (in minutes)	
Description	VT Urban	VT Rural
Psychiatry	30	30
Substance Abuse	30	30
Pulmonary Disease	60	60
Radiology	60	60
Rheumatology	60	60
Sleep Medicine	60	60
Urology	60	60
Pediatrics	60	60
General Acute Care Hospital	60	60
Psychiatric Hospital	60	60

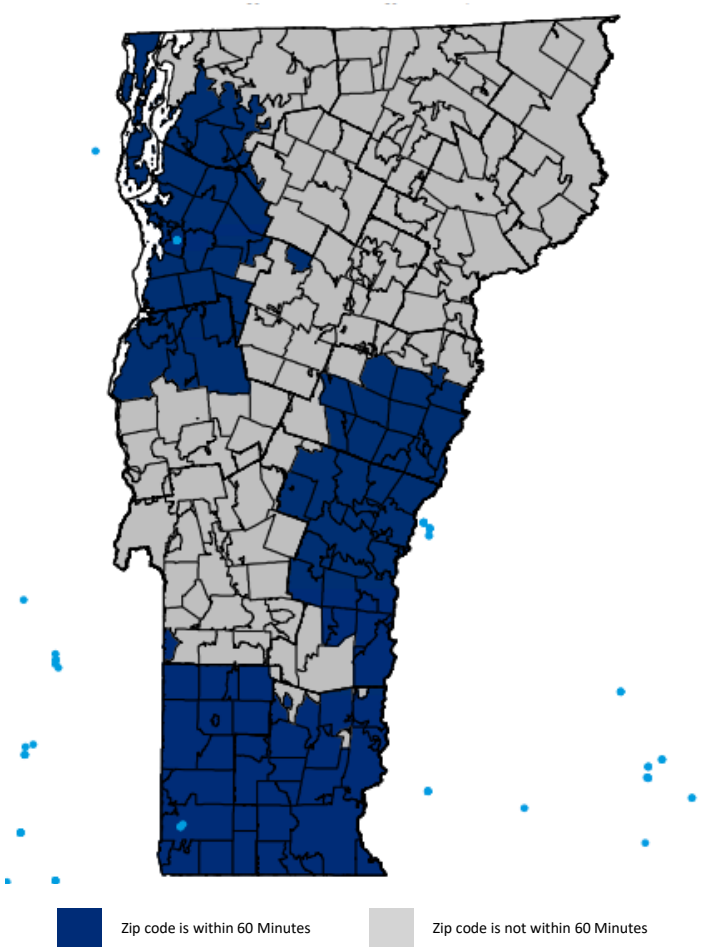
- Each ACA carrier and Medicaid provided directories listing all contracted providers in their network, along with the provider's address and specialty type
- A mapping of specialty types included each ACA carrier's/Medicaid's provider listing to the testing categories outlined here can be found in the Appendix

COMMERCIAL AND MEDICAID RESULTS BY PROVIDER SPECIALTY

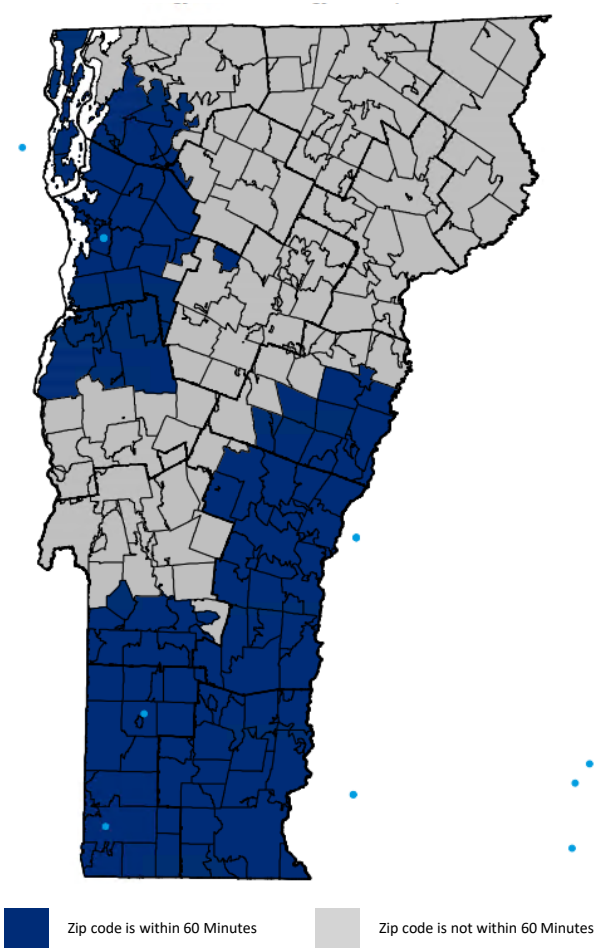
ACCESS TO ALLERGY AND IMMUNOLOGY

EVALUATING PATIENT ACCESSIBILITY: PHYSICIANS LOCATED WITHIN 60 MINUTES

ACA Market: Providers and Patient Accessibility



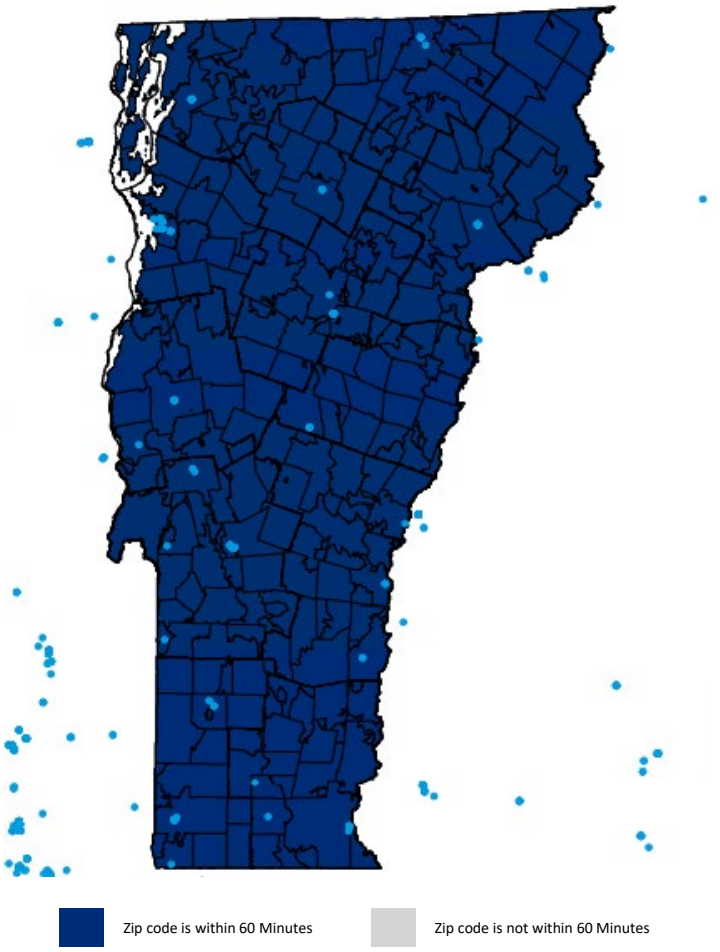
Medicaid: Providers and Patient Accessibility



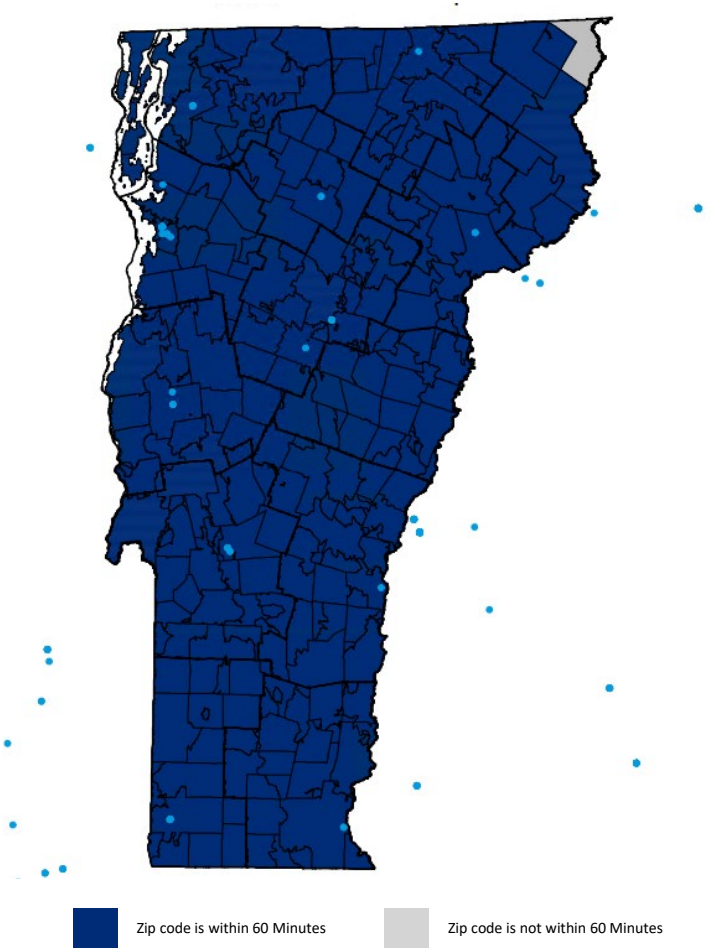
ACCESS TO CARDIOVASCULAR DISEASE

EVALUATING PATIENT ACCESSIBILITY: PHYSICIANS LOCATED WITHIN 60 MINUTES

ACA Market: Providers and Patient Accessibility



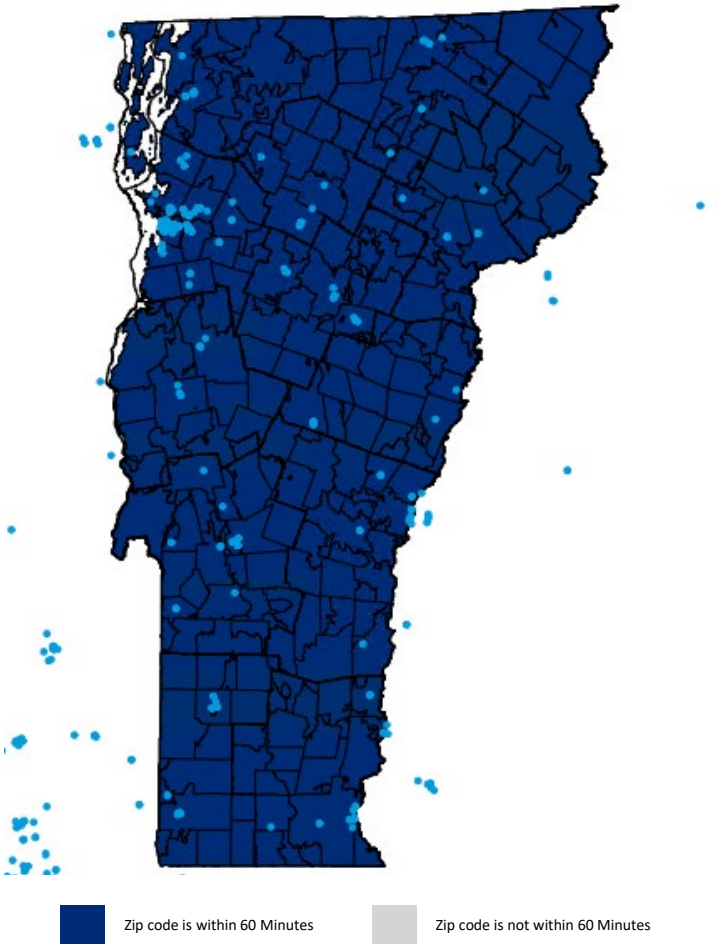
Medicaid: Providers and Patient Accessibility



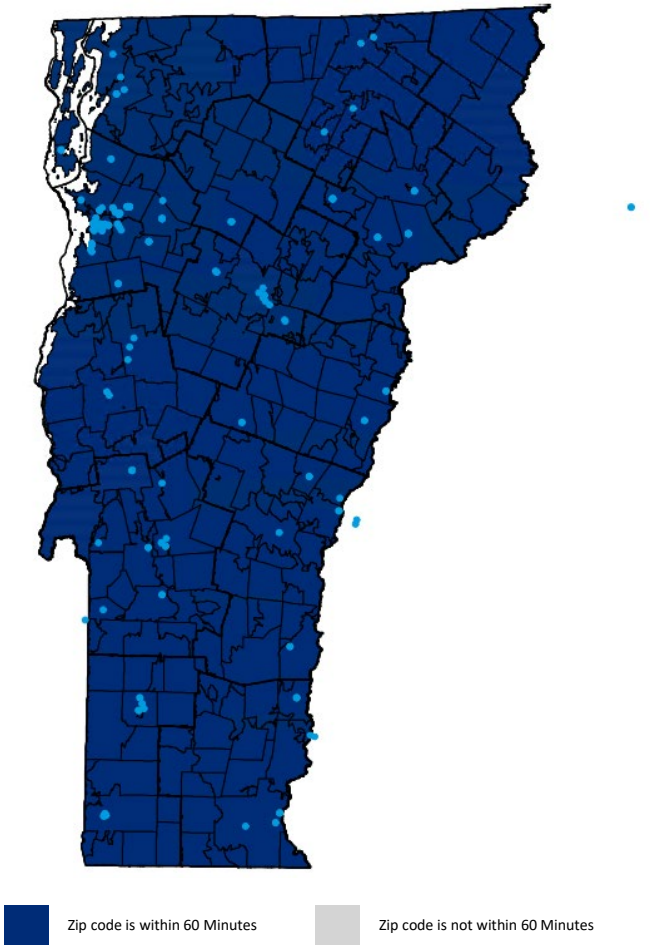
ACCESS TO CHIROPRACTOR

EVALUATING PATIENT ACCESSIBILITY: PHYSICIANS LOCATED WITHIN 60 MINUTES

ACA Market: Providers and Patient Accessibility



Medicaid: Providers and Patient Accessibility

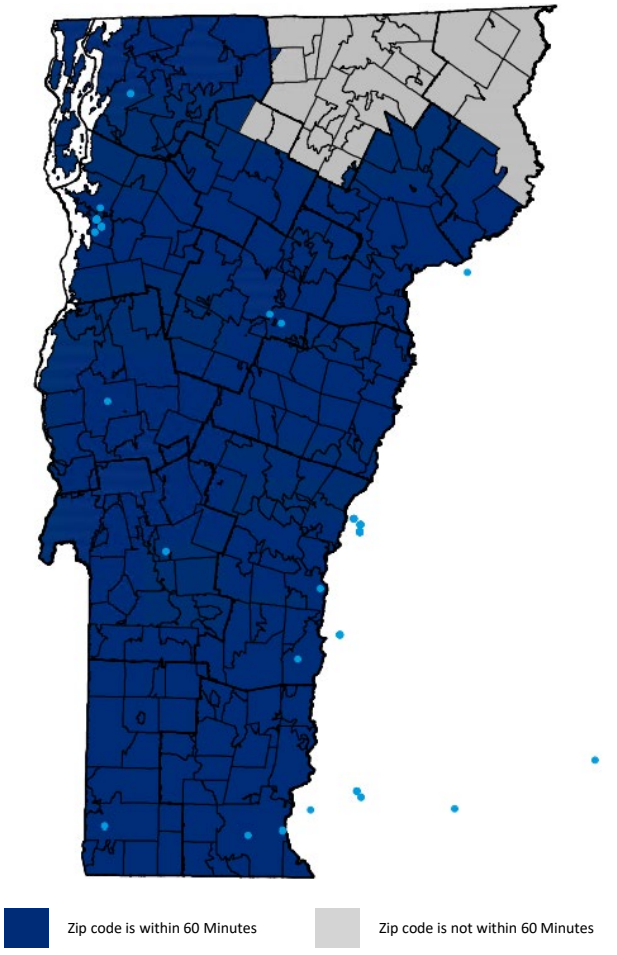


ACCESS TO DERMATOLOGY

EVALUATING PATIENT ACCESSIBILITY: PHYSICIANS LOCATED WITHIN 60 MINUTES

ACA Market: Providers and Patient Accessibility

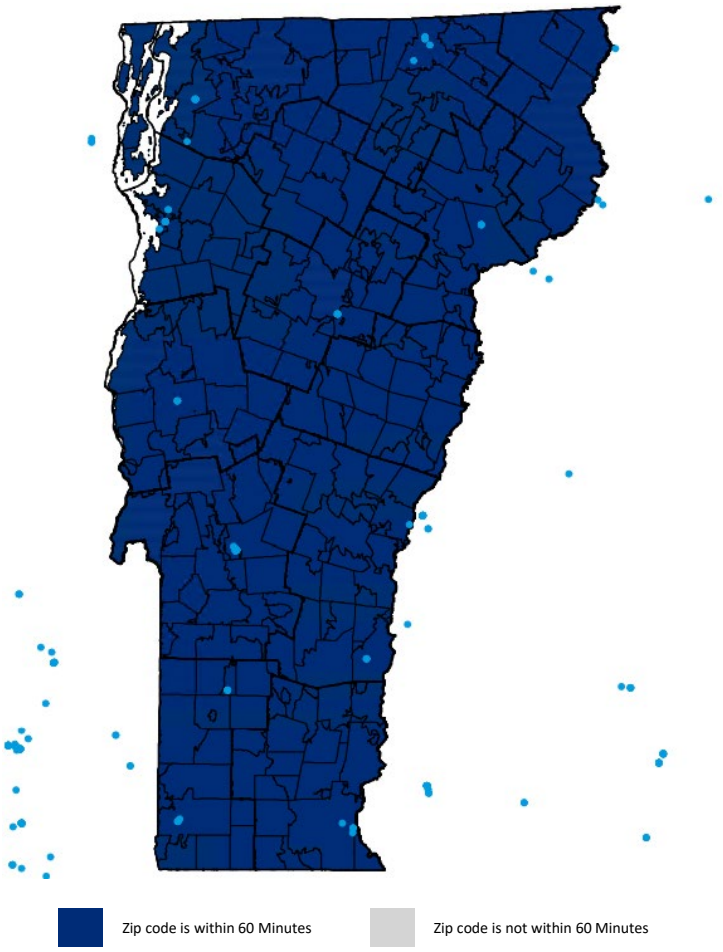
Medicaid: Providers and Patient Accessibility



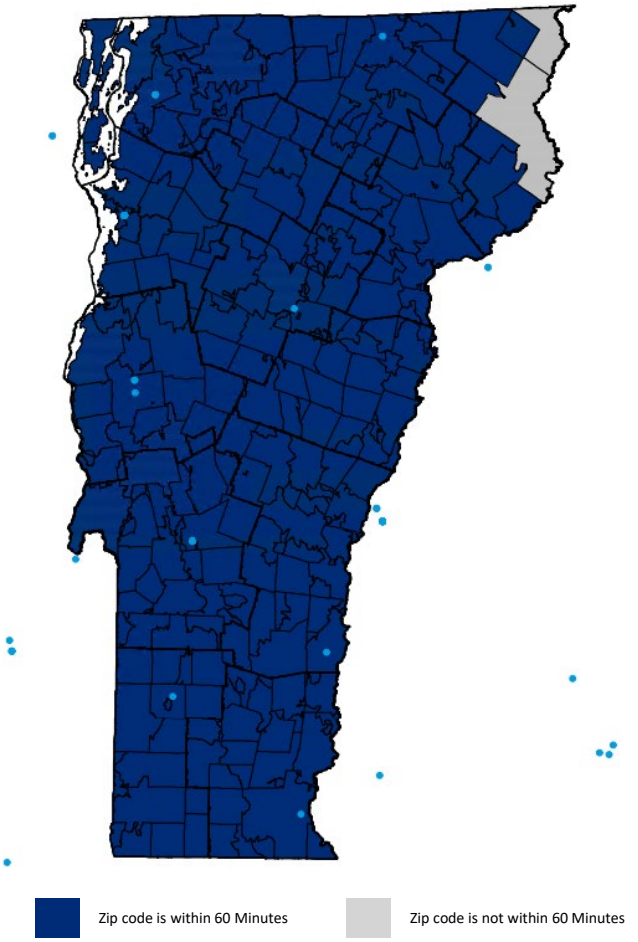
ACCESS TO ENT/OTOLARYNGOLOGY

EVALUATING PATIENT ACCESSIBILITY: PHYSICIANS LOCATED WITHIN 60 MINUTES

ACA Market: Providers and Patient Accessibility



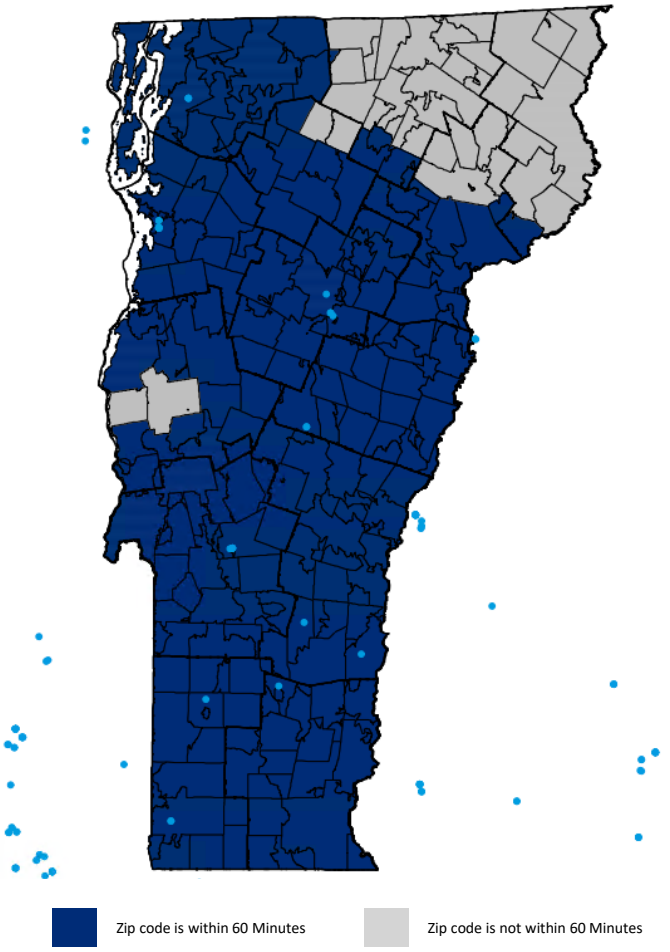
Medicaid: Providers and Patient Accessibility



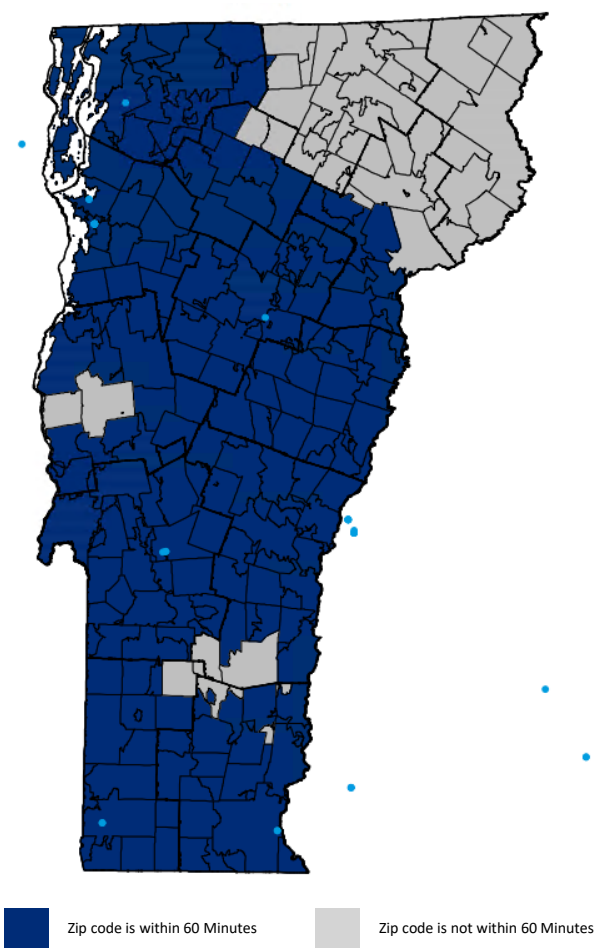
ACCESS TO ENDOCRINOLOGY

EVALUATING PATIENT ACCESSIBILITY: PHYSICIANS LOCATED WITHIN 60 MINUTES

ACA Market: Providers and Patient Accessibility



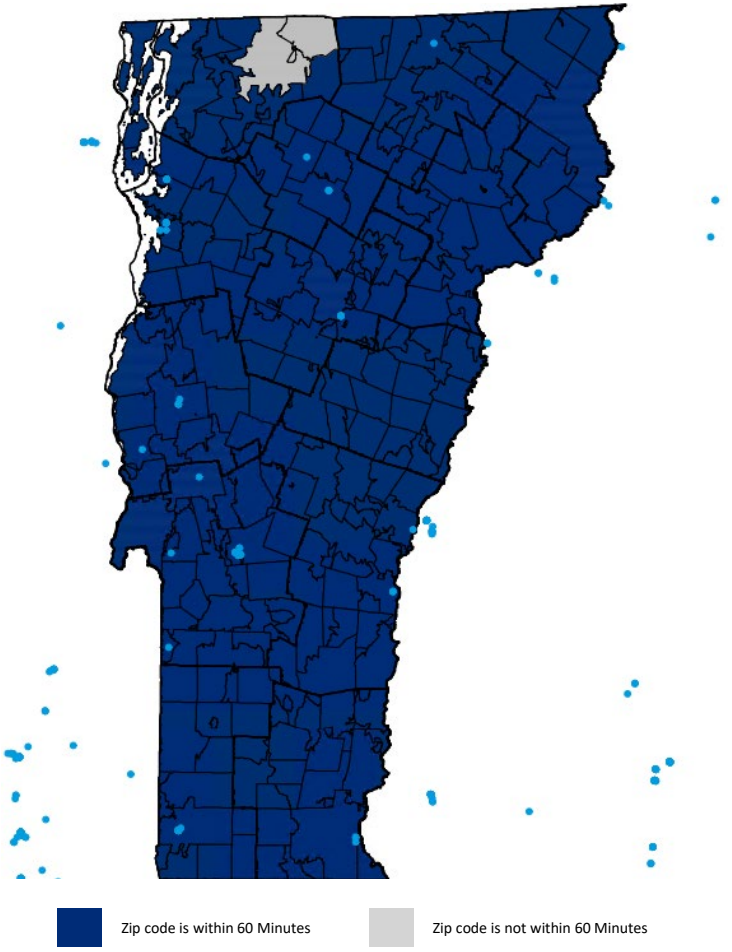
Medicaid: Providers and Patient Accessibility



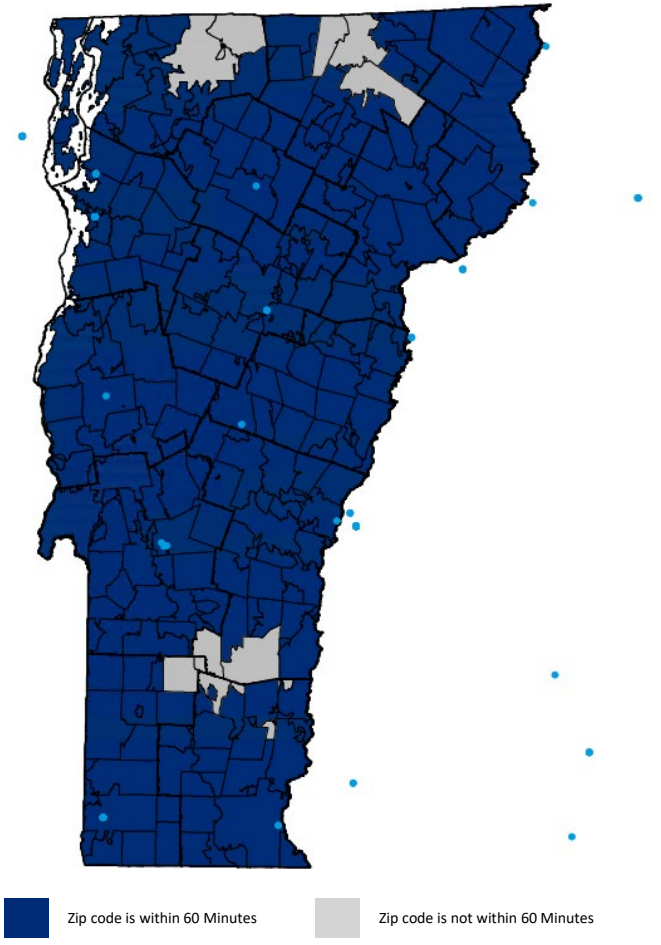
ACCESS TO GASTROENTEROLOGY

EVALUATING PATIENT ACCESSIBILITY: PHYSICIANS LOCATED WITHIN 60 MINUTES

ACA Market: Providers and Patient Accessibility



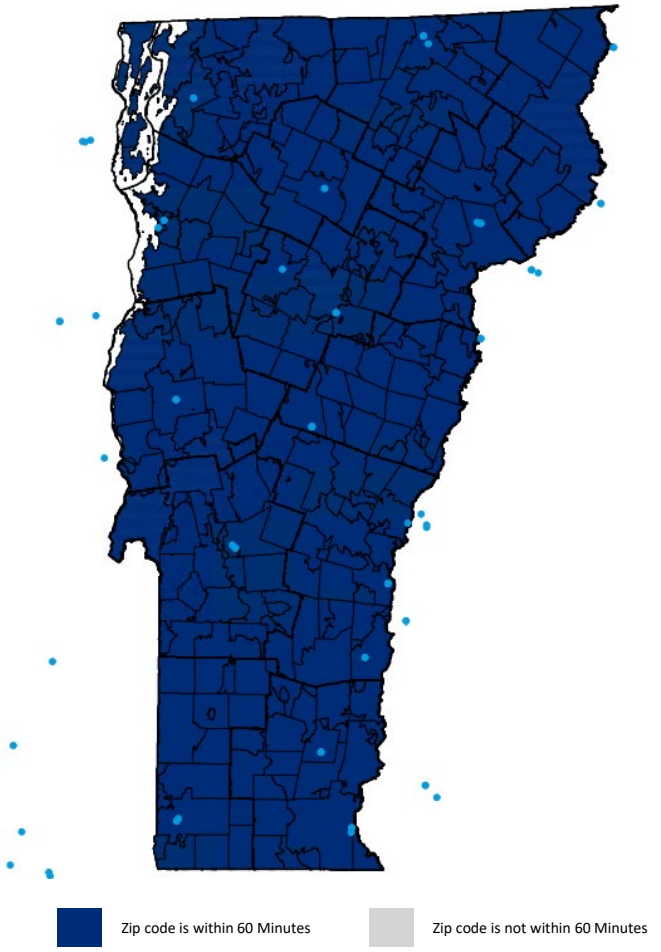
Medicaid: Providers and Patient Accessibility



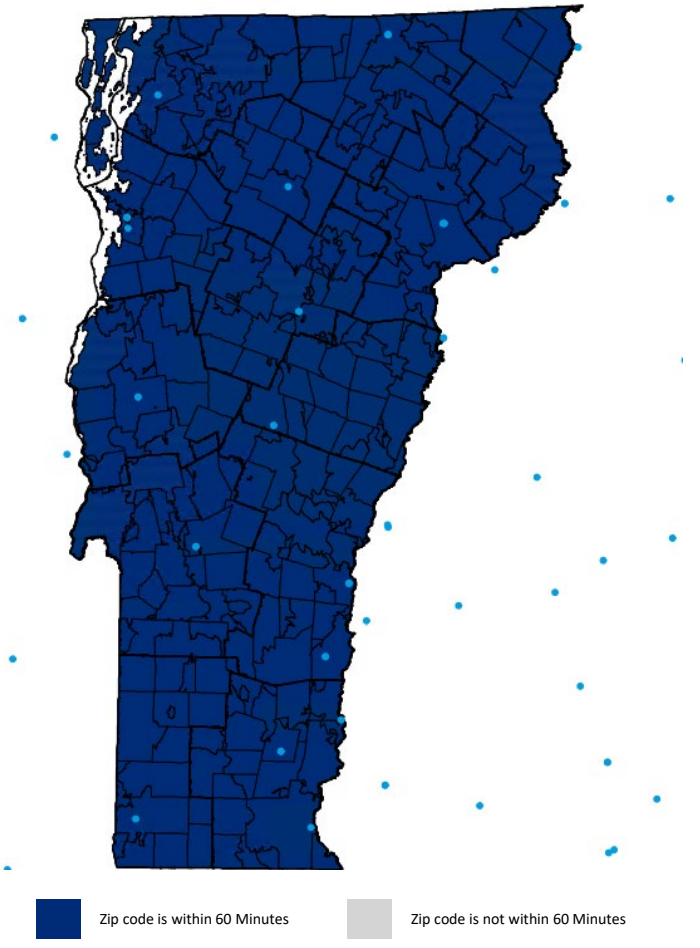
ACCESS TO GENERAL ACUTE CARE HOSPITAL

EVALUATING PATIENT ACCESSIBILITY: PHYSICIANS LOCATED WITHIN 60 MINUTES

ACA Market: Providers and Patient Accessibility



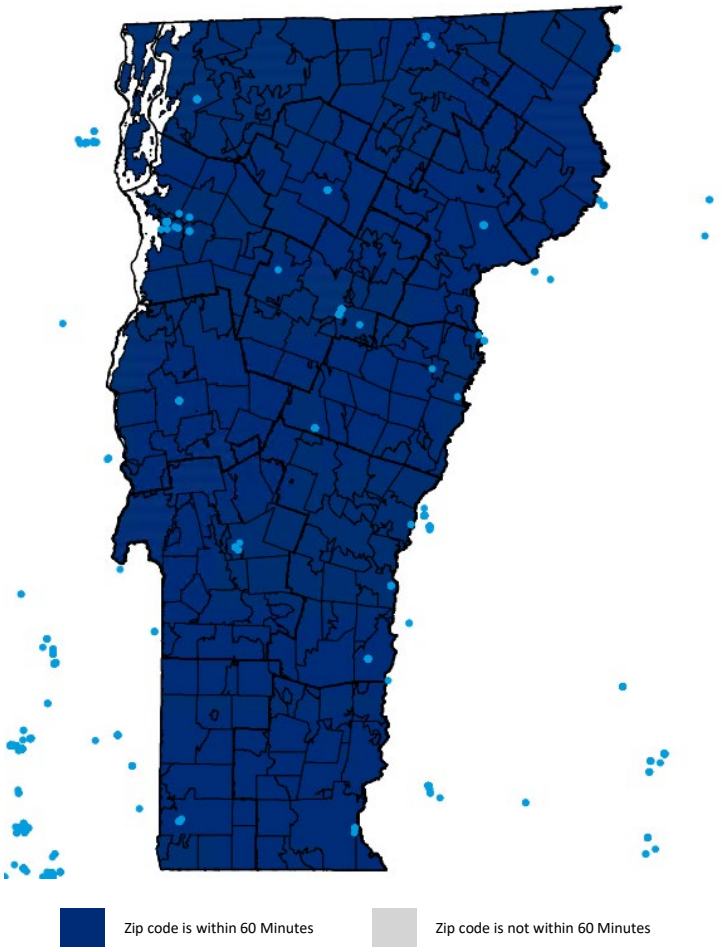
Medicaid: Providers and Patient Accessibility



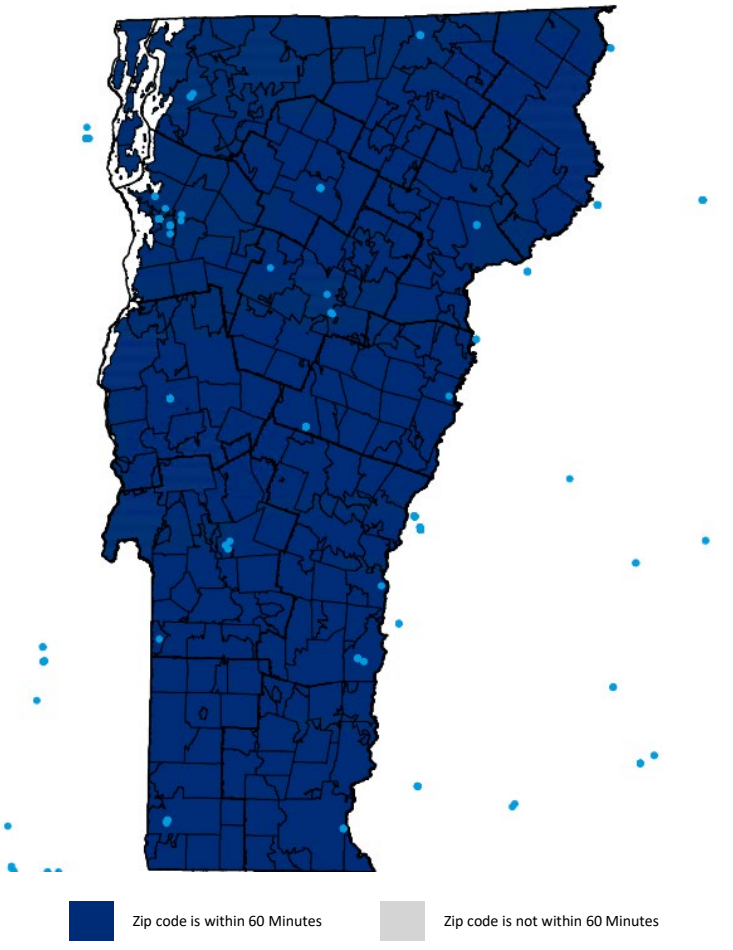
ACCESS TO GENERAL SURGERY

EVALUATING PATIENT ACCESSIBILITY: PHYSICIANS LOCATED WITHIN 60 MINUTES

ACA Market: Providers and Patient Accessibility



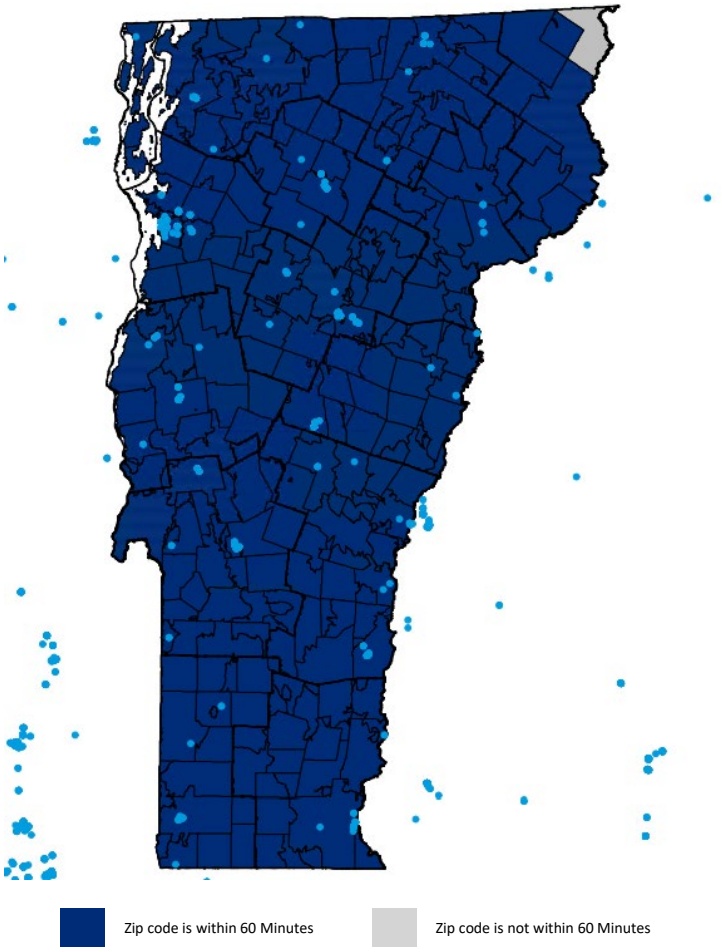
Medicaid: Providers and Patient Accessibility



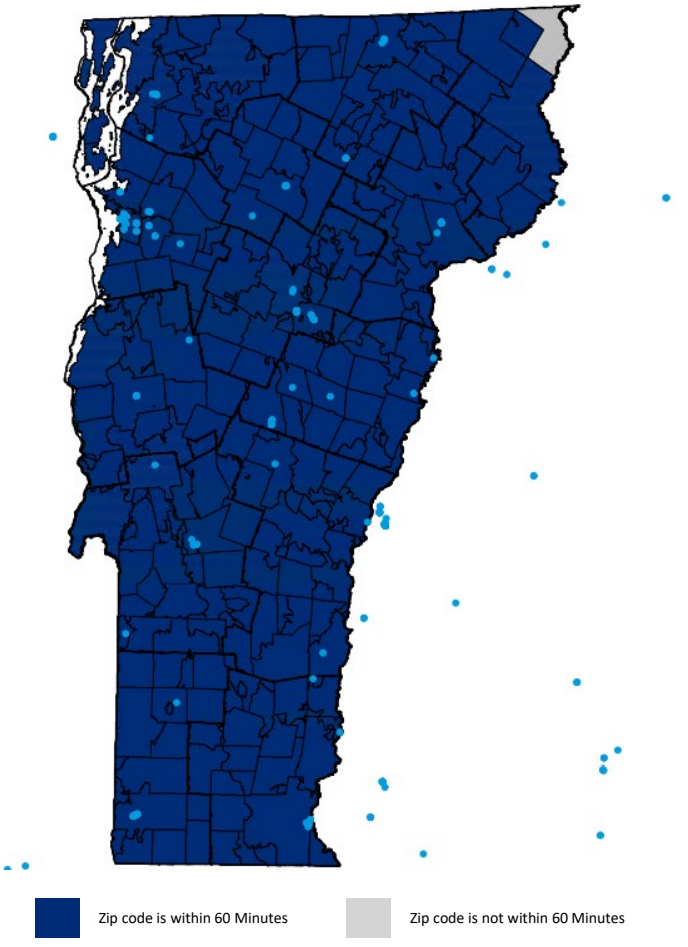
ACCESS TO GYNECOLOGY (OB/GYN)

EVALUATING PATIENT ACCESSIBILITY: PHYSICIANS LOCATED WITHIN 60 MINUTES

ACA Market: Providers and Patient Accessibility



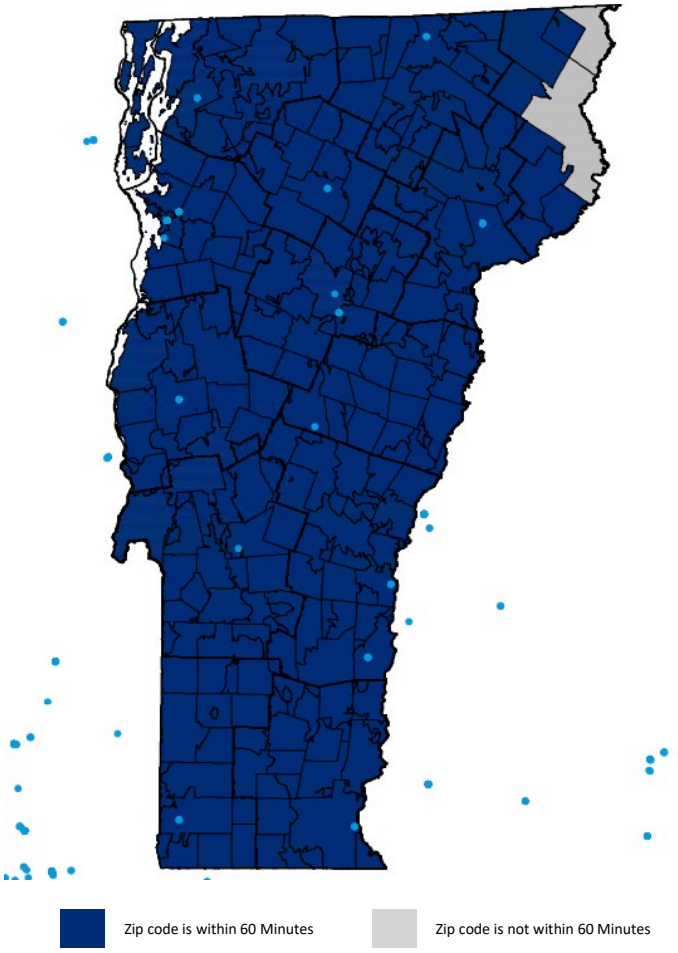
Medicaid: Providers and Patient Accessibility



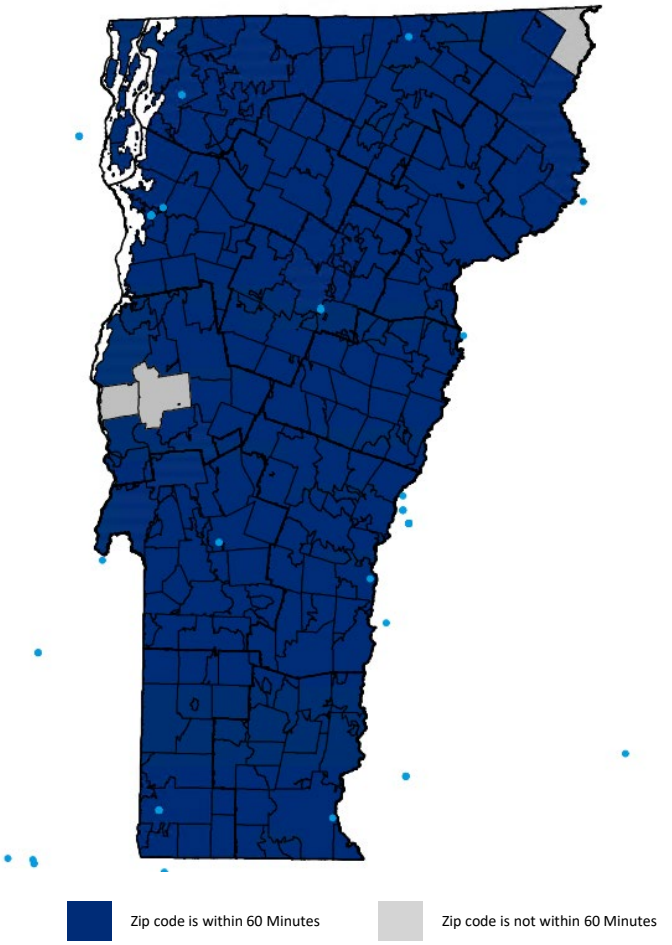
ACCESS TO HEMATOLOGY

EVALUATING PATIENT ACCESSIBILITY: PHYSICIANS LOCATED WITHIN 60 MINUTES

ACA Market: Providers and Patient Accessibility



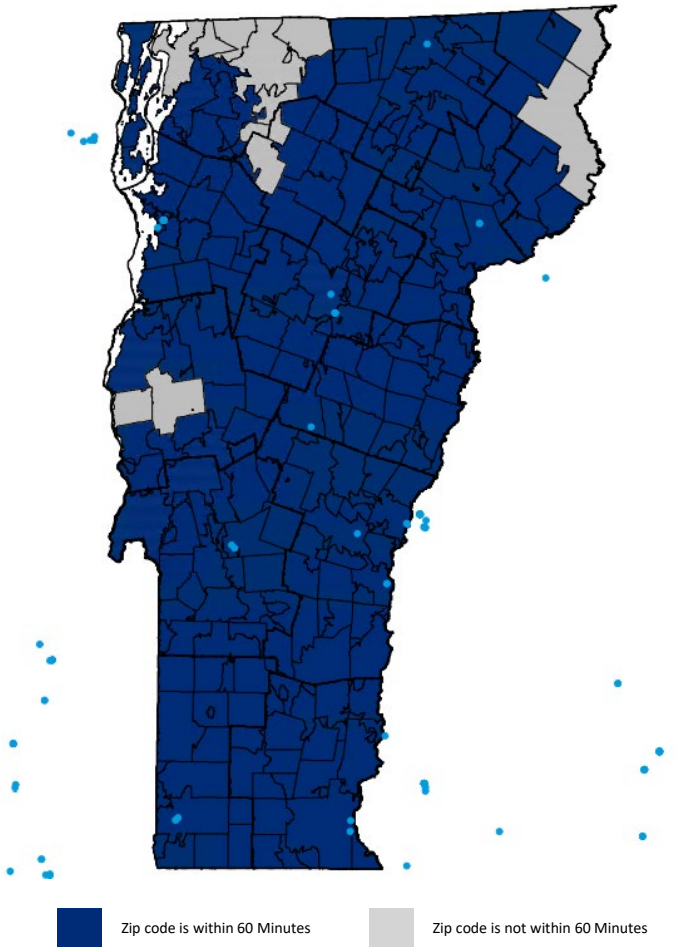
Medicaid: Providers and Patient Accessibility



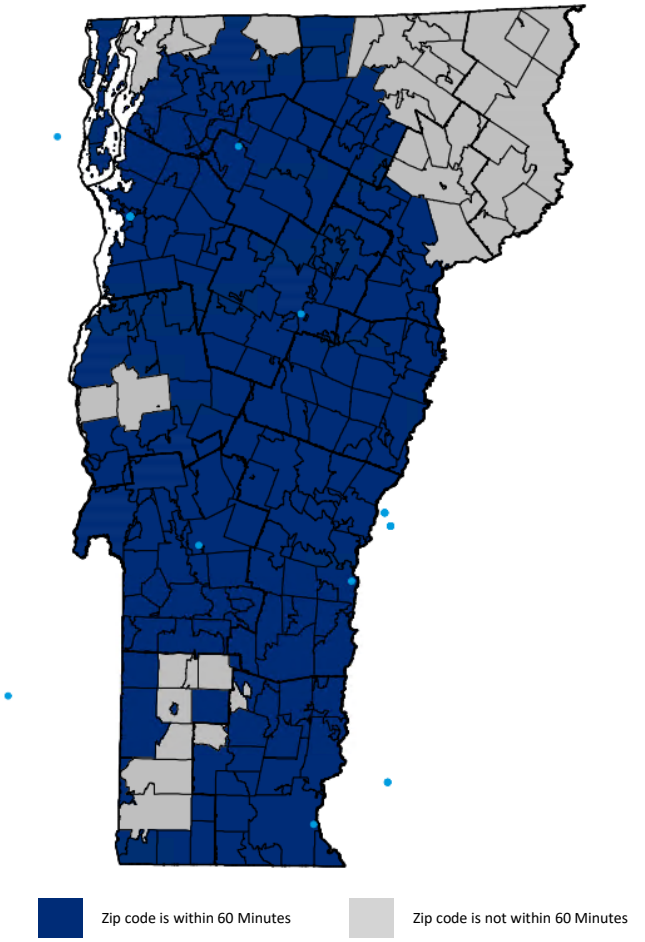
ACCESS TO INFECTIOUS DISEASES

EVALUATING PATIENT ACCESSIBILITY: PHYSICIANS LOCATED WITHIN 60 MINUTES

ACA Market: Providers and Patient Accessibility



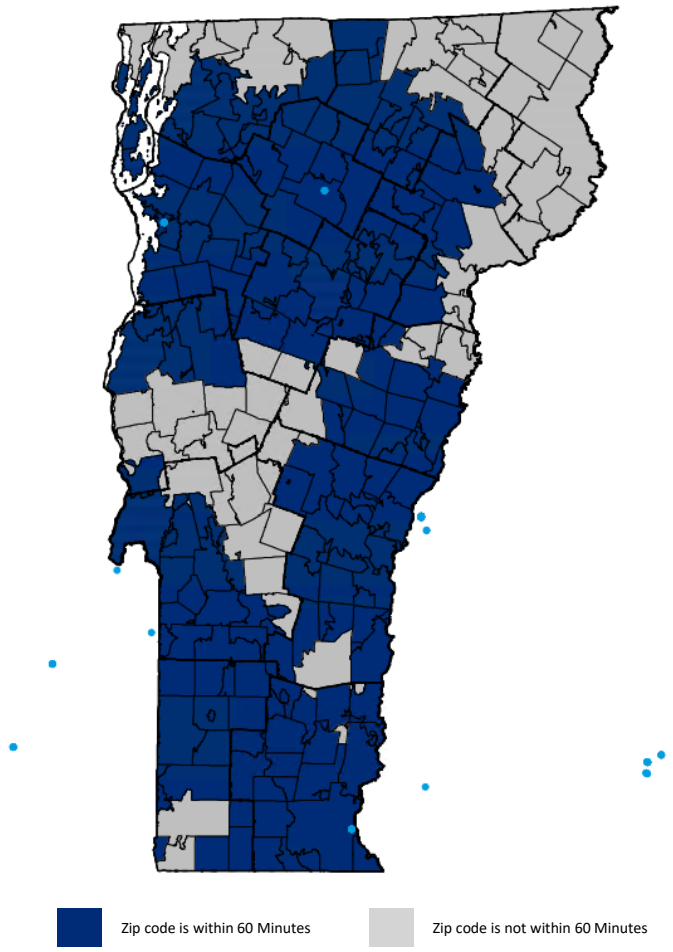
Medicaid: Providers and Patient Accessibility



ACCESS TO NEONATOLOGY

EVALUATING PATIENT ACCESSIBILITY: PHYSICIANS LOCATED WITHIN 60 MINUTES

ACA Market: Providers and Patient Accessibility



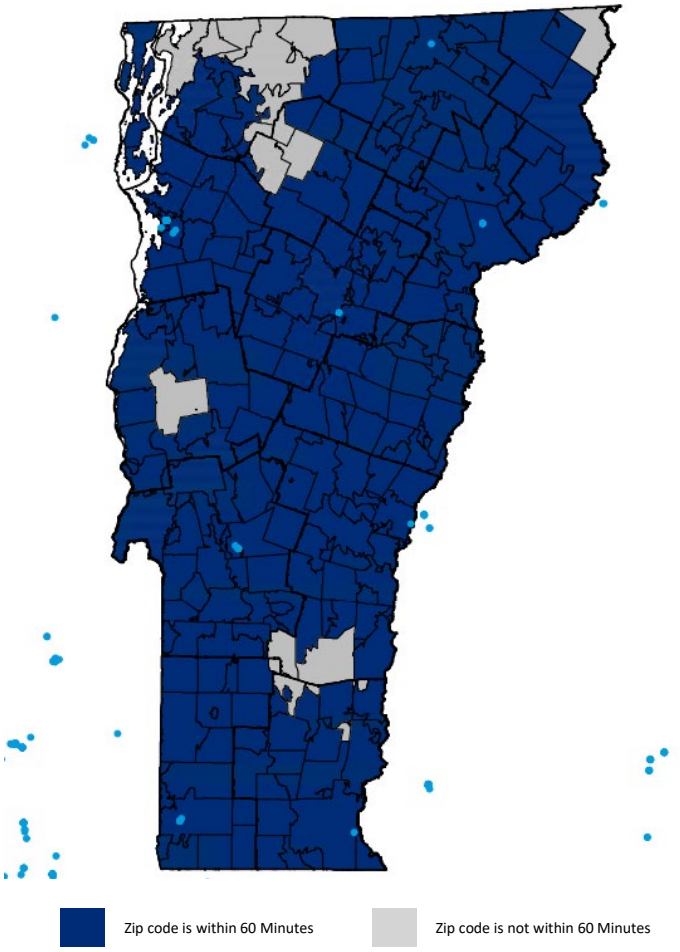
Medicaid: Providers and Patient Accessibility

No Provider Information Reported for Neonatology for Medicaid

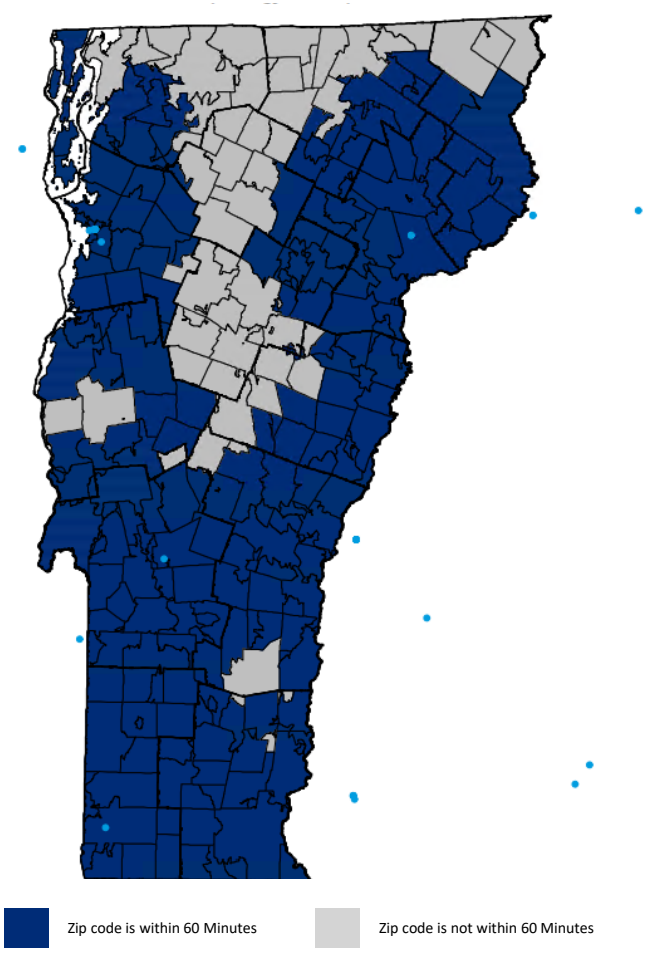
ACCESS TO NEPHROLOGY

EVALUATING PATIENT ACCESSIBILITY: PHYSICIANS LOCATED WITHIN 60 MINUTES

ACA Market: Providers and Patient Accessibility



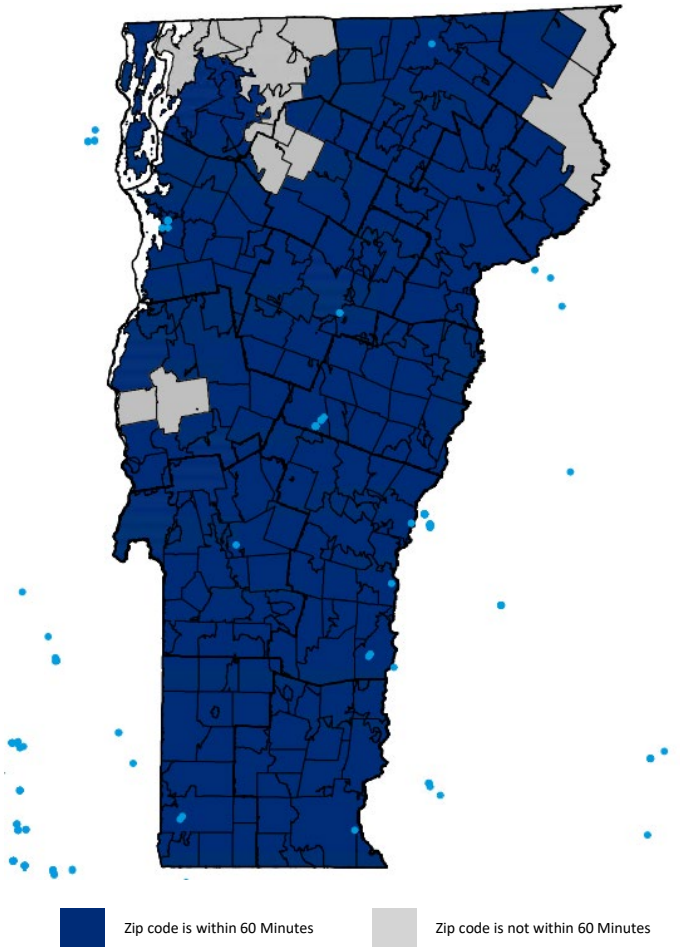
Medicaid: Providers and Patient Accessibility



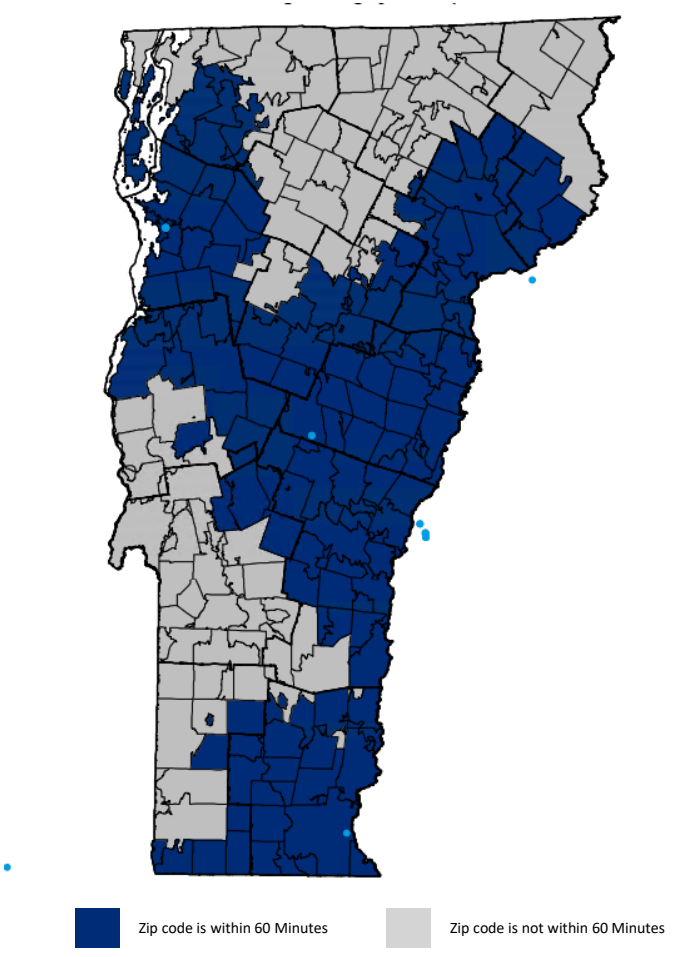
ACCESS TO NEUROLOGICAL SURGERY

EVALUATING PATIENT ACCESSIBILITY: PHYSICIANS LOCATED WITHIN 60 MINUTES

ACA Market: Providers and Patient Accessibility



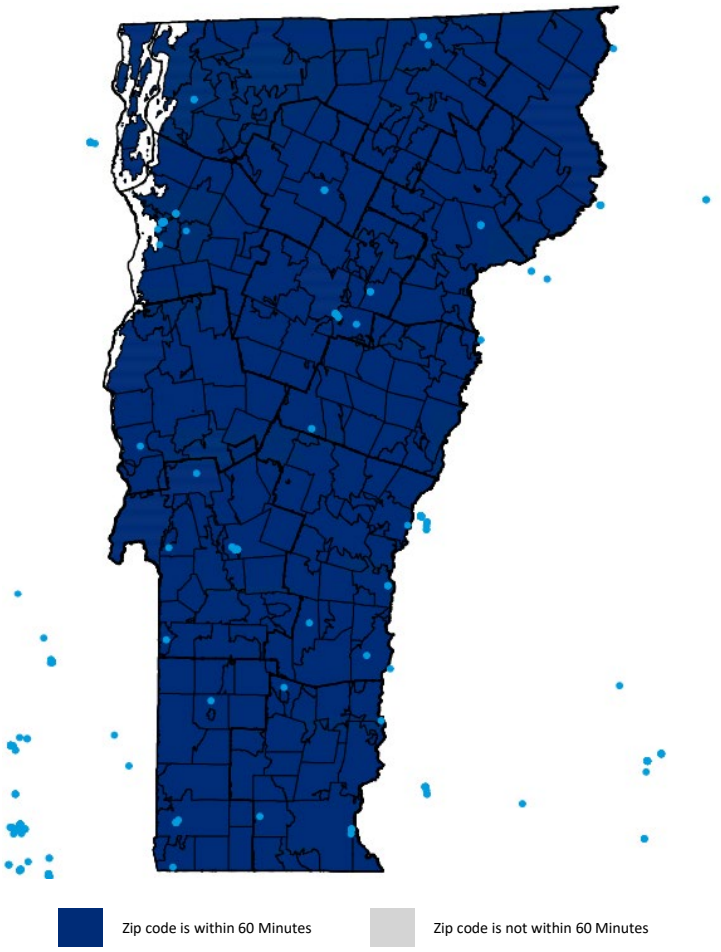
Medicaid: Providers and Patient Accessibility



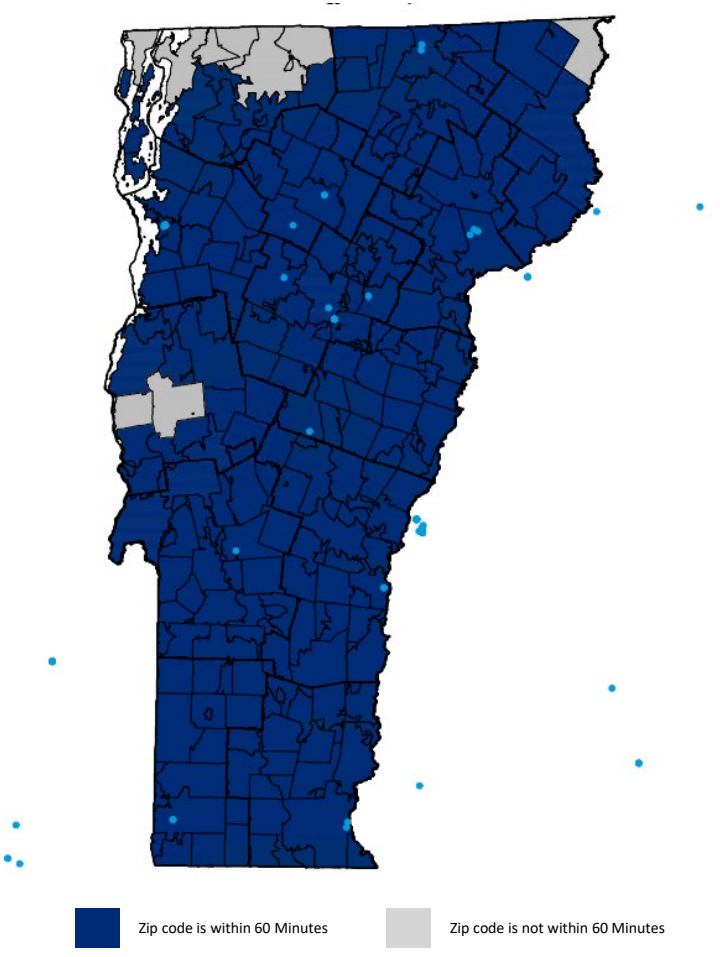
ACCESS TO NEUROLOGY

EVALUATING PATIENT ACCESSIBILITY: PHYSICIANS LOCATED WITHIN 60 MINUTES

ACA Market: Providers and Patient Accessibility



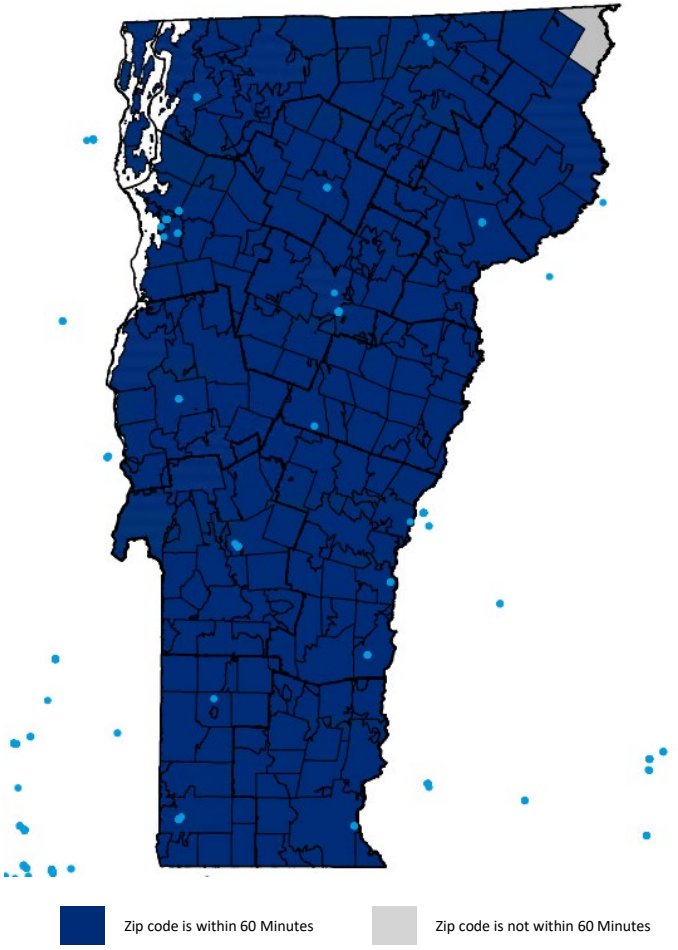
Medicaid: Providers and Patient Accessibility



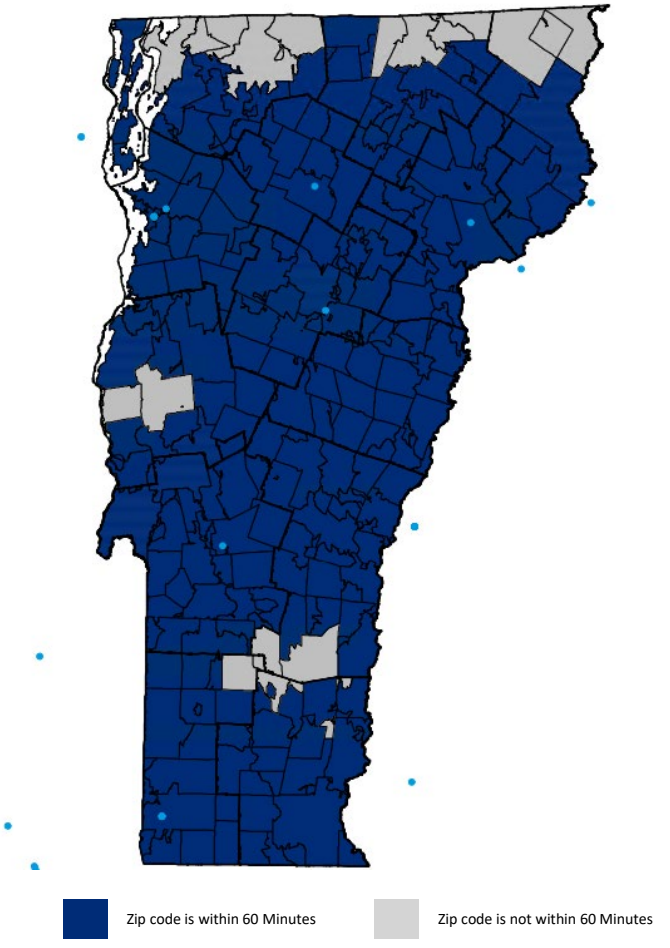
ACCESS TO ONCOLOGY

EVALUATING PATIENT ACCESSIBILITY: PHYSICIANS LOCATED WITHIN 60 MINUTES

ACA Market: Providers and Patient Accessibility



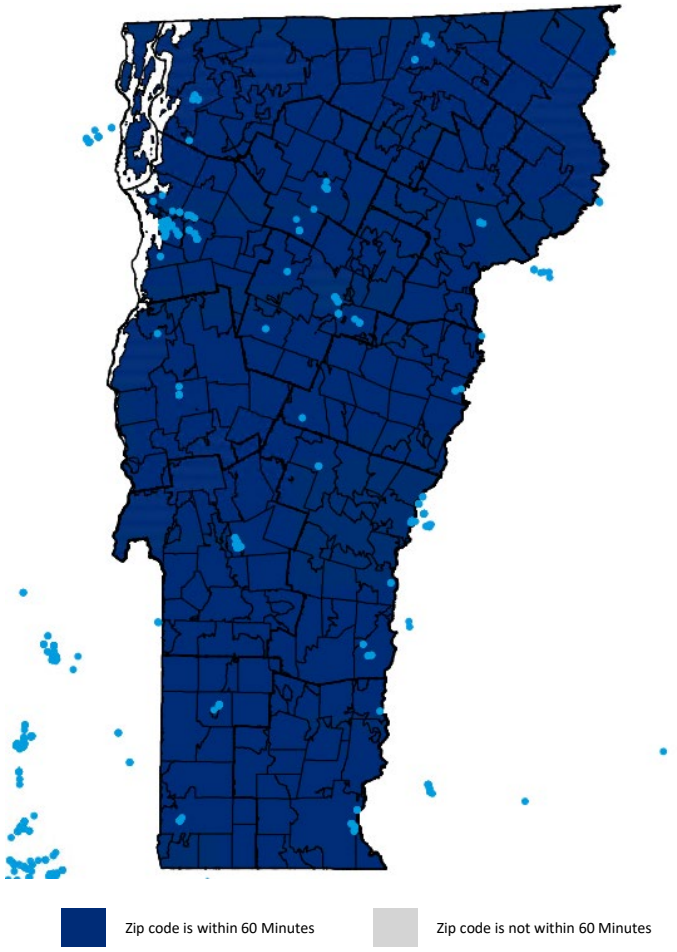
Medicaid: Providers and Patient Accessibility



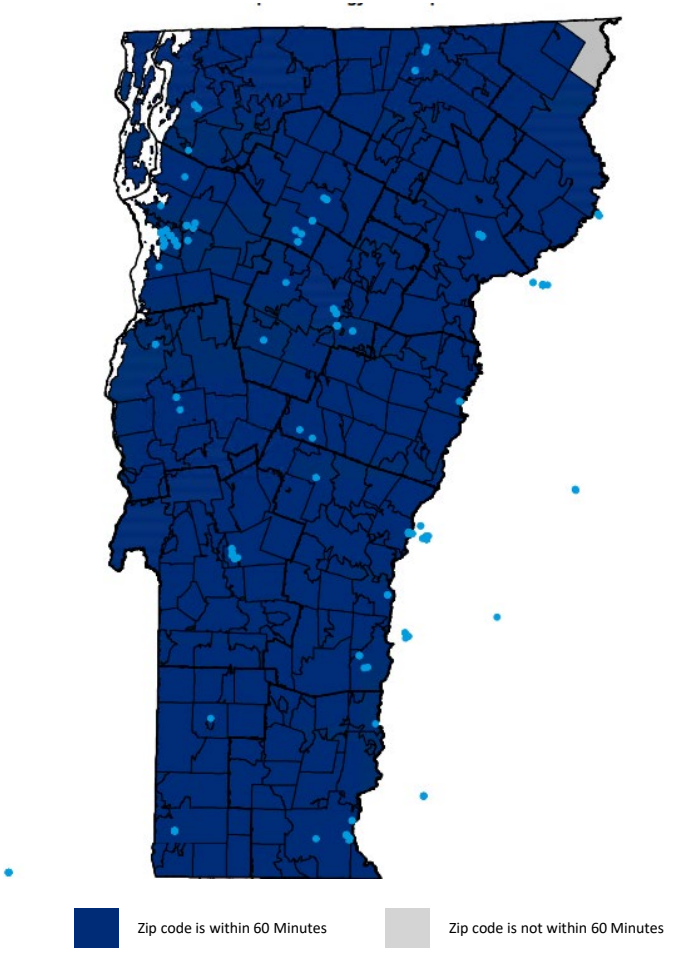
ACCESS TO OPHTHALMOLOGY

EVALUATING PATIENT ACCESSIBILITY: PHYSICIANS LOCATED WITHIN 60 MINUTES

ACA Market: Providers and Patient Accessibility



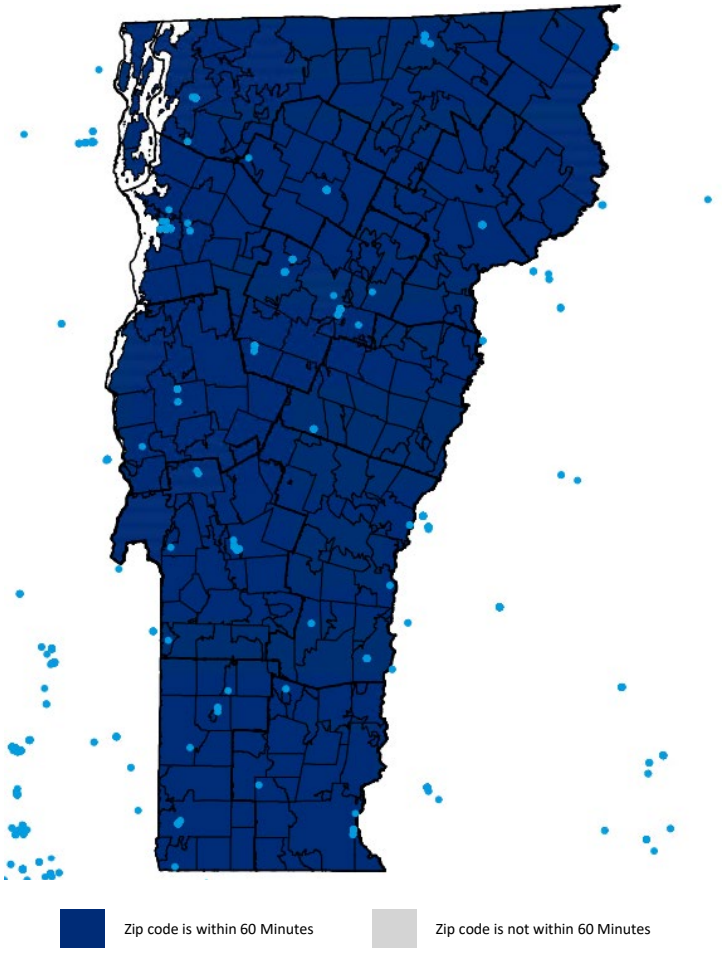
Medicaid: Providers and Patient Accessibility



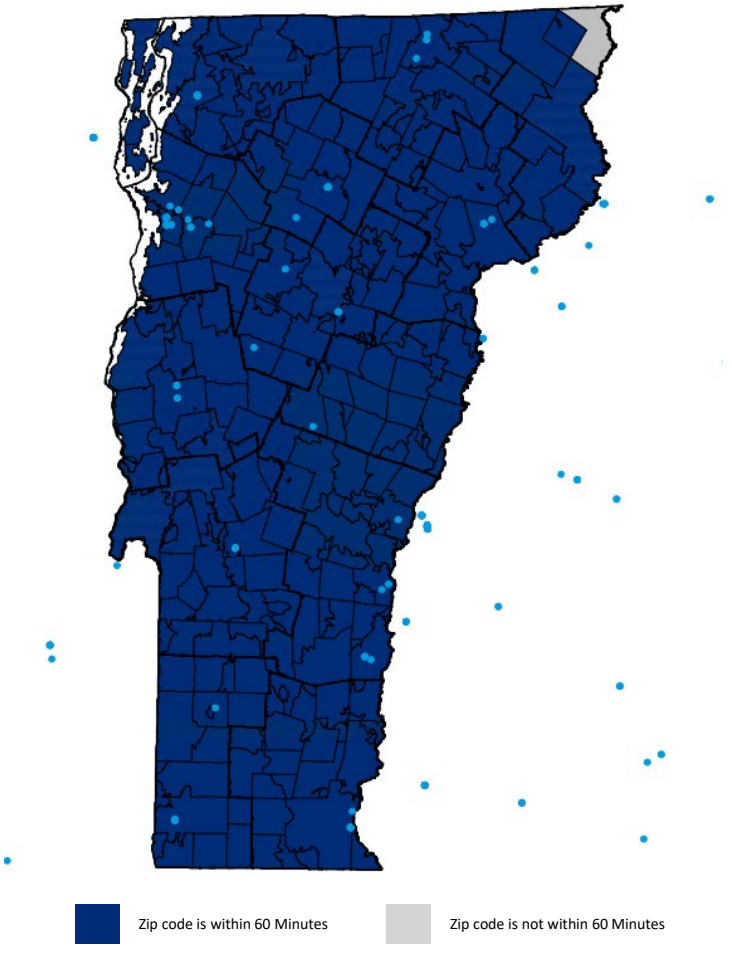
ACCESS TO ORTHOPEDIC SURGERY

EVALUATING PATIENT ACCESSIBILITY: PHYSICIANS LOCATED WITHIN 60 MINUTES

ACA Market: Providers and Patient Accessibility



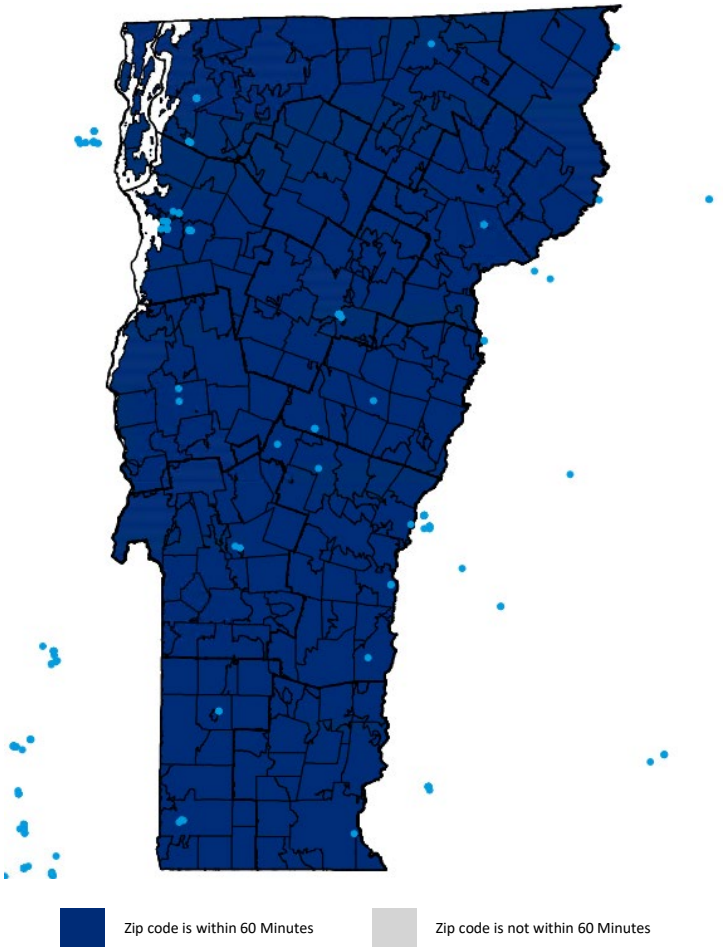
Medicaid: Providers and Patient Accessibility



ACCESS TO PAIN MANAGEMENT

EVALUATING PATIENT ACCESSIBILITY: PHYSICIANS LOCATED WITHIN 60 MINUTES

ACA Market: Providers and Patient Accessibility



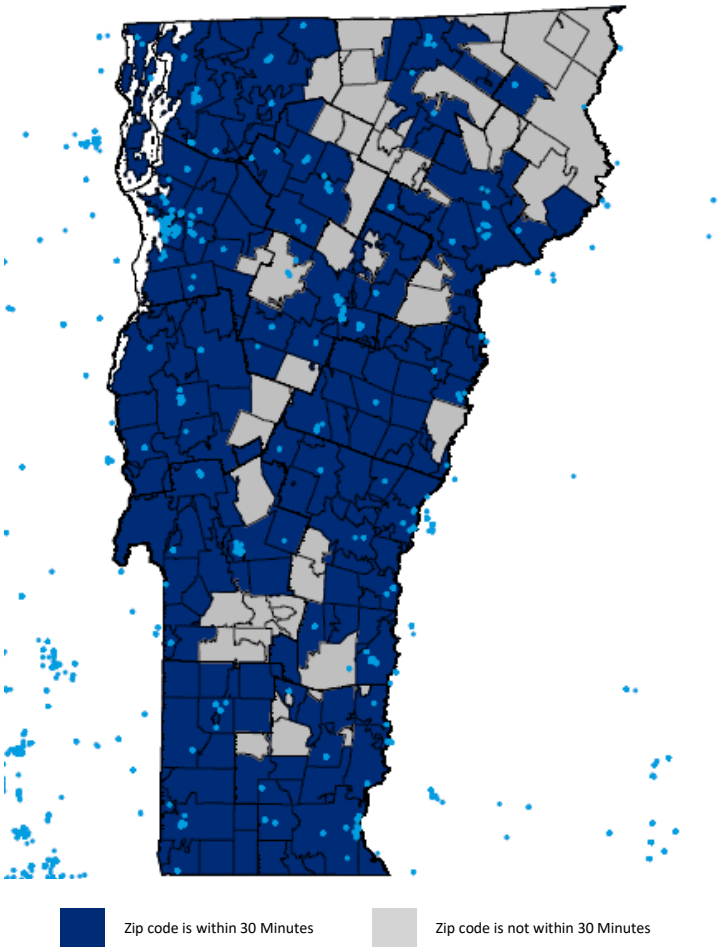
Medicaid: Providers and Patient Accessibility

No Provider Information Reported for Pain Management for Medicaid

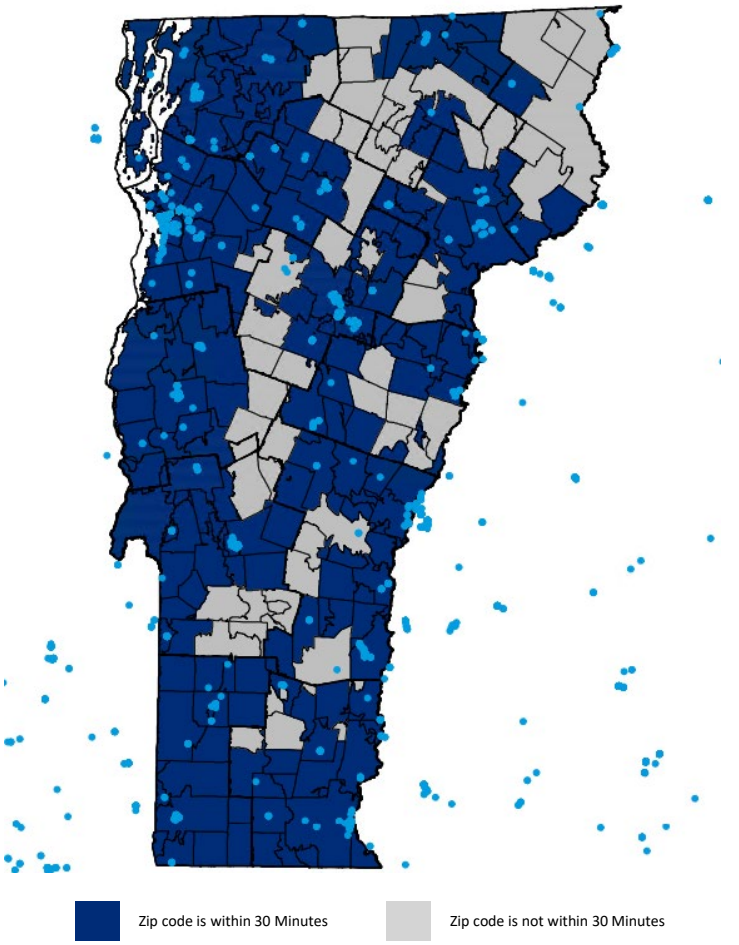
ACCESS TO PCP

EVALUATING PATIENT ACCESSIBILITY: PHYSICIANS LOCATED WITHIN 30 MINUTES

ACA Market: Providers and Patient Accessibility



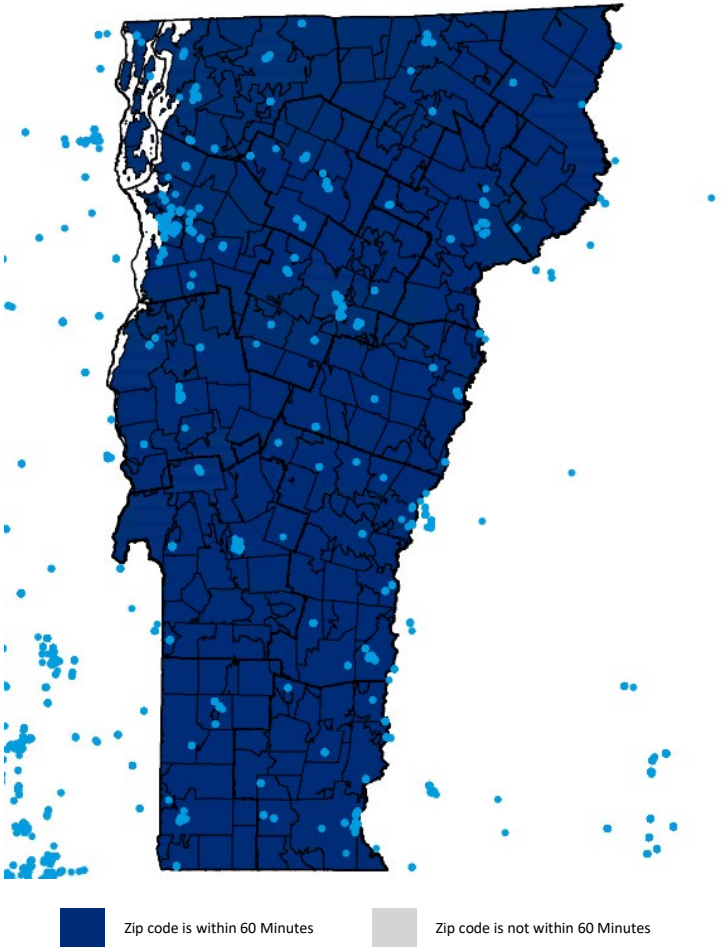
Medicaid: Providers and Patient Accessibility



ACCESS TO PEDIATRICS

EVALUATING PATIENT ACCESSIBILITY: PHYSICIANS LOCATED WITHIN 60 MINUTES

ACA Market: Providers and Patient Accessibility

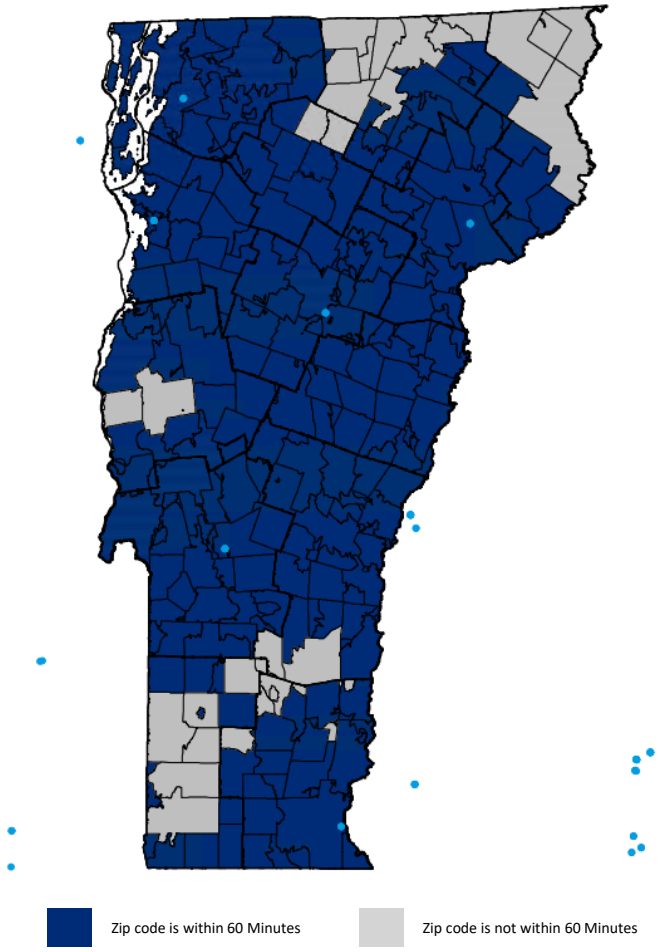


Medicaid: Providers and Patient Accessibility

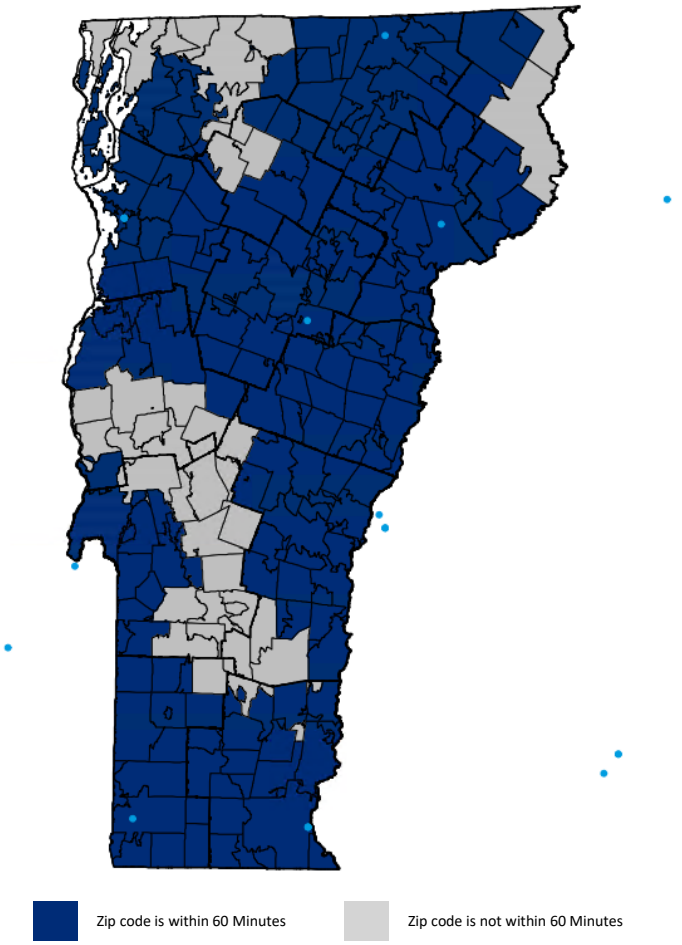
ACCESS TO PEDIATRIC CARDIOLOGY

EVALUATING PATIENT ACCESSIBILITY: PHYSICIANS LOCATED WITHIN 60 MINUTES

ACA Market: Providers and Patient Accessibility



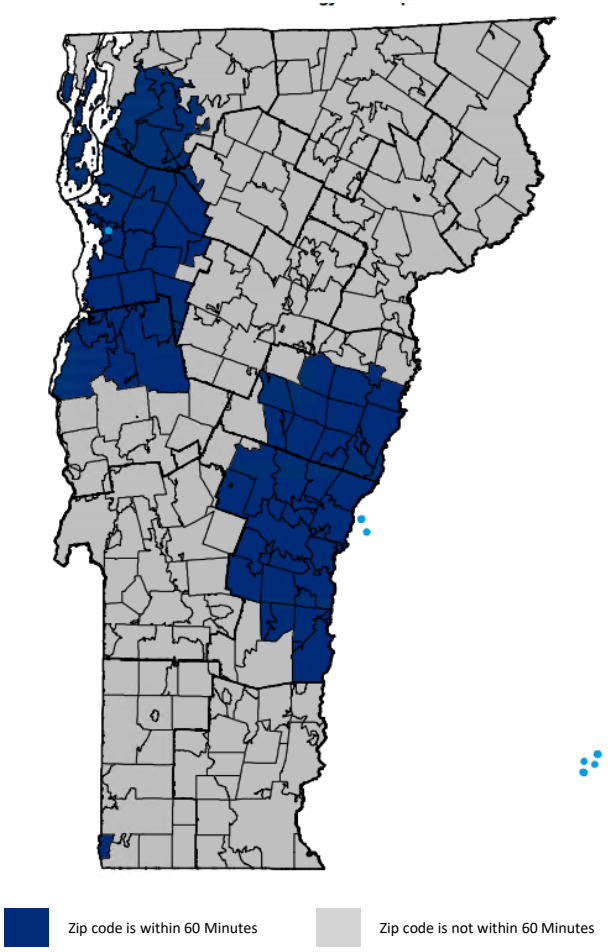
Medicaid: Providers and Patient Accessibility



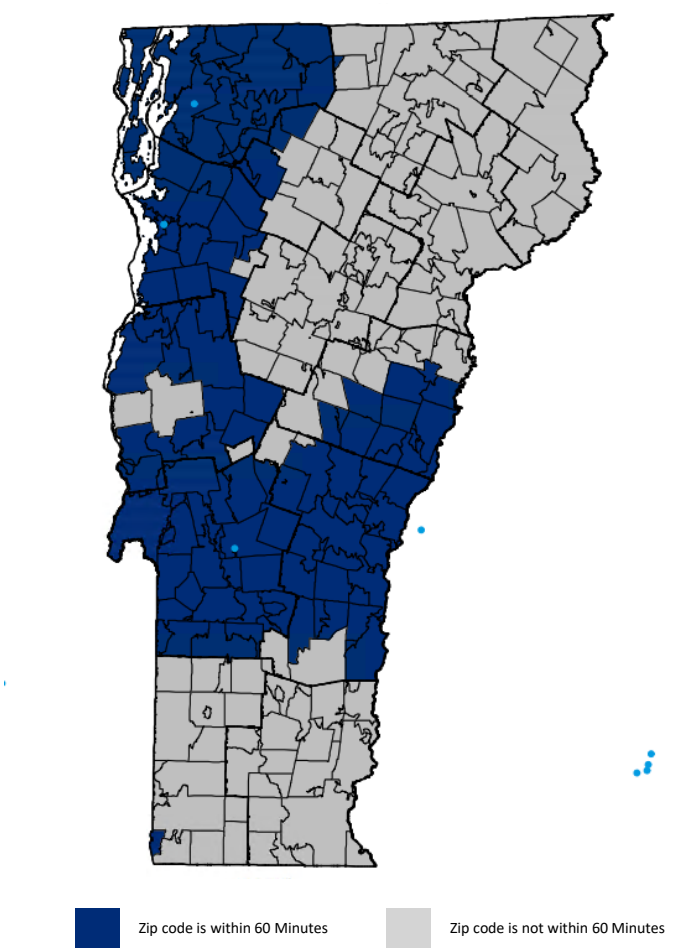
ACCESS TO PEDIATRIC ENDOCRINOLOGY

EVALUATING PATIENT ACCESSIBILITY: PHYSICIANS LOCATED WITHIN 60 MINUTES

ACA Market: Providers and Patient Accessibility



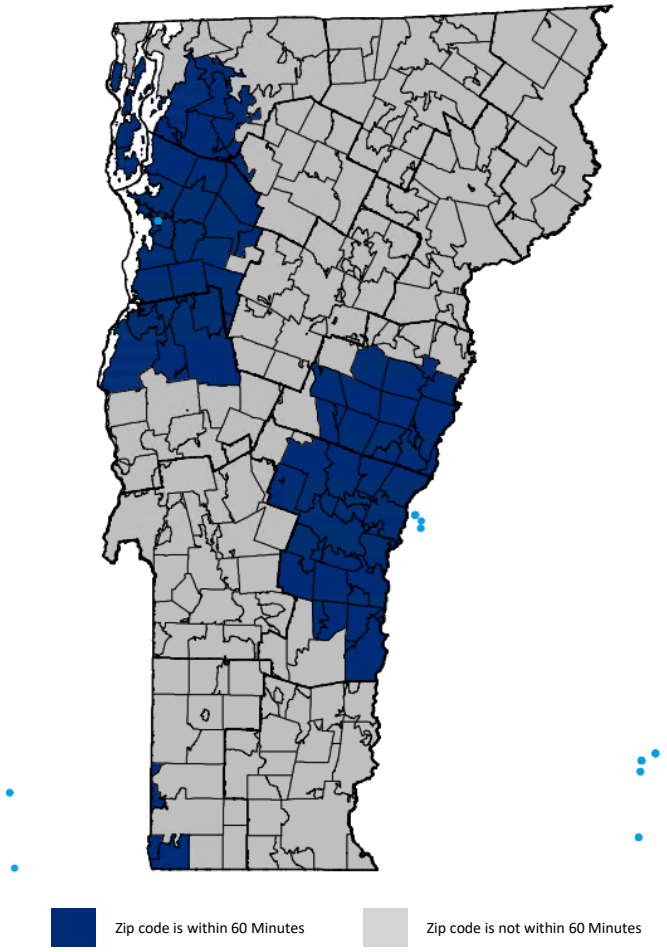
Medicaid: Providers and Patient Accessibility



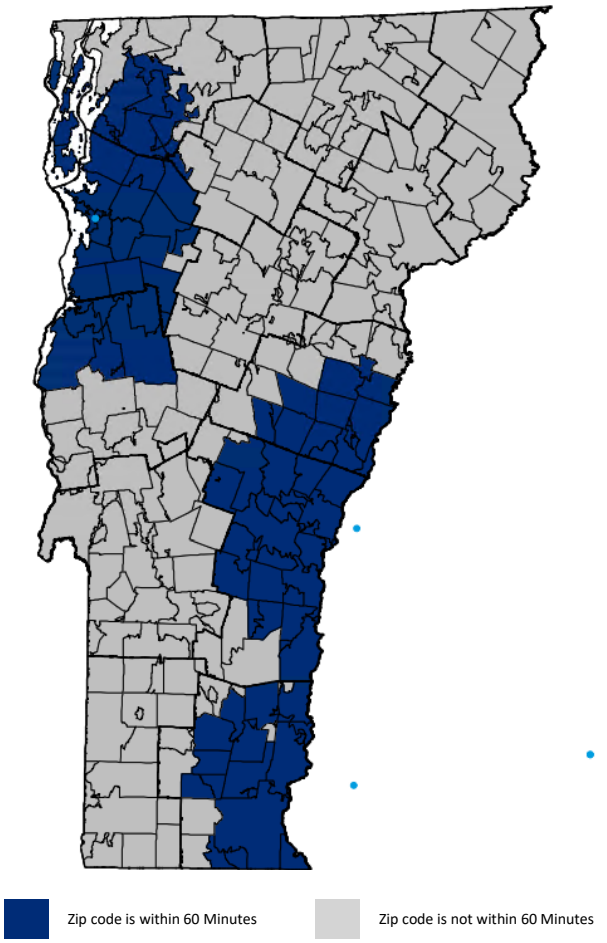
ACCESS TO PEDIATRIC GASTROENTEROLOGY

EVALUATING PATIENT ACCESSIBILITY: PHYSICIANS LOCATED WITHIN 60 MINUTES

ACA Market: Providers and Patient Accessibility



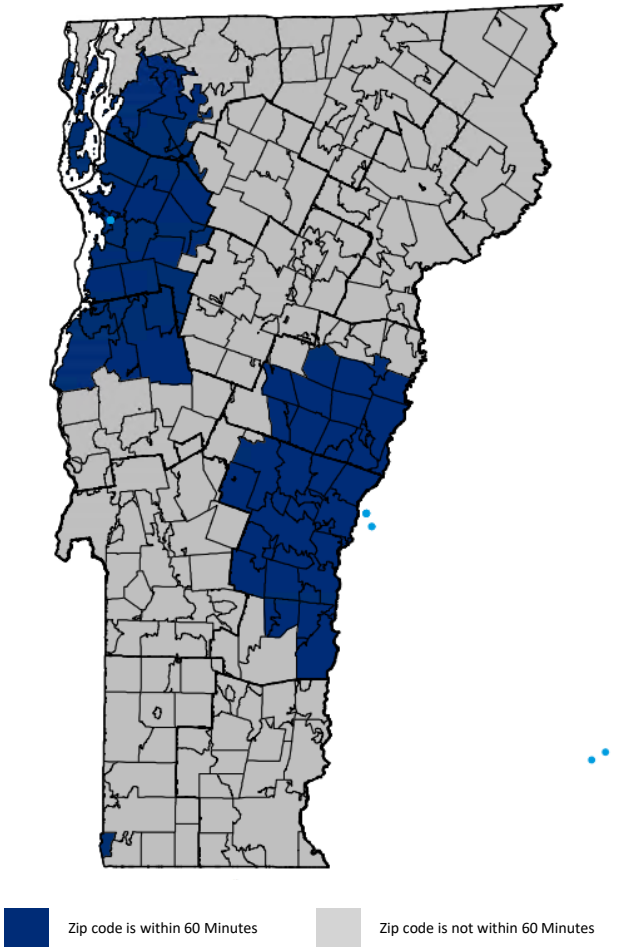
Medicaid: Providers and Patient Accessibility



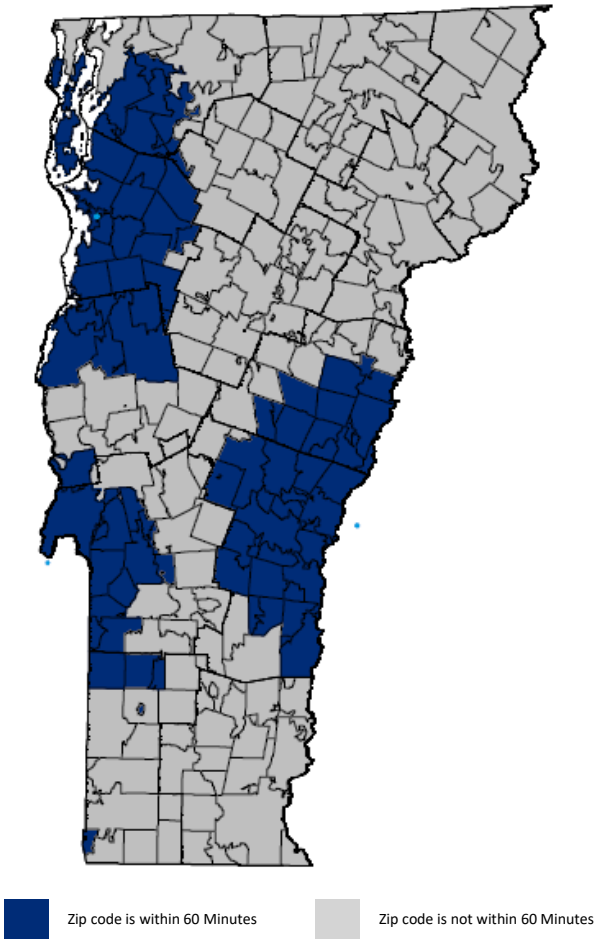
ACCESS TO PEDIATRIC HEMATOLOGY/ONCOLOGY

EVALUATING PATIENT ACCESSIBILITY: PHYSICIANS LOCATED WITHIN 60 MINUTES

ACA Market: Providers and Patient Accessibility



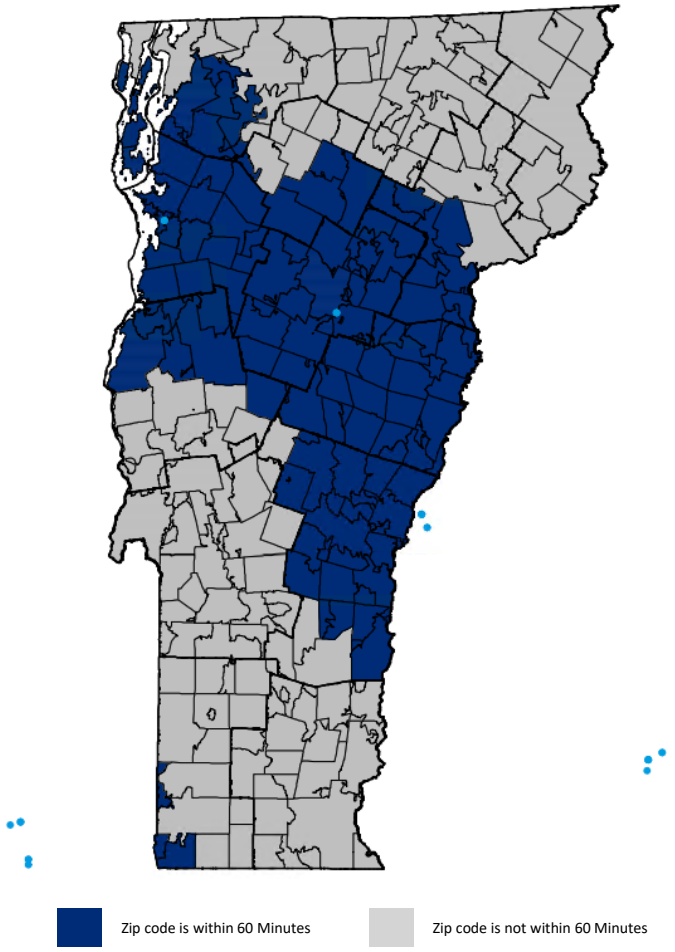
Medicaid: Providers and Patient Accessibility



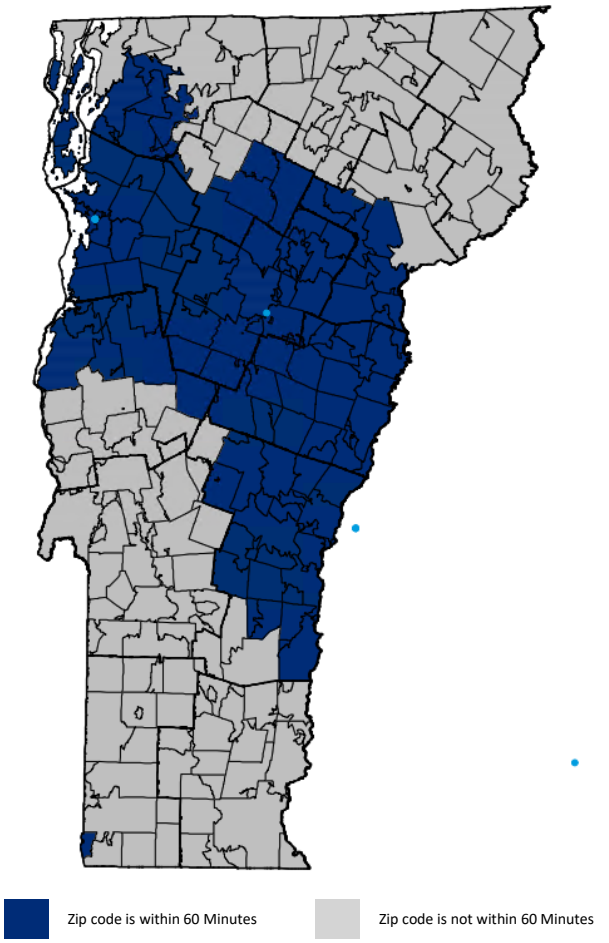
ACCESS TO PEDIATRIC NEUROLOGY

EVALUATING PATIENT ACCESSIBILITY: PHYSICIANS LOCATED WITHIN 60 MINUTES

ACA Market: Providers and Patient Accessibility



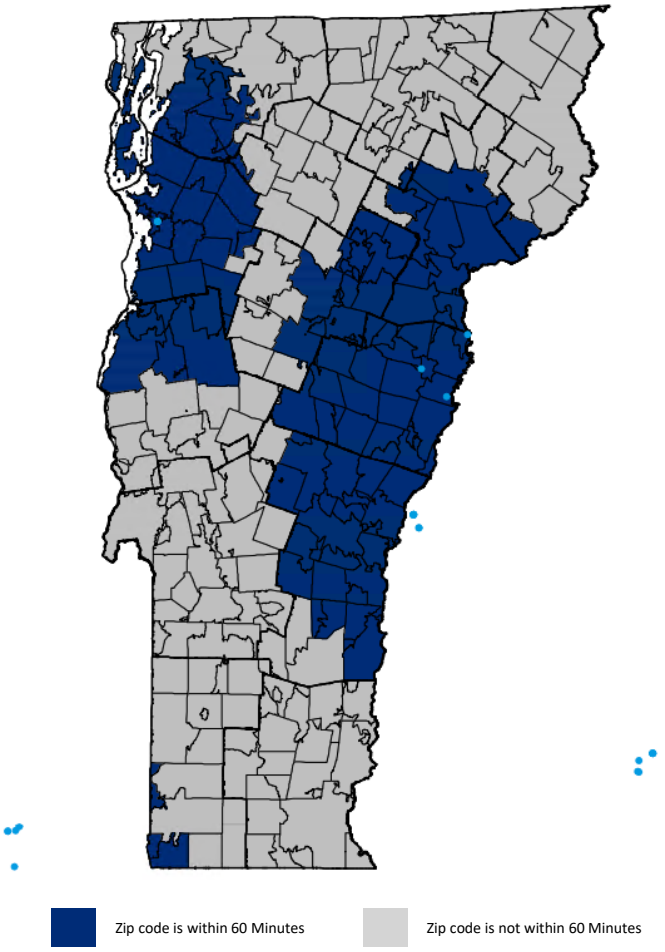
Medicaid: Providers and Patient Accessibility



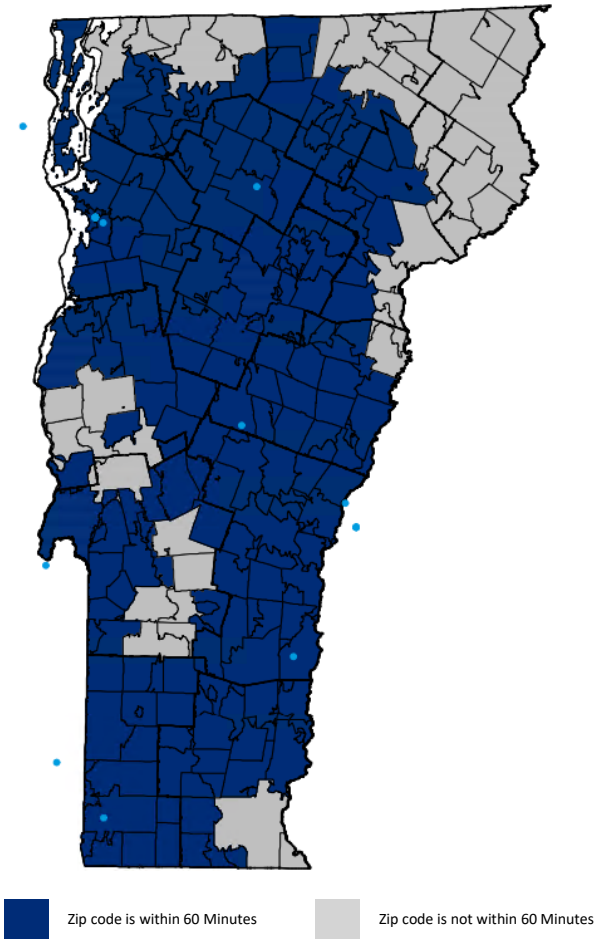
ACCESS TO PEDIATRIC SURGERY

EVALUATING PATIENT ACCESSIBILITY: PHYSICIANS LOCATED WITHIN 60 MINUTES

ACA Market: Providers and Patient Accessibility



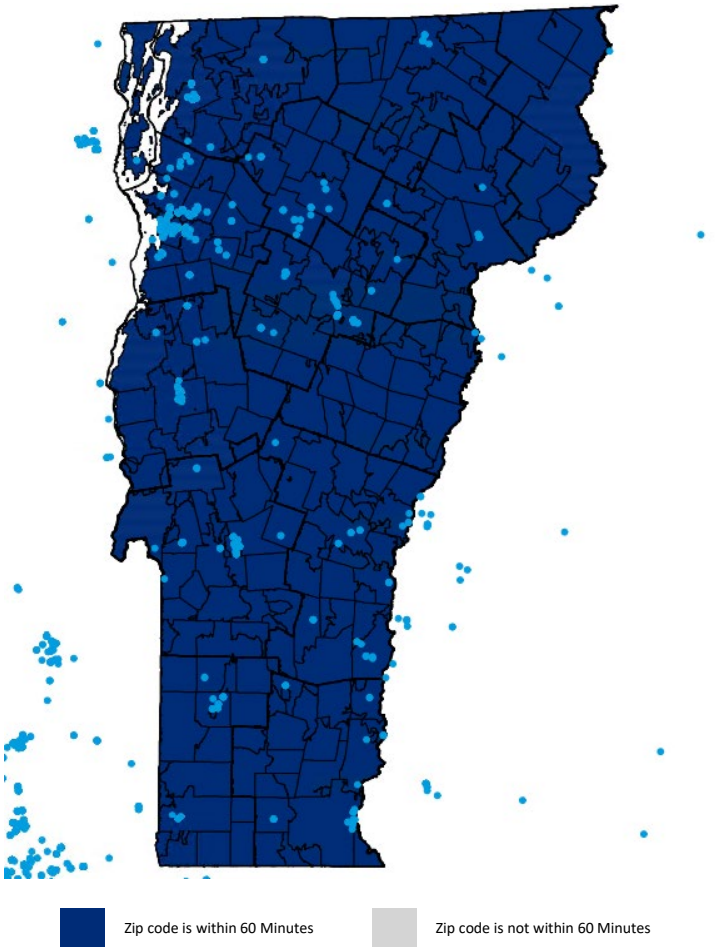
Medicaid: Providers and Patient Accessibility



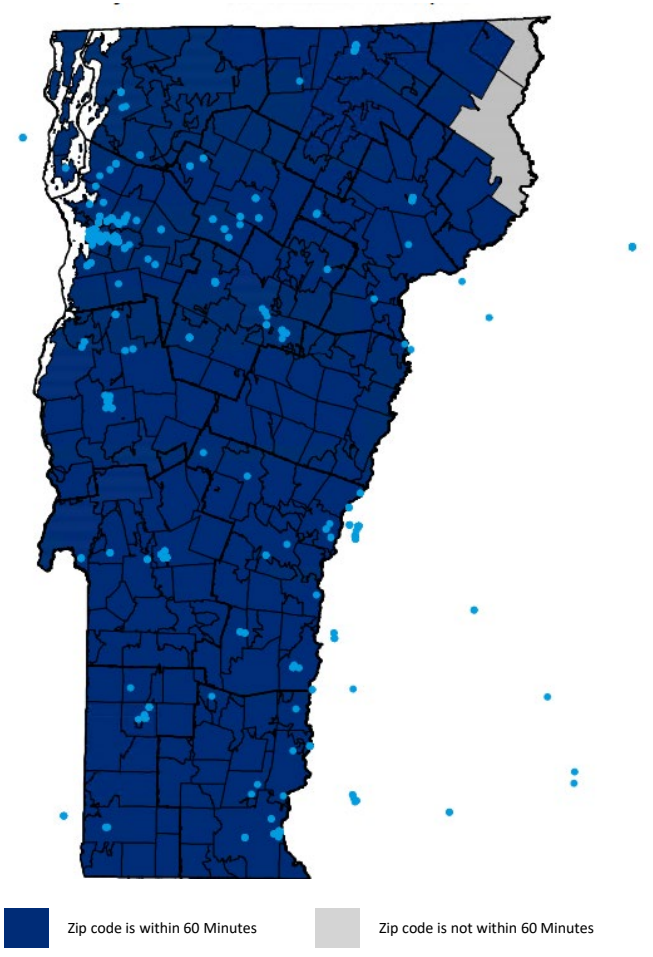
ACCESS TO PHYSICAL MEDICINE & REHABILITATION

EVALUATING PATIENT ACCESSIBILITY: PHYSICIANS LOCATED WITHIN 60 MINUTES

ACA Market: Providers and Patient Accessibility



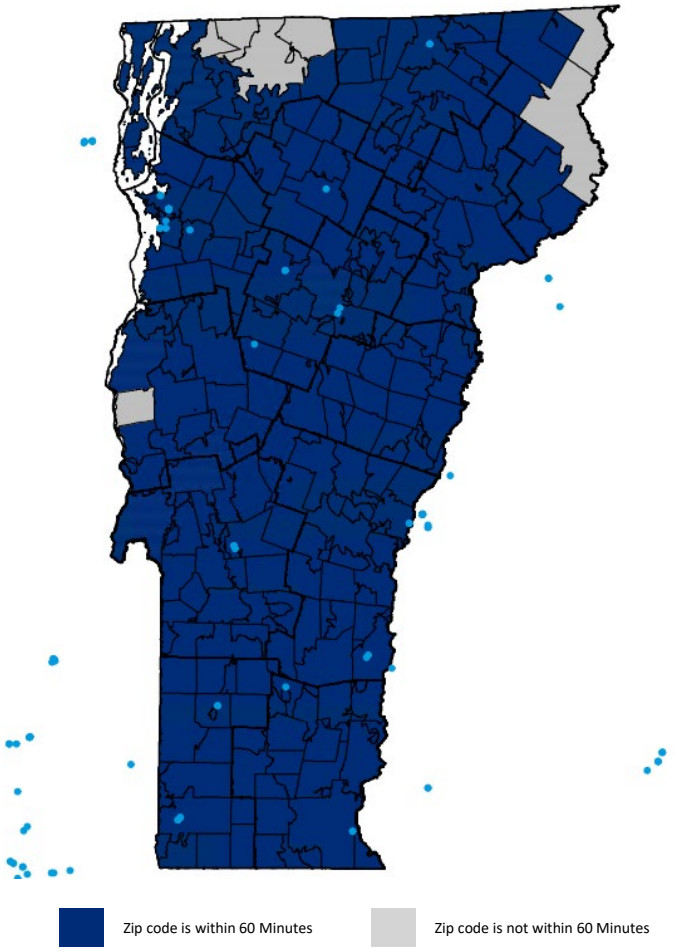
Medicaid: Providers and Patient Accessibility



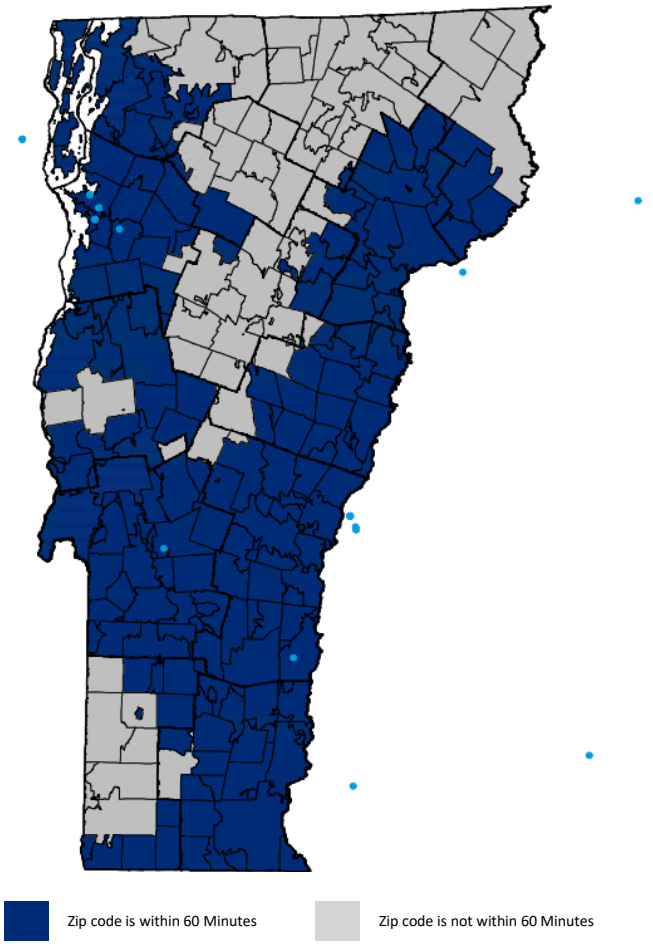
ACCESS TO PLASTIC SURGERY

EVALUATING PATIENT ACCESSIBILITY: PHYSICIANS LOCATED WITHIN 60 MINUTES

ACA Market: Providers and Patient Accessibility



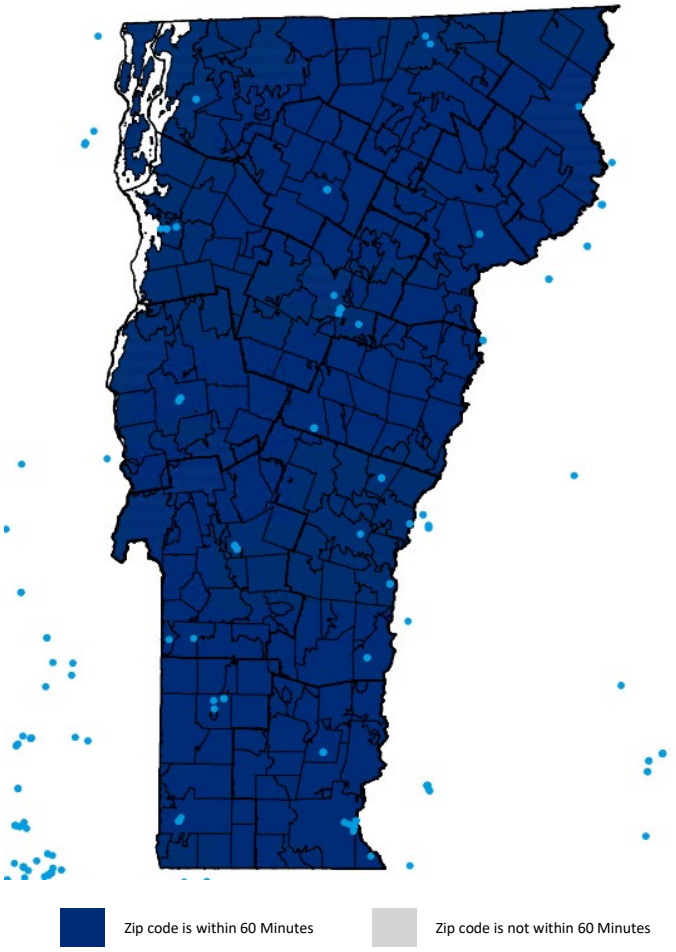
Medicaid: Providers and Patient Accessibility



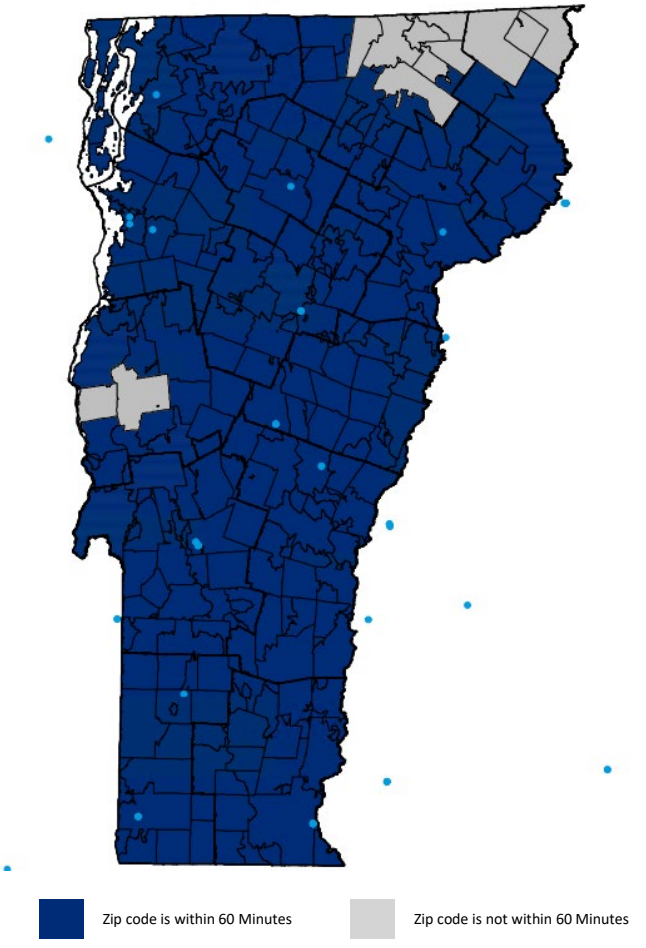
ACCESS TO PODIATRY

EVALUATING PATIENT ACCESSIBILITY: PHYSICIANS LOCATED WITHIN 60 MINUTES

ACA Market: Providers and Patient Accessibility



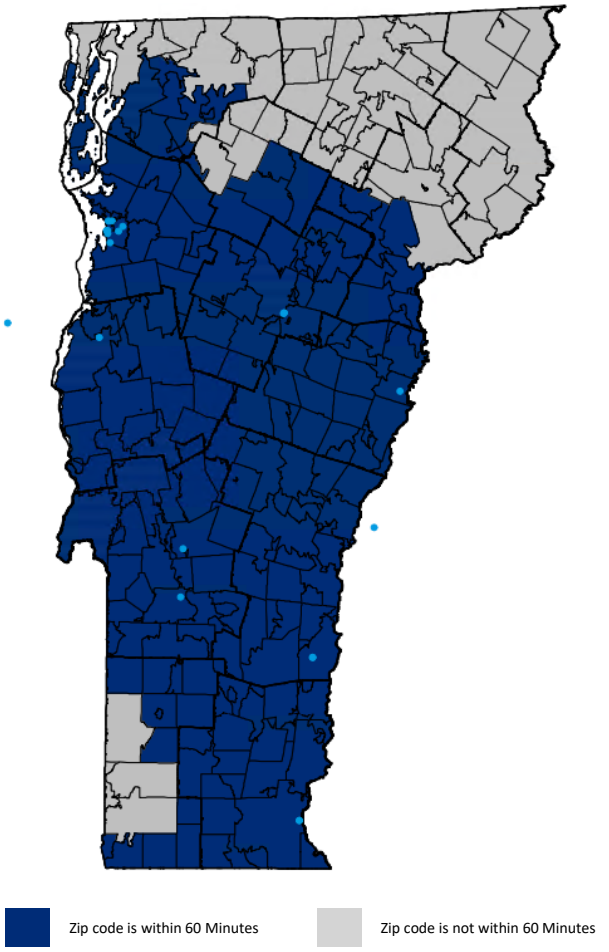
Medicaid: Providers and Patient Accessibility



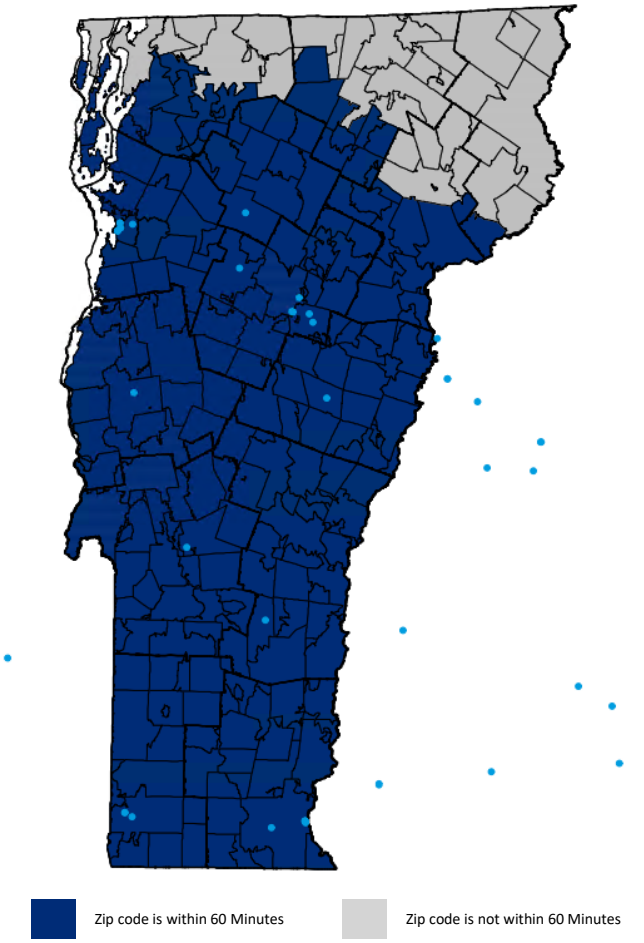
ACCESS TO PSYCHIATRIC HOSPITAL

EVALUATING PATIENT ACCESSIBILITY: PHYSICIANS LOCATED WITHIN 60 MINUTES

ACA Market: Providers and Patient Accessibility



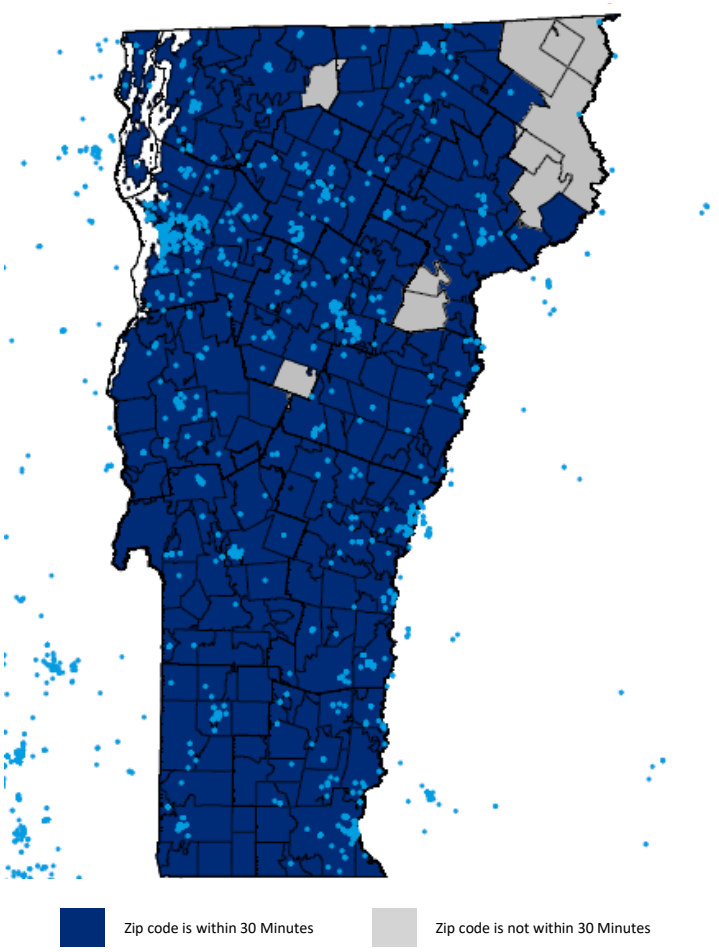
Medicaid: Providers and Patient Accessibility



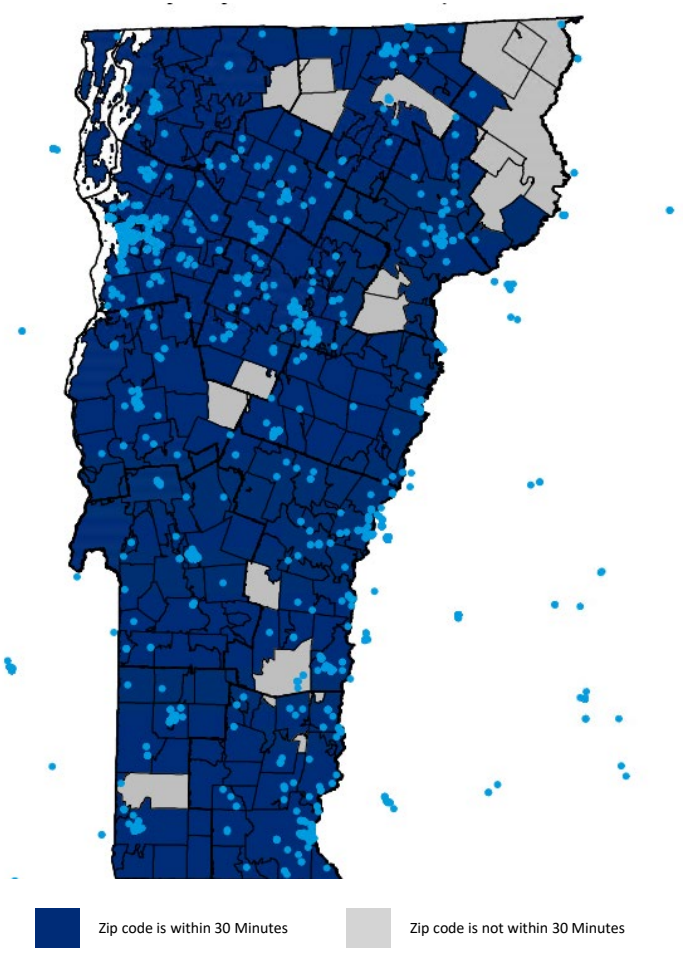
ACCESS TO PSYCHIATRY AND MENTAL HEALTH

EVALUATING PATIENT ACCESSIBILITY: PHYSICIANS LOCATED WITHIN 30 MINUTES

ACA Market: Providers and Patient Accessibility



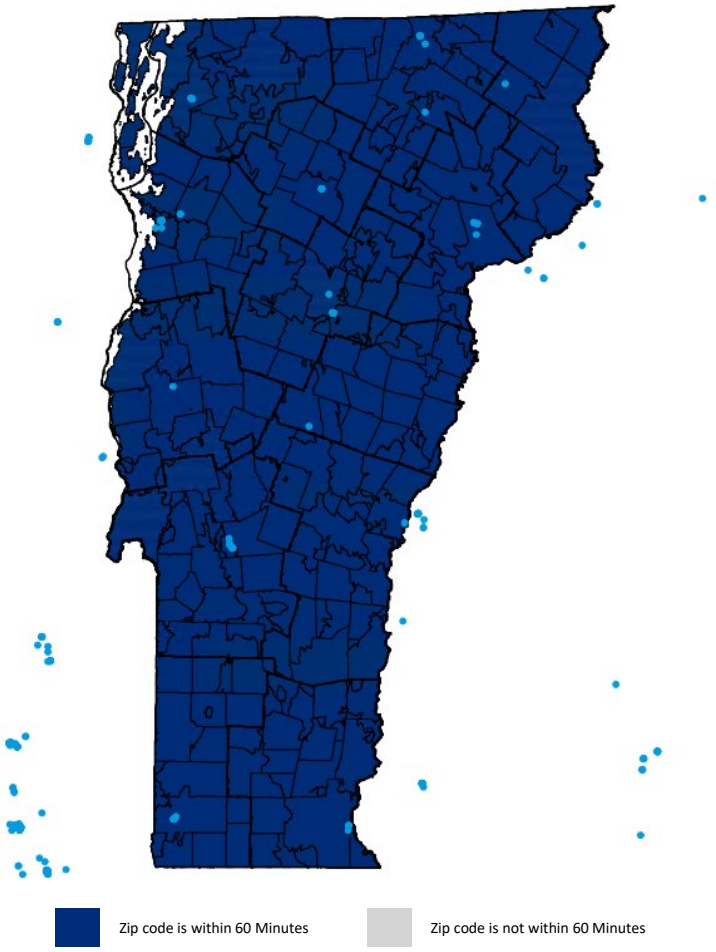
Medicaid: Providers and Patient Accessibility



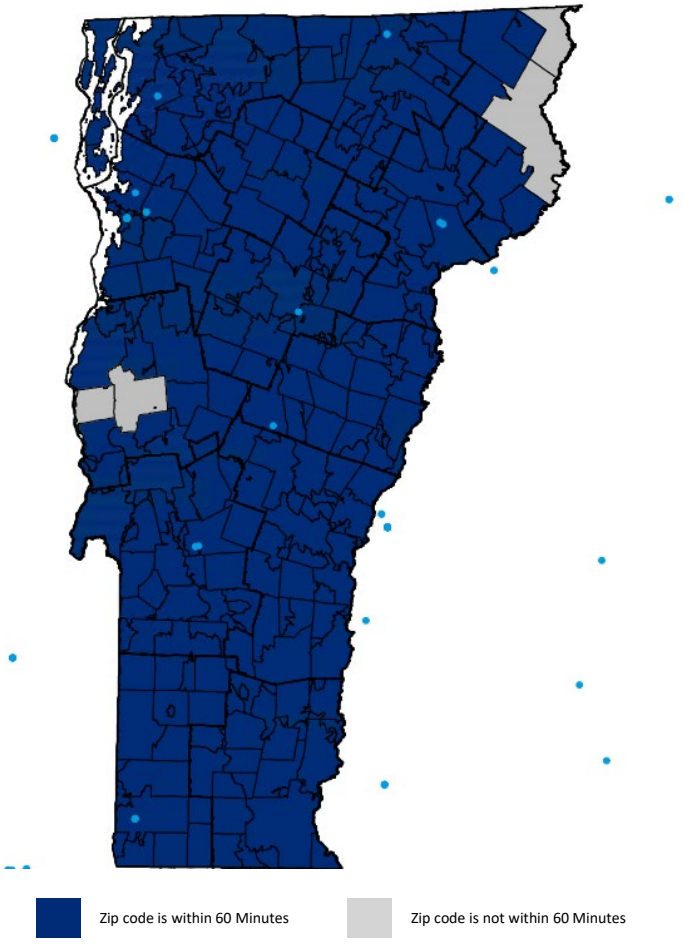
ACCESS TO PULMONOLOGY

EVALUATING PATIENT ACCESSIBILITY: PHYSICIANS LOCATED WITHIN 60 MINUTES

ACA Market: Providers and Patient Accessibility



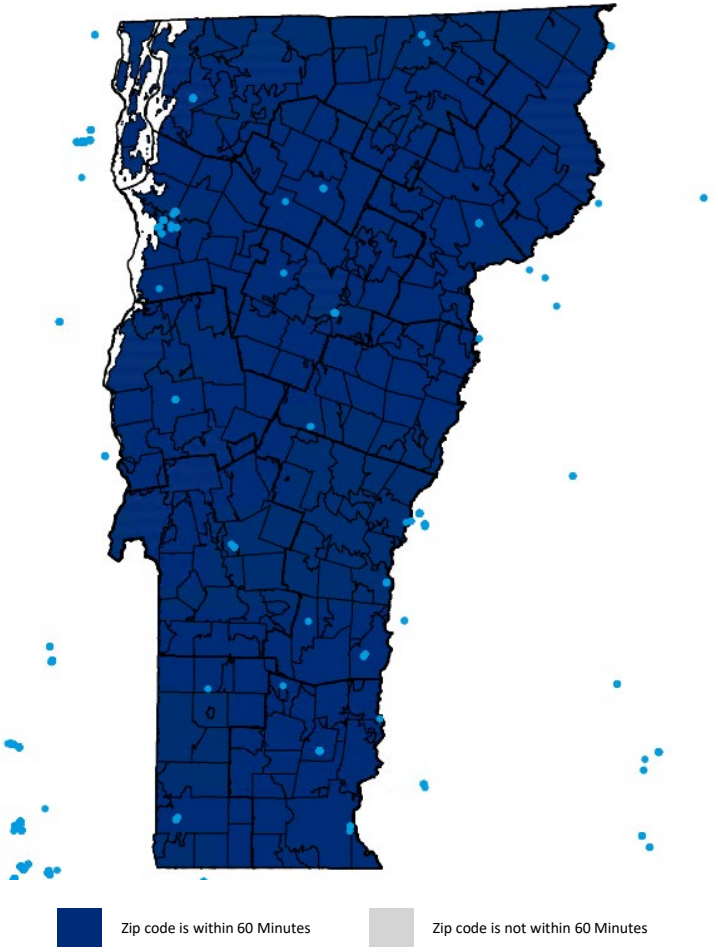
Medicaid: Providers and Patient Accessibility



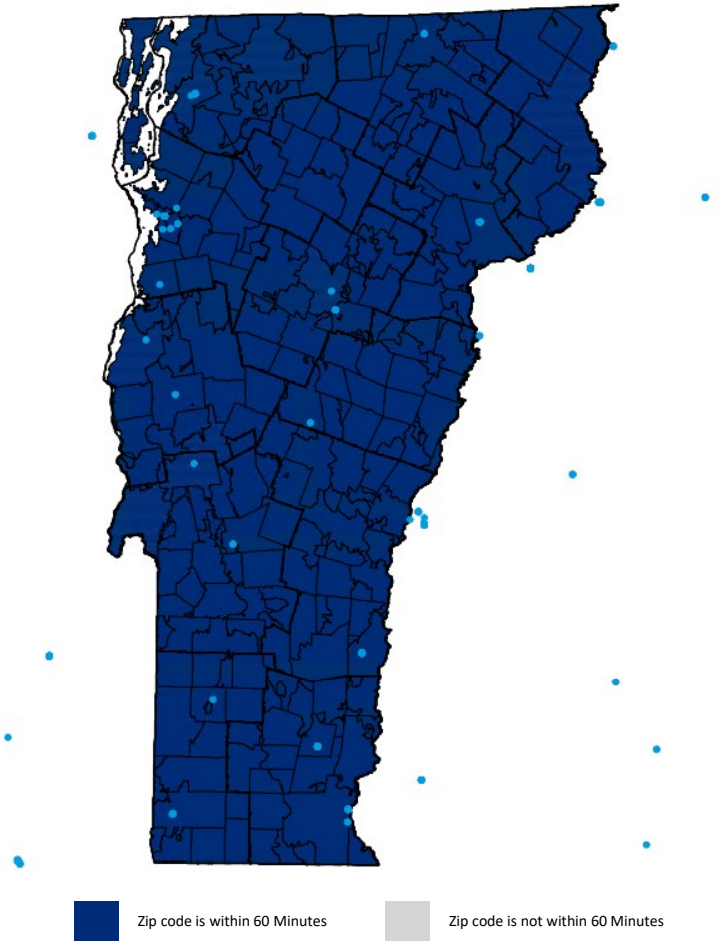
ACCESS TO RADIOLOGY

EVALUATING PATIENT ACCESSIBILITY: PHYSICIANS LOCATED WITHIN 60 MINUTES

ACA Market: Providers and Patient Accessibility



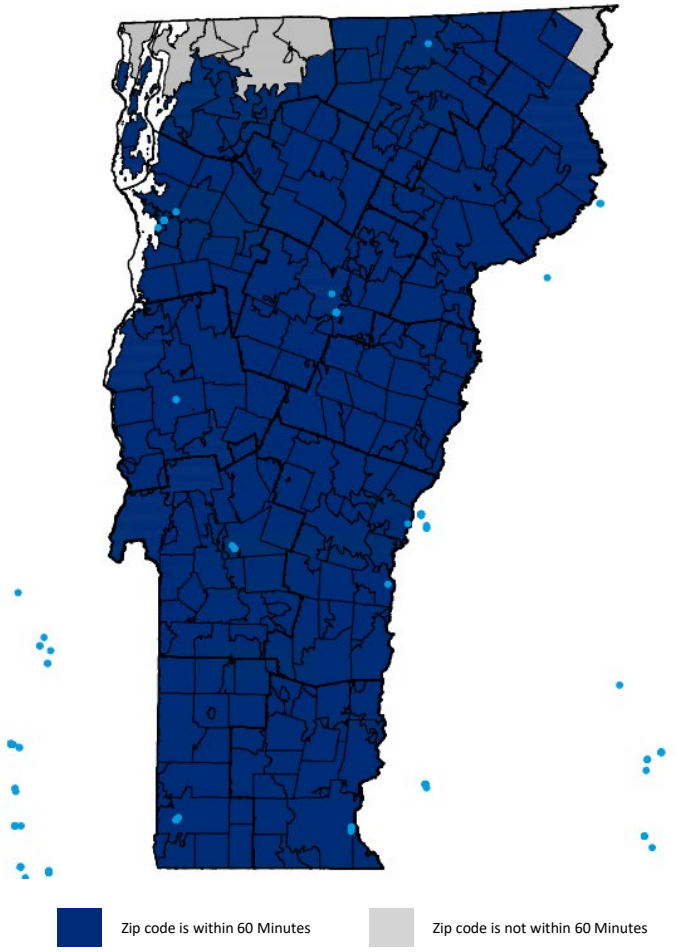
Medicaid: Providers and Patient Accessibility



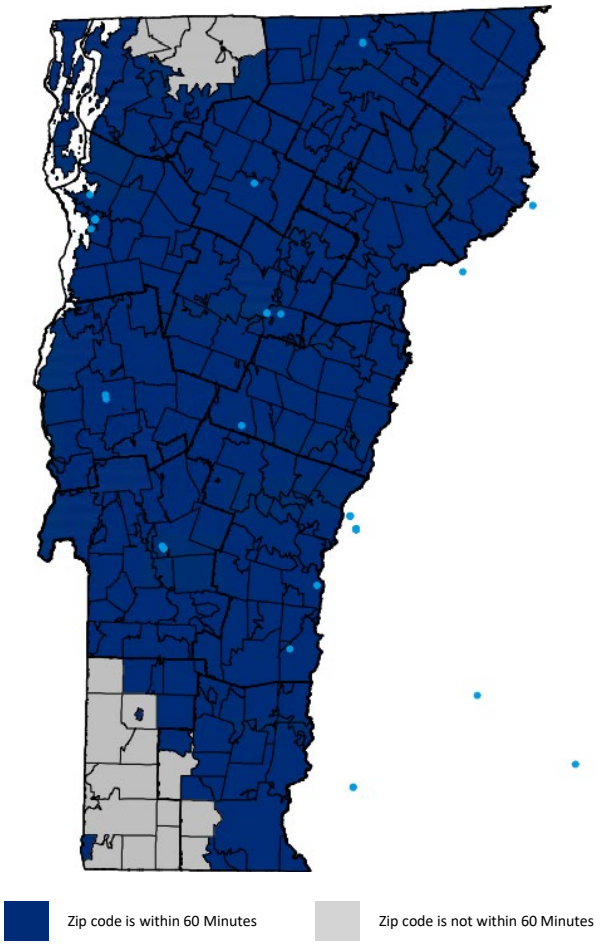
ACCESS TO RHEUMATOLOGY

EVALUATING PATIENT ACCESSIBILITY: PHYSICIANS LOCATED WITHIN 60 MINUTES

ACA Market: Providers and Patient Accessibility



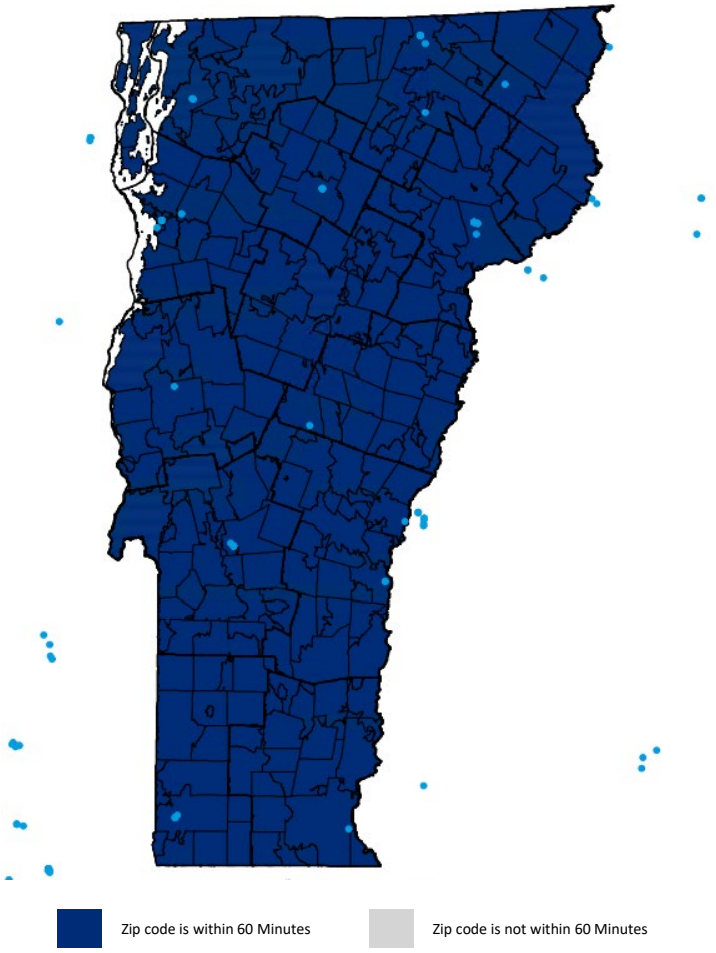
Medicaid: Providers and Patient Accessibility



ACCESS TO SLEEP MEDICINE

EVALUATING PATIENT ACCESSIBILITY: PHYSICIANS LOCATED WITHIN 60 MINUTES

ACA Market: Providers and Patient Accessibility



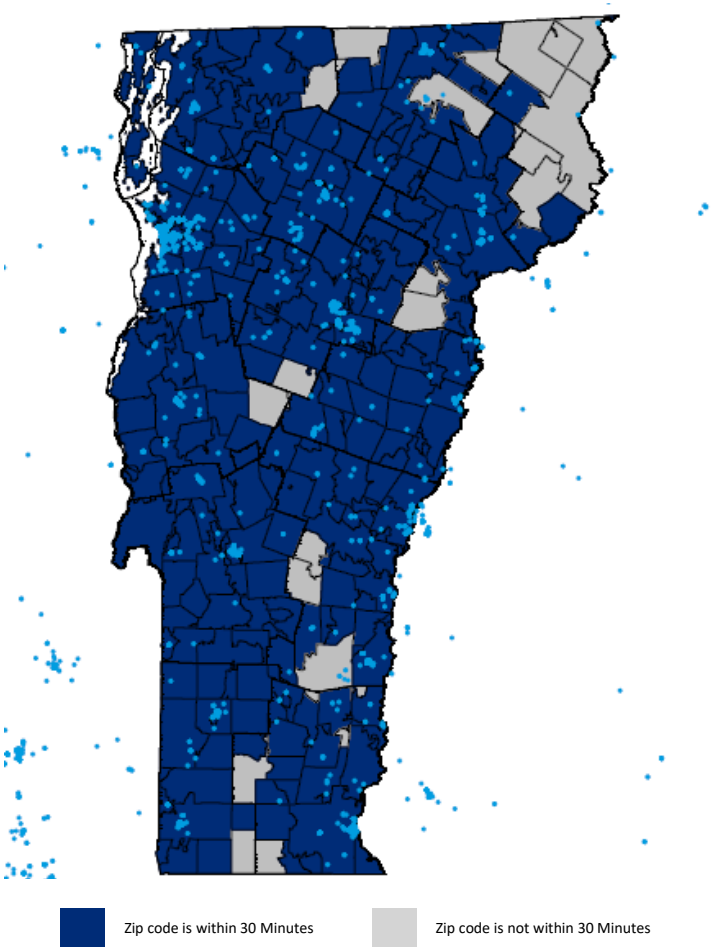
Medicaid: Providers and Patient Accessibility

No Provider Information Reported for Sleep Medicine for Medicaid

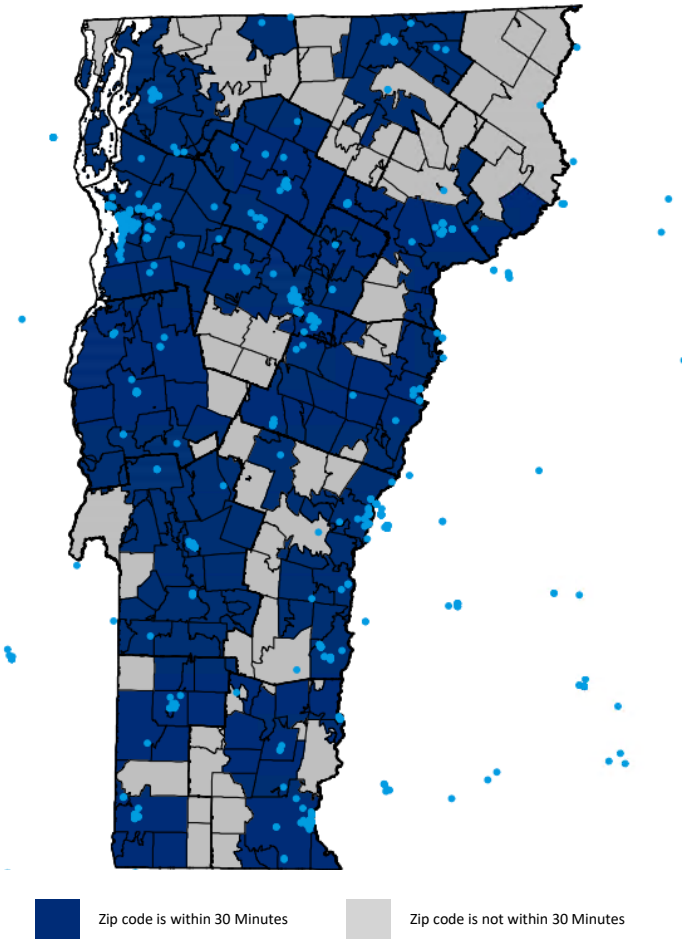
ACCESS TO SUBSTANCE ABUSE

EVALUATING PATIENT ACCESSIBILITY: PHYSICIANS LOCATED WITHIN 30 MINUTES

ACA Market: Providers and Patient Accessibility



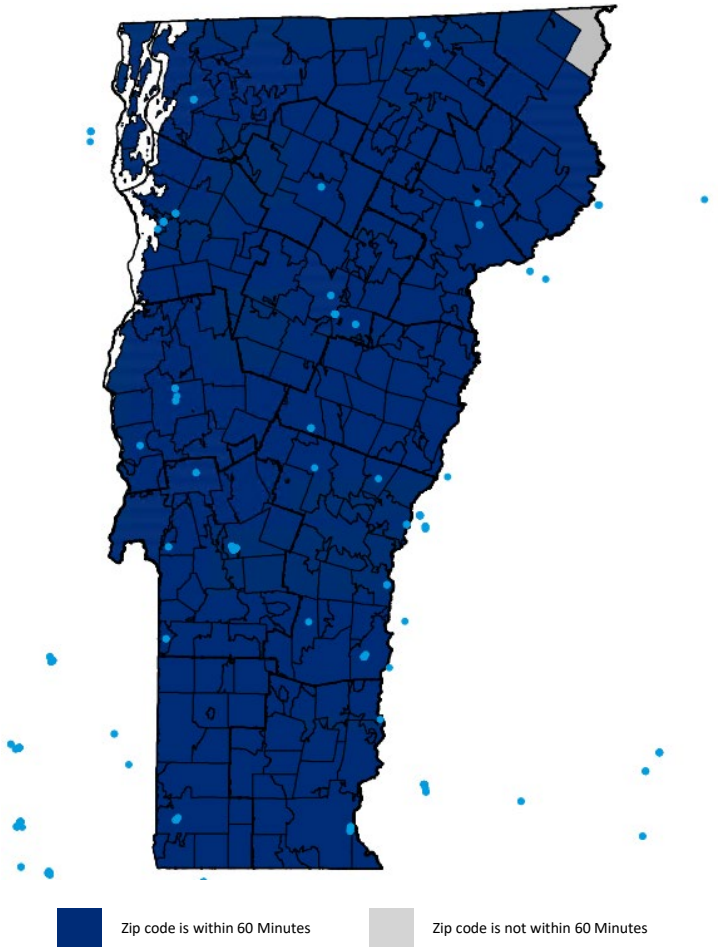
Medicaid: Providers and Patient Accessibility



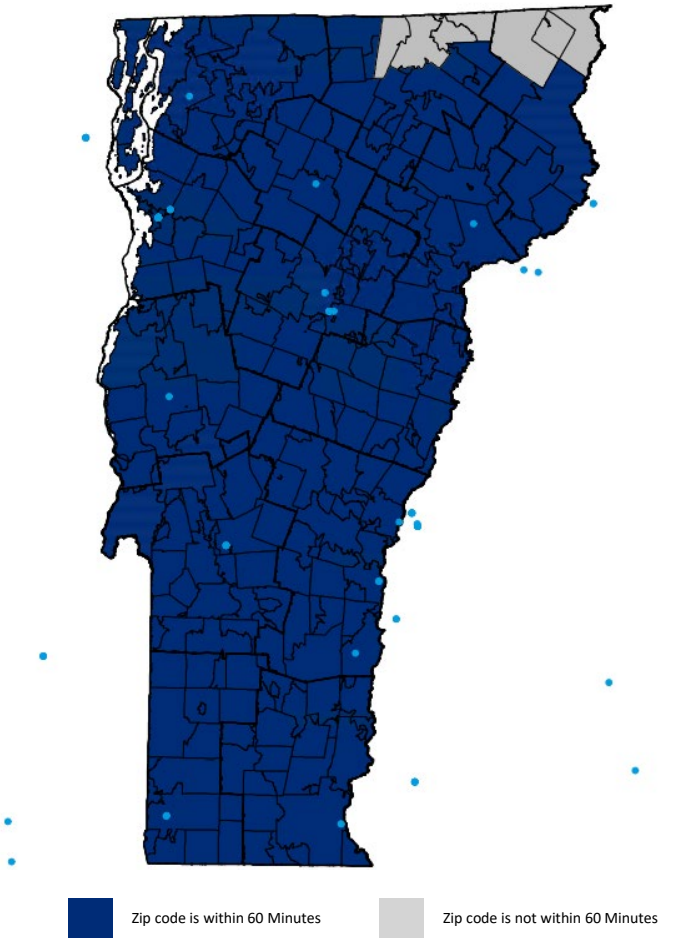
ACCESS TO UROLOGY

EVALUATING PATIENT ACCESSIBILITY: PHYSICIANS LOCATED WITHIN 60 MINUTES

ACA Market: Providers and Patient Accessibility



Medicaid: Providers and Patient Accessibility



4

PROVIDER ACCESS – DEMAND VS. SUPPLY

KEY COMPONENTS OF THE ANALYSIS

Questions

- Which specialties cannot meet Vermont's health needs?
- Are there adjacent specialties that are seeing relatively high levels of utilization in response to lower availability among the specialties identified above?
- Which provider specialties are Vermonters in the Eastern Region not likely to have their demand met, even with supplementation of Dartmouth providers?
- In what geographic regions are more providers needed, and among which specialties?

Data Sources

- 2019 VHCURES
  - Members were assigned to a single type of coverage each month based on the primary insurance indicator field
  - Members with both Medicare and Medicaid primary flags (i.e., dual eligible) were assigned to Medicare
- IBM Watson 2019 MarketScan Commercial Database
  - Used for Commercial peer state analysis of matched cohort to assess potential utilization censoring in the Vermont VHCURES Commercial population
- 2019 Medicare 5% LDS
  - Used for Medicare peer state analysis of matched cohort to assess potential utilization censoring in the Vermont VHCURES Medicare population
  - Includes dual eligible members
- 2020 Definitive Healthcare
  - Used to determine the number of physicians by specialty and advance practice professionals (APPs) in Vermont by geographic region
  - Used to determine the number physicians by specialty and APPs affiliated with Dartmouth
- 2020 MGMA DataDive
  - Used to determine the median annual work RVU (wRVU) productivity by provider specialty/type for the Eastern MGMA region (i.e., CT, DE, MA, MD, ME, NC, NH, NJ, NY, PA, RI, VA, VT, WV)
  - The 2020 results utilize 2019 data and are not impacted by COVID

KEY COMPONENTS OF THE ANALYSIS

Data Sources

- 2019 American Community Survey
  - Used to size the Vermont market by age cohort, gender, and coverage type (i.e., Commercial, Medicare, Medicaid, Uninsured, Other); note the Other coverage type represents a small portion of the Vermont population and is primarily military individuals and their families
  - Other sources were used to make adjustments for the known bias of under counting Medicaid lives, offset by an overcount of commercial lives
- US Census Bureau population projections
  - Population estimates by age cohort and gender for Vermont were used to project the 2020 and 2025 populations by age cohort and gender, including shifts by coverage type

Assumptions

- Claim lines for which the provider specialty field was not populated were assigned a provider specialty based on the distribution of provider specialties among claims with the same procedure code/diagnosis code grouping where the provider specialty is known[1]
  - This approach was also applied for provider specialties which are not specific enough (e.g., Specialist, Single Specialty) and claims billed by an outpatient facility with a revenue code identifying a professional fee (i.e., 960-989) and valid procedure code
- wRVUs were assigned to each claim line representing a professional service in VHCURES, Marketscan, and the Medicare 5% LDS based on procedure code and modifier
  - Claims for procedure codes associated with radiology and lab services that are sometimes billed separately for the professional (presence of modifier 26) and technical (presence of modifier TC) components and sometimes billed as a global charge for both the professional and technical components combined were handled in the following manner:
    - Claims with a TC modifier representing a technical component only were ignored
    - Claims with a 26 modifier representing a professional component only were assigned the professional wRVUs associated with that procedure code
    - Claims with no modifier, representing a global fee, were assigned the professional wRVUs associated with that procedure in order to capture only the professional component

[1]Approximately 15% of all professional claims in VHCURES do not contain an internal provider ID that could be linked to a specialty

KEY COMPONENTS OF THE ANALYSIS

Assumptions

- For claim lines representing procedures that are not assigned a wRVU by CMS, a wRVU was imputed for the claim in the following manner:
  - Across all claims of a given provider specialty or APP type, geography, and coverage type for which a wRVU is assigned, the average charge per wRVU was calculated
  - Total charges for that provider specialty or APP type, geography, and coverage type associated with claim lines for which a wRVU is not assigned were divided by the calculated average charge per wRVU to determine the imputed wRVUs for that claim line[1]
- Providers in Vermont of a given specialty or APP type were assumed to deliver an average wRVUs in a year consistent with the median reported wRVU production for providers of that type in the Eastern MGMA region, as reflected in the 2020 MGMA DataDive
- An estimate of wRVUs consumed by the uninsured population in Vermont was developed based on a set of relationships to that of individuals of the same age cohort and gender with Commercial coverage, by provider specialty, using the relationship between patient mix and specialty according to a 2016 AMA benchmarking study; relativities of total spend were established using National Health Expenditures data from 2019 for professional services between uninsured out-of-pocket costs and Commercial paid dollars
- While care is being provided at the University of Vermont Medical Center to non-Vermont residents, the total number of providers of each specialty type or advance practice professionals are reported when presenting the available supply of physicians/APPs for the Western Region
- In determining the number of providers of each specialty type or APP available to Vermont residents in the Eastern Region, it was assumed that Dartmouth is staffed such that 40% of the providers are available to deliver care to Vermont residents[2]
- Services performed by a provider identified as part of the Dartmouth system were identified three ways:
  1. Any provider in the VHCURES provider master list with “Dartmouth” included in their legal organization name

[1]This method of imputing wRVUs for procedure codes for which a wRVU is not assigned by CMS is consistent with how respondents to the MGMA survey are instructed to report annual wRVUs
[2]This assumption was determined based on the percentage of Dartmouth-Hitchcock patients which are from Vermont (https://www.dartmouth-hitchcock.org/about/facts-figures)

KEY COMPONENTS OF THE ANALYSIS

Assumptions

2. Any providers with an NPI that has primary hospital affiliation, physician group affiliation, or practice location of Dartmouth in the Definitive Health Care Data
3. Providers in the Definitive Healthcare data with a zip code of 03756

- Despite recent declines in the uninsured rate in Vermont, it was assumed that once the Public Health Emergency is lifted and the enhanced premium tax credits made available under the America Rescue Plan Act sunset that uninsured rates will return to levels similar to those observed in 2019
- The analysis could not be performed for Mental Health and Substance Abuse categories due to the inability to accurately calculate wRVU demand for the Medicaid population as a result of Vermont's demonstration program that utilizes a bundled payment approach.
- Subspecialties for nurse practitioners, physician assistants, and internists were not identifiable across all data sources utilized; therefore, all information (e.g., claims, provider counts, etc.) were rolled up to the nurse practitioner, physician assistant, and internal medicine levels
- Claims for services delivered by a physician assistant or nurse practitioner under the supervision of a physician that are billed as 'incident to' and therefore billed under the physician's NPI may likely result in these claims receiving a provider specialty type based on the physician's taxonomy in VHCURES and therefore create a disconnect between the calculated wRVUs demanded from that provider specialty type and the supply of physicians of that provider specialty type

METHODOLOGY

Methodology

1. Develop projected 2020 and 2025 Vermont population projections by region, age cohort, gender, and coverage type (these can be found in the Appendix)
2. Assign a provider specialty or APP type to each claim line in the 2019 VHCURES professional data that does not have the specialty field populated or is not specific enough
   - Pull all 2019 professional claims for all members in VHCURES with Medicare, Medicaid, or Commercial coverage, excluding all claims with a 'TC' modifier, and assign each claim a procedure code grouping and diagnosis code grouping
   - For each procedure code grouping and diagnosis grouping, pull the subset of claims where a provider specialty is present and develop a distribution of provider specialties that appear on those claims
   - Assign a provider specialty to claims with an unknown or unspecified provider specialty based on the distribution of provider specialties present on claims in that procedure code grouping and diagnosis code grouping
3. For each Commercial and Medicare member in the 2019 VHCURES data, gather their age cohort, gender, region, and a list of chronic conditions
   - Chronic conditions were identified based on diagnoses codes and utilized the Clinical Classification Software Refined (CCS) as published by the Agency for Healthcare Research and Quality
4. Utilize propensity score matching to identify a "matched cohort" of individuals in the 2019 MarketScan and the Medicare 5% LDS that correspond with the Vermont Commercial and Medicare populations in VHCURES, respectively, by leveraging OW Congruence to identify and draw these members from managed or well managed CBSA areas within the peer states
   - Link members in the matching process so that each Commercial/Medicare VHCURES member in the Eastern/Western Region has a corresponding member in the matched cohorts and are tracked as either an Eastern/Western Region member
5. Pull all professional claims for each of the VHCURES population and the matched Commercial and Medicare population from MarketScan and the Medicare 5% LDS, assign wRVUs to each claim line based on procedure code and procedure modifier

METHODOLOGY

Methodology

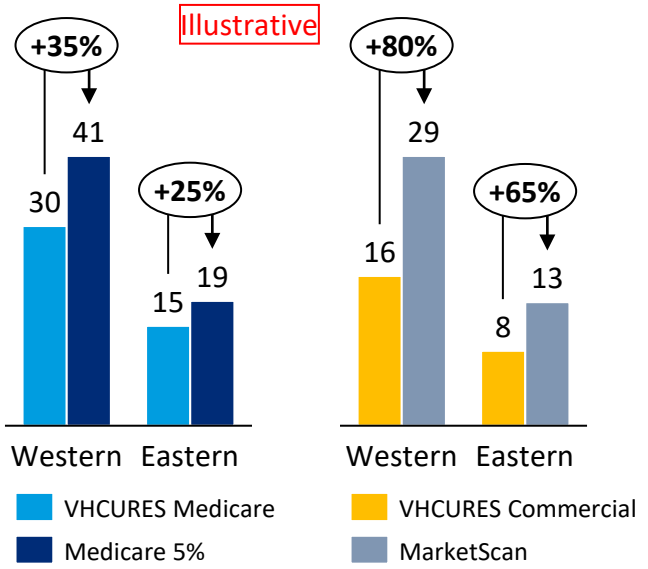
6. Determine the number of wRVUs for each provider specialty/APP type, coverage type, region, age cohort, and gender for each of the VHCURES population and the matched cohort population
   - Impute a wRVU for procedure codes for which CMS has not assigned a wRVU
7. Determine the number of 2019 member months for each provider specialty/APP type, coverage type, region, age cohort, and gender for each of the VHCURES population and the matched cohort population
8. Calculate the average number of wRVUs received (i.e., wRVU demand) per member per month (PMPM) from each provider specialty/APP type by coverage type, region, age cohort, and gender for each of the VHCURES population and the matched cohort population
9. Develop ratios of wRVUs demanded from an Uninsured individual relative to a Commercially insured member of the same age cohort, gender, and region for each provider specialty/APP type; this ratio was assumed to be 1.00 for the Other coverage type category
10. Estimate the wRVU demand PMPM for the Uninsured population for each provider specialty/APP type, region, age cohort, and gender by multiplying the Commercial wRVU demand PMPM for each specialty/APP type by coverage type, region, age cohort, and gender by the ratios determined in the prior step
11. For each of the VHCURES and matched cohorts, utilize the wRVU demand PMPM for each specialty/APP type by coverage type, region, age cohort, and gender developed in the prior steps and the projected 2020 Vermont residents by coverage type, region, age cohort, and gender to estimate overall wRVU for each provider specialty/APP type; perform the same calculation using the projected 2025 Vermont residents by coverage type, region, age cohort, and gender
12. Compare the calculated 2020 wRVU demand for each provider specialty/APP type and region for the Commercial population in VHCURES and the Commercial matched cohort drawn from managed/well managed areas within the peer states to assess the potential for utilization censoring occurring in the VHCURES; perform the same comparison for the Medicare population in VHCURES and the Medicare matched cohort

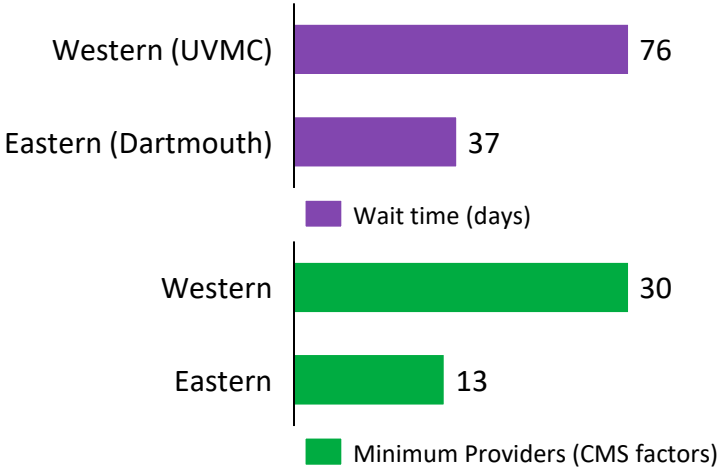
METHODOLOGY

Methodology

13. Make adjustments to the 2020 and 2025 wRVU demand at the region level for provider specialties/APP types where the analysis in the prior step presents strong evidence in both the Commercial and Medicare comparisons to suggest utilization in Vermont is censored
14. Divide the wRVU demand for each provider specialty/APP type and region, adjusted for censoring, by the median annual wRVU production for that provider specialty/APP type from the 2020 MGMA DataDive to estimate the number of providers demanded of that type in each region
15. Compare the number of providers of each specialty type indicated by the demand analysis to the number of providers of each specialty type in Vermont and separately with 40% of the Dartmouth providers by specialty type added to the Eastern Region physician supply

CENSORING ADJUSTMENTS WERE REVIEWED FOR EACH SPECIALTY





- **Criteria**
  - Identify credibility from sample sizes
  - Evaluate relationship between potential censoring of Commercial and Medicare utilization in Vermont
  - Review wait time by region from the State's Secret Shopper initiative
  - Look for regional consistency with CMS minimum provider ratios by specialty
- **Discussion**
  - OW peer reviewed each adjustment assessing consistency in censoring treatment based on the specific specialty and available data on relationships
    - Regional relativity
    - Credibility of sample
    - Potential bias for specific specialty
    - Wait times
    - CMS minimum providers[1]

1. CMS minimum providers logic was adjusted to scale for Commercial and Medicaid using MGMA gross revenue benchmarking by specialty

ANNUAL WORK RVU PRODUCTION BY PROVIDER TYPE

Median wRVU for the Eastern region from the MGMA DataDive physician survey

Specialty Category	Annual wRVU Production
Allergy and Immunology	4,603
Cardiovascular Disease	8,569
Dermatology	6,885
Endocrinology	4,474
ENT/Otolaryngology	7,273
Gastroenterology	7,597
Infectious Disease	5,749
Nephrology	6,751
Neurological Surgery	10,309
Pulmonology	6,197
Podiatry	5,984
Radiology	8,941
Rheumatology	4,682
Urology	7,784

Comments

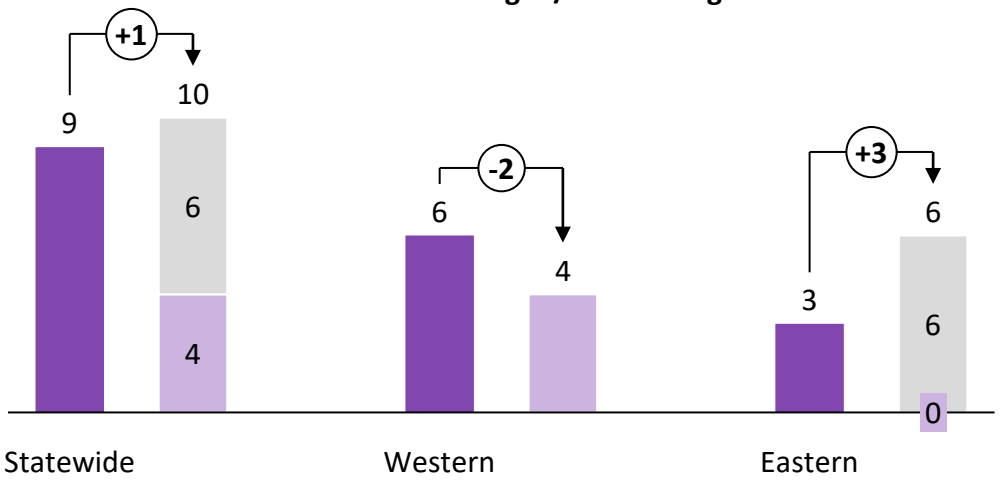
- Annual wRVU production for providers of each specialty type reported within the 2020 MGMA DataDive physician survey for the Eastern region were used
- Physician specialty types were grouped into the specialty categories shown to the left (e.g., Allergy/Immunology and Pediatrics: Allergy/ Immunology were grouped into the Allergy/ Immunology specialty category), with the annual wRVU production reported for specialty types mapped to each category weighted based on the number of survey responses of each specialty type[1]
  - These mappings into specialty groupings are consistent with how claim information and therefore wRVUs were mapped to the same specialty categories
- Underlying the analysis is an implicit assumption that wRVU production by Vermont physicians within a specialty category is the same as for the physicians of that specialty category in the Eastern region that responded to the MGMA survey

[1] This implicitly assumes that the response rate by providers of each specialty type within each specialty category is consistent

PHYSICIAN NEEDS - VERMONT RESIDENTS – ALLERGY AND IMMUNOLOGY

Vermont demand based on 2019 claims from VHCURES, adjusted to reflect the entire 2020 and projected 2025 Vermont population in each Healthcare Region

2020 uncensored demand for a managed/well-managed market



2025 uncensored demand for a managed/well-managed market

Observations/Considerations

- The supply of Allergists/Immunologists relative to uncensored demand appears to be in balance on a statewide basis, however there may be a deficit in the Western Region, and that deficit may be greater than implied here due to Allergists/Immunologists at UVM Medical Center also treating patients from out of state, whose demand is not included
- Vermonters in the Eastern Region receive all of their care from Allergists/Immunologists through Dartmouth Providers
- The demand for Allergists/Immunologists is not projected to change significantly in 2025

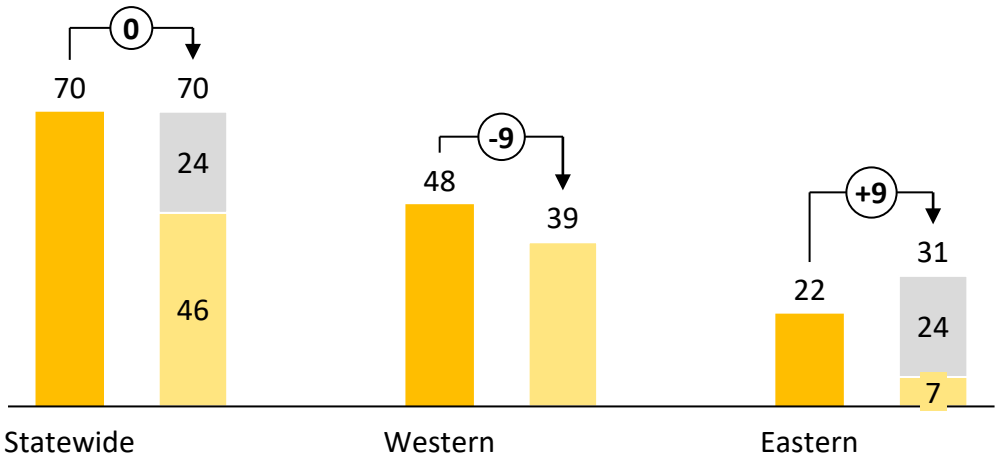
Physician Demand from Vermonters
2020 Vermont Physicians
2020 Dartmouth Physicians (40%)

Sources: VHCURES, Definitive Healthcare, IBM MarketScan Commercial Database, Medicare 5% LDS, MGMA 2020 benchmarks for wRVUs.
Note: Analysis is based on wRVUs for claims with a provider specialty falling into the category of Allergy or Immunology, and physicians identified in Definitive Healthcare falling into the category of Allergy or Immunology; any care delivered by APPs and billed under the physician's NPI that therefore reflect a specialty in the category of Allergy or Immunology in the VHCURES data may result in demand being somewhat overstated relative to physician supply.

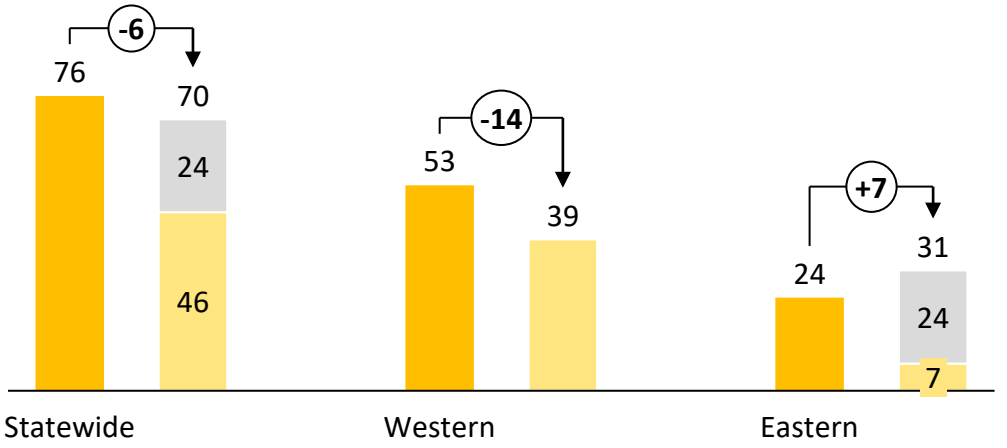
PHYSICIAN NEEDS - VERMONT RESIDENTS – CARDIOVASCULAR DISEASE

Vermont demand based on 2019 claims from VHCURES, adjusted to reflect the entire 2020 and projected 2025 Vermont population in each Healthcare Region

2020 uncensored demand for a managed/well-managed market



2025 uncensored demand for a managed/well-managed market



Observations/Considerations

- The supply of Cardiovascular Disease physicians relative to uncensored demand appears to be in balance on a statewide basis, however there may be a deficit in the Western Region, and that deficit may be greater than implied here due to Cardiovascular Disease physicians at UVM Medical Center also treating patients from out of state, whose demand is not included
- Vermonters in the Eastern Region rely heavily on Cardiovascular Disease physicians at Dartmouth to meet their demand
- The demand for Cardiovascular Disease physicians is projected to increase by 2025 as the population ages

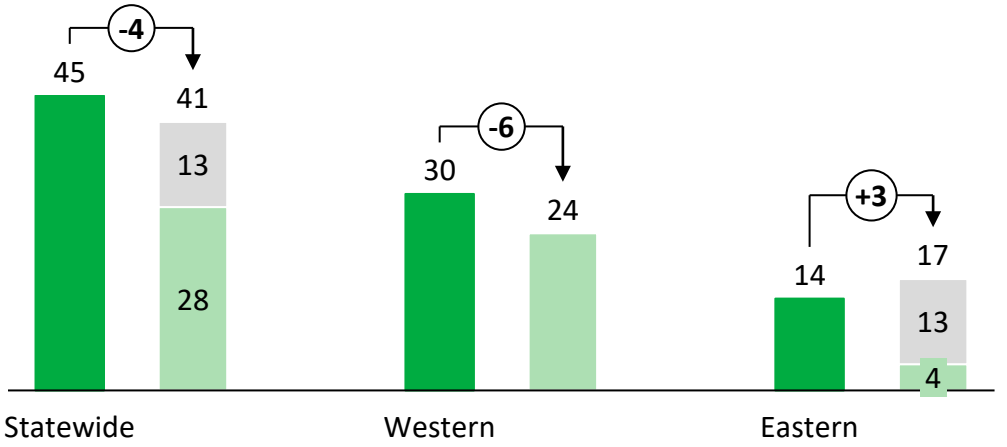
Physician Demand from Vermonters
2020 Vermont Physicians
2020 Dartmouth Physicians (40%)

Sources: VHCURES, Definitive Healthcare, IBM MarketScan Commercial Database, Medicare 5% LDS, MGMA 2020 benchmarks for wRVUs.
Note: Analysis is based on wRVUs for claims with a provider specialty falling into the category of Cardiovascular Disease, and physicians identified in Definitive Healthcare falling into the category of Cardiovascular Disease; any care delivered by APPs and billed under the physician's NPI that therefore reflect a specialty in the category of Cardiovascular Disease in the VHCURES data may result in demand being somewhat overstated relative to physician supply.

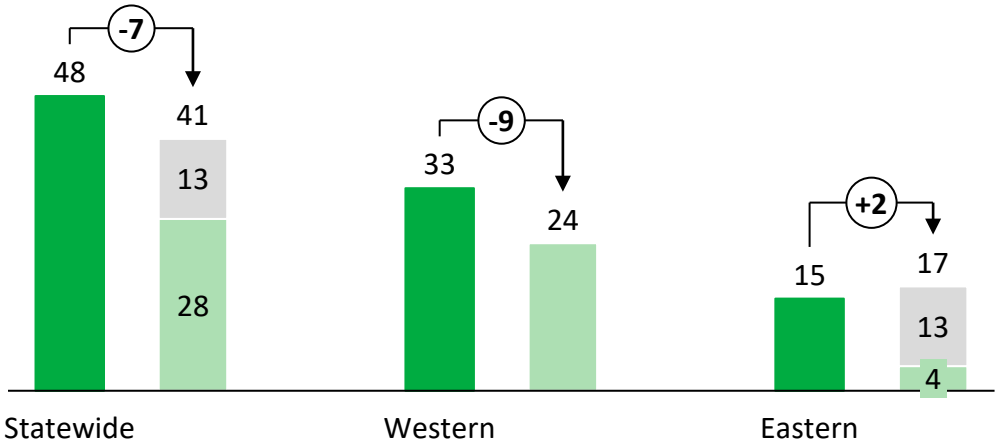
PHYSICIAN NEEDS - VERMONT RESIDENTS - DERMATOLOGY

Vermont demand based on 2019 claims from VHCURES, adjusted to reflect the entire 2020 and projected 2025 Vermont population in each Healthcare Region

2020 uncensored demand for a managed/well-managed market



2025 uncensored demand for a managed/well-managed market



Observations/Considerations

- The supply of Dermatologists relative to uncensored demand appears to reflect a shortfall on a statewide basis, with a larger a deficit in the Western Region, and that deficit may be greater than implied here due to dermatologists at UVM Medical Center also treating patients from out of state, whose demand is not included
- Vermonters in the Eastern Region rely heavily on Dermatologists at Dartmouth to meet their demand
- The demand for Dermatologists is projected to increase by 2025, leading to a larger deficit relative to current supply

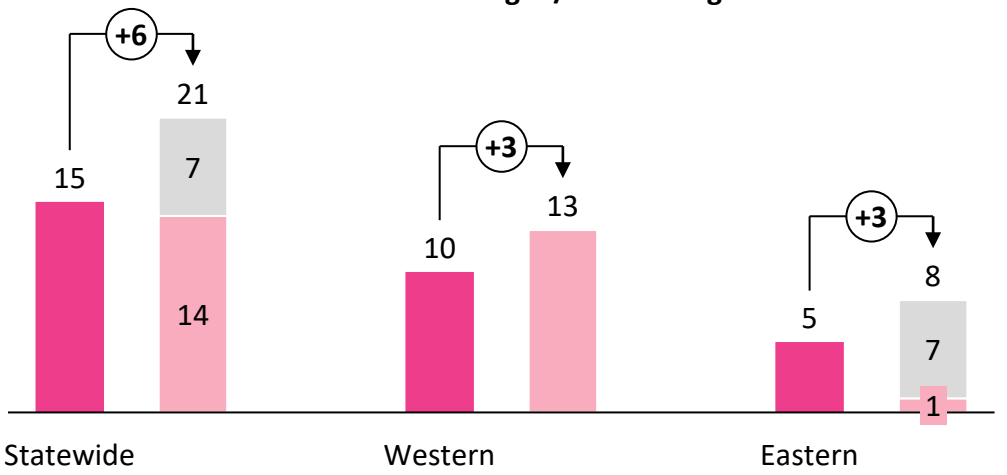
Physician Demand from Vermonters
2020 Vermont Physicians
2020 Dartmouth Physicians (40%)

Sources: VHCURES, Definitive Healthcare, IBM MarketScan Commercial Database, Medicare 5% LDS, MGMA 2020 benchmarks for wRVUs.
Note: Analysis is based on wRVUs for claims with a provider specialty falling into the category of Cardiovascular Disease, and physicians identified in Definitive Healthcare falling into the category of Cardiovascular Disease; any care delivered by APPs and billed under the physician's NPI that therefore reflect a specialty in the category of Cardiovascular Disease in the VHCURES data may result in demand being somewhat overstated relative to physician supply.

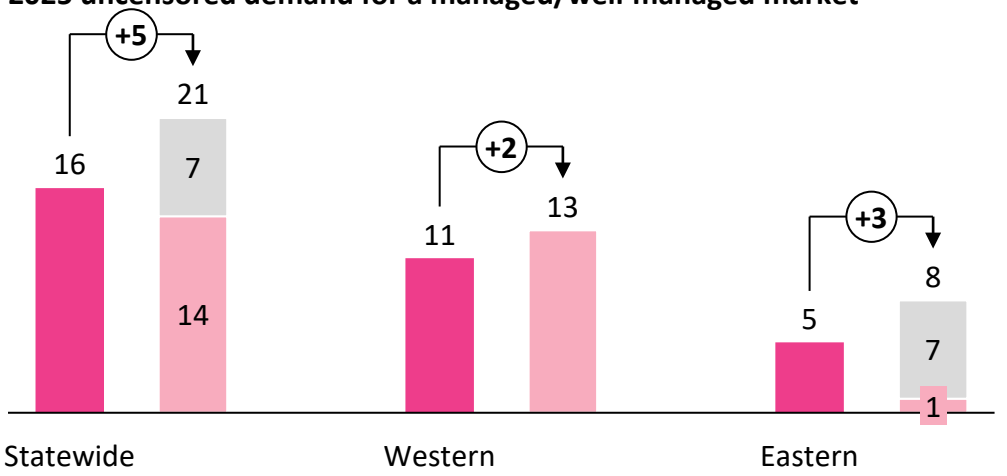
PHYSICIAN NEEDS - VERMONT RESIDENTS – ENDOCRINOLOGY

Vermont demand based on 2019 claims from VHCURES, adjusted to reflect the entire 2020 and projected 2025 Vermont population in each Healthcare Region

2020 uncensored demand for a managed/well-managed market



2025 uncensored demand for a managed/well-managed market



Observations/Considerations

- The supply of Endocrinologists relative to uncensored demand appears to reflect a sufficient supply on both a statewide basis and by region
- Vermonters in the Eastern Region rely heavily on Endocrinologists at Dartmouth to meet their demand
- The Western Region may have greater demand than implied here due to Endocrinologists at UVM Medical Center also treating patients from out of state, whose demand is not included
- The demand for Endocrinologists is projected to increase by 2025, reducing capacity relative to current supply

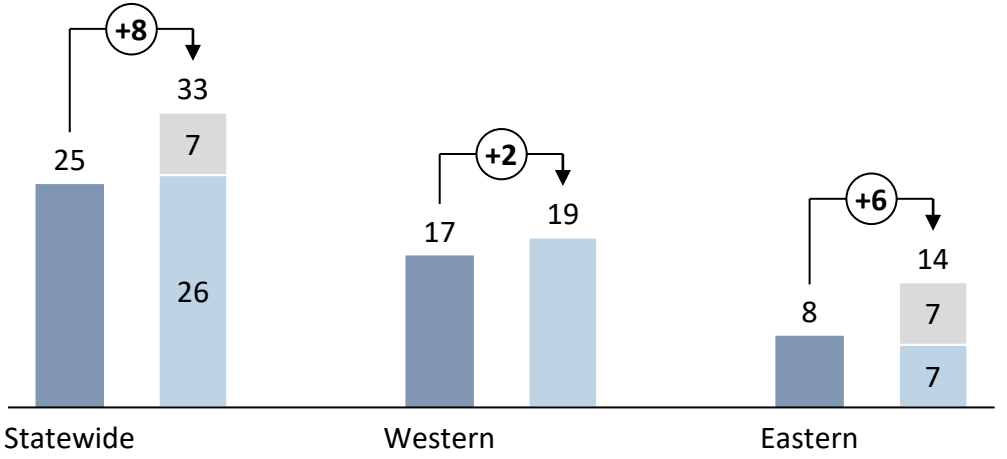
Physician Demand from Vermonters
2020 Vermont Physicians
2020 Dartmouth Physicians (40%)

Sources: VHCURES, Definitive Healthcare, IBM MarketScan Commercial Database, Medicare 5% LDS, MGMA 2020 benchmarks for wRVUs.
Note: Analysis is based on wRVUs for claims with a provider specialty falling into the category of Endocrinology, and physicians identified in Definitive Healthcare falling into the category of Endocrinology; any care delivered by APPs and billed under the physician's NPI that therefore reflect a specialty in the category of Endocrinology in the VHCURES data may result in demand being somewhat overstated relative to physician supply.

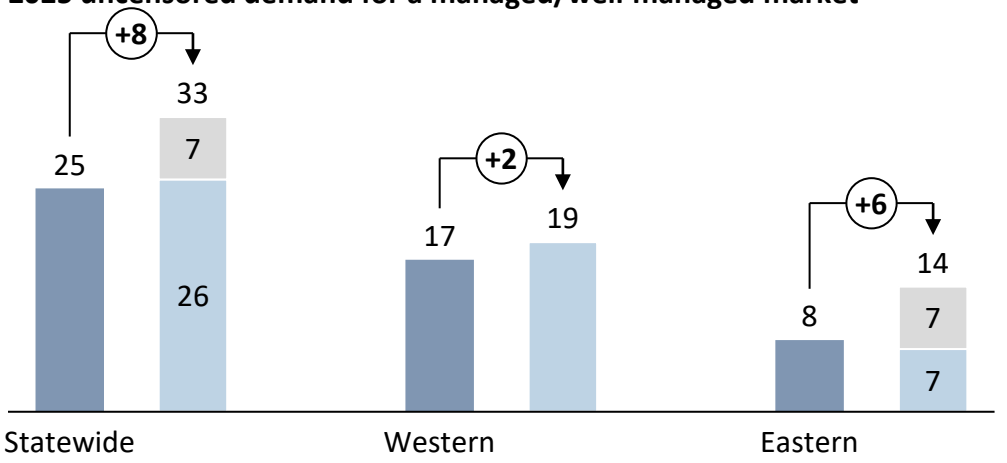
PHYSICIAN NEEDS - VERMONT RESIDENTS – ENT/OTOLARYNGOLOGY

Vermont demand based on 2019 claims from VHCURES, adjusted to reflect the entire 2020 and projected 2025 Vermont population in each Healthcare Region

2020 uncensored demand for a managed/well-managed market



2025 uncensored demand for a managed/well-managed market



Observations/Considerations

- The supply of ENTs relative to uncensored demand appears to reflect a sufficient supply on both a statewide basis and by region
- Vermonters in the Eastern Region rely heavily on ENTs at Dartmouth to meet their demand
- The demand for ENTs is not projected to change significantly in 2025

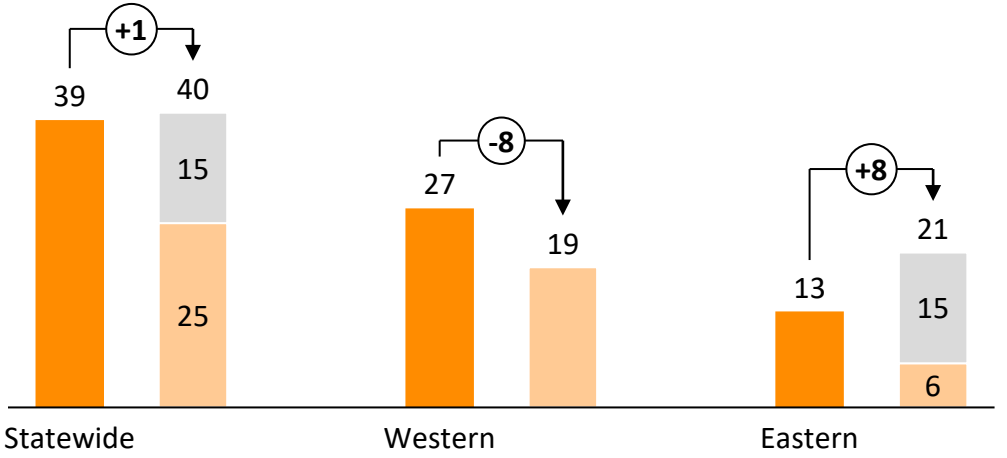
Physician Demand from Vermonters
2020 Vermont Physicians
2020 Dartmouth Physicians (40%)

Sources: VHCURES, Definitive Healthcare, IBM MarketScan Commercial Database, Medicare 5% LDS, MGMA 2020 benchmarks for wRVUs.
Note: Analysis is based on wRVUs for claims with a provider specialty falling into the category of ENT/Otolaryngology, and physicians identified in Definitive Healthcare falling into the category of ENT/Otolaryngology; any care delivered by APPs and billed under the physician's NPI that therefore reflect a specialty in the category of ENT/Otolaryngology in the VHCURES data may result in demand being somewhat overstated relative to physician supply.

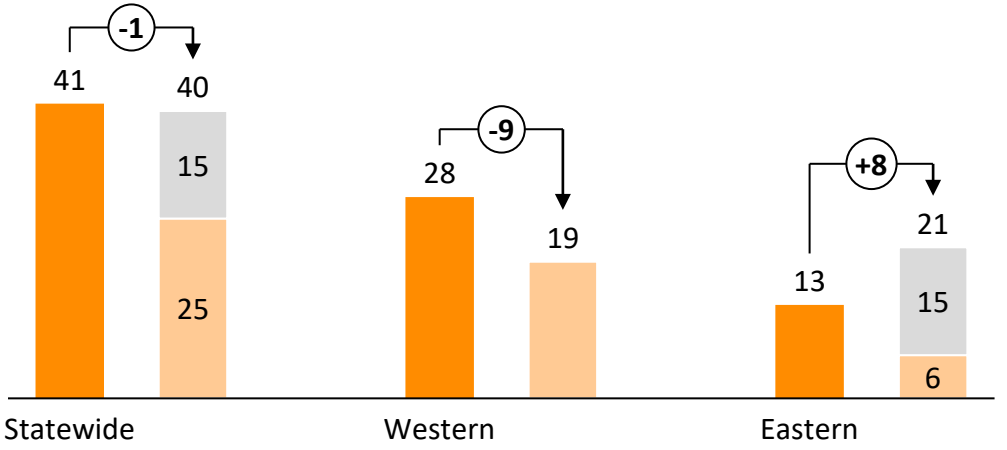
PHYSICIAN NEEDS - VERMONT RESIDENTS – GASTROENTEROLOGY

Vermont demand based on 2019 claims from VHCURES, adjusted to reflect the entire 2020 and projected 2025 Vermont population in each Healthcare Region

2020 uncensored demand for a managed/well-managed market



2025 uncensored demand for a managed/well-managed market



Observations/Considerations

- The supply of Gastroenterologists relative to uncensored demand appears to be in balance on a statewide basis, however there may be a deficit in the Western Region, and that deficit may be greater than implied here due to Gastroenterologists at UVM Medical Center also treating patients from out of state, whose demand is not included
- Vermonters in the Eastern Region receive heavily on Gastroenterologists at Dartmouth to meet their demand
- The demand for Gastroenterologists is not projected to change significantly in 2025

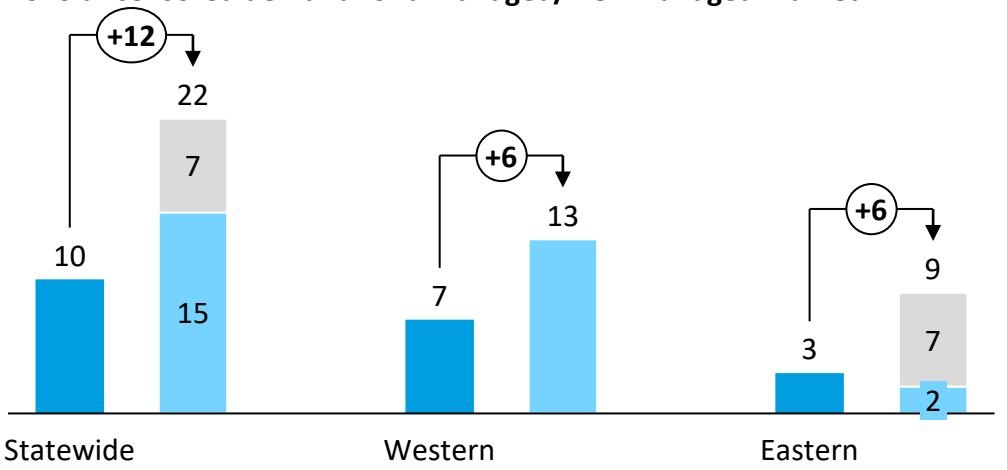
Physician Demand from Vermonters
2020 Vermont Physicians
2020 Dartmouth Physicians (40%)

Sources: VHCURES, Definitive Healthcare, IBM MarketScan Commercial Database, Medicare 5% LDS, MGMA 2020 benchmarks for wRVUs.
Note: Analysis is based on wRVUs for claims with a provider specialty falling into the category of Gastroenterology, and physicians identified in Definitive Healthcare falling into the category of Gastroenterology; any care delivered by APPs and billed under the physician's NPI that therefore reflect a specialty in the category of Gastroenterology in the VHCURES data may result in demand being somewhat overstated relative to physician supply.

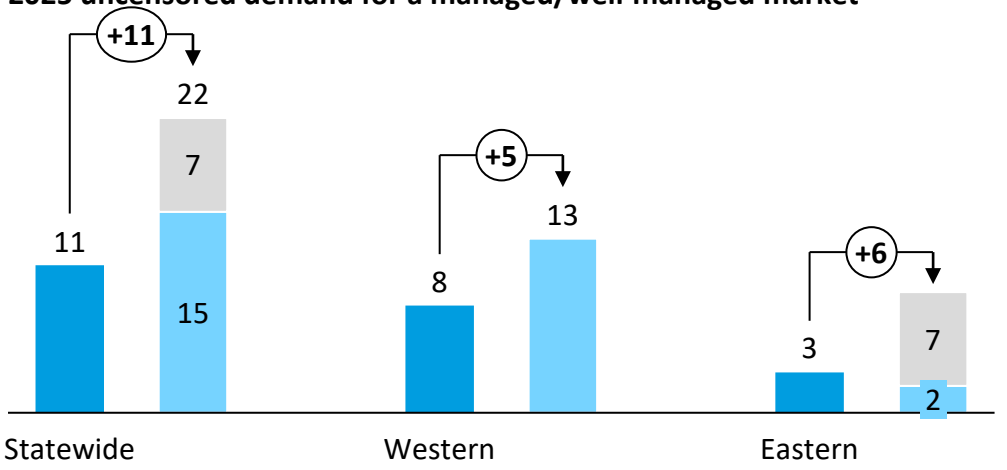
PHYSICIAN NEEDS - VERMONT RESIDENTS – INFECTIOUS DISEASE

Vermont demand based on 2019 claims from VHCURES, adjusted to reflect the entire 2020 and projected 2025 Vermont population in each Healthcare Region

2020 uncensored demand for a managed/well-managed market



2025 uncensored demand for a managed/well-managed market



Observations/Considerations

- The supply of Infectious Disease providers relative to uncensored demand appears to reflect a sufficient supply on both a statewide basis and by region
- Vermonters in the Eastern Region rely somewhat on Infectious Disease providers at Dartmouth to meet their demand
- The demand for Infectious Disease providers is not projected to change significantly in 2025

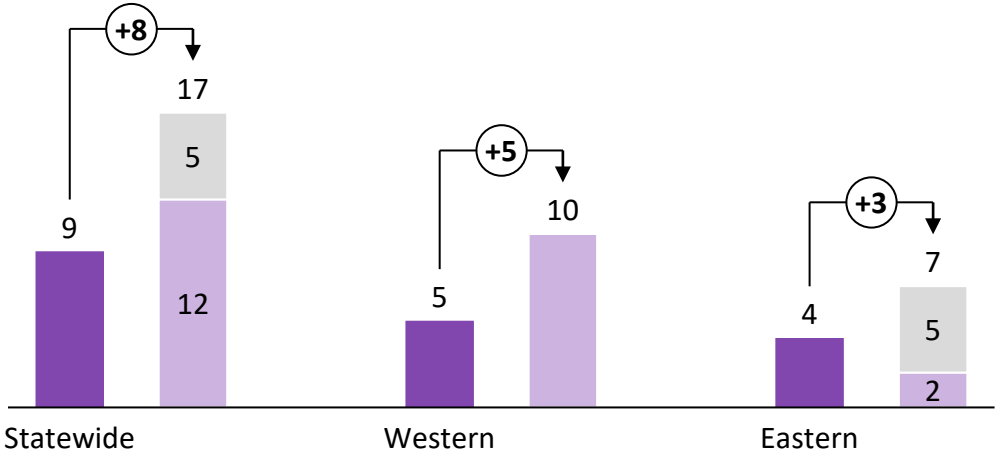
Physician Demand from Vermonters
2020 Vermont Physicians
2020 Dartmouth Physicians (25%)

Sources: VHCURES, Definitive Healthcare, IBM MarketScan Commercial Database, Medicare 5% LDS, MGMA 2020 benchmarks for wRVUs.
Note: Analysis is based on wRVUs for claims with a provider specialty falling into the category of Infectious Disease, and physicians identified in Definitive Healthcare falling into the category of Infectious Disease; any care delivered by APPs and billed under the physician's NPI that therefore reflect a specialty in the category of Infectious Disease in the VHCURES data may result in demand being somewhat overstated relative to physician supply.

PHYSICIAN NEEDS - VERMONT RESIDENTS – NEPHROLOGY

Vermont demand based on 2019 claims from VHCURES, adjusted to reflect the entire 2020 and projected 2025 Vermont population in each Healthcare Region

2020 uncensored demand for a managed/well-managed market



2025 uncensored demand for a managed/well-managed market

Observations/Considerations

- The supply of Nephrologists relative to uncensored demand appears to reflect a sufficient supply on both a statewide basis and by region
- Vermonters in the Eastern Region rely on Nephrologists at Dartmouth to meet their demand
- The demand for Nephrologists is not projected to change significantly in 2025

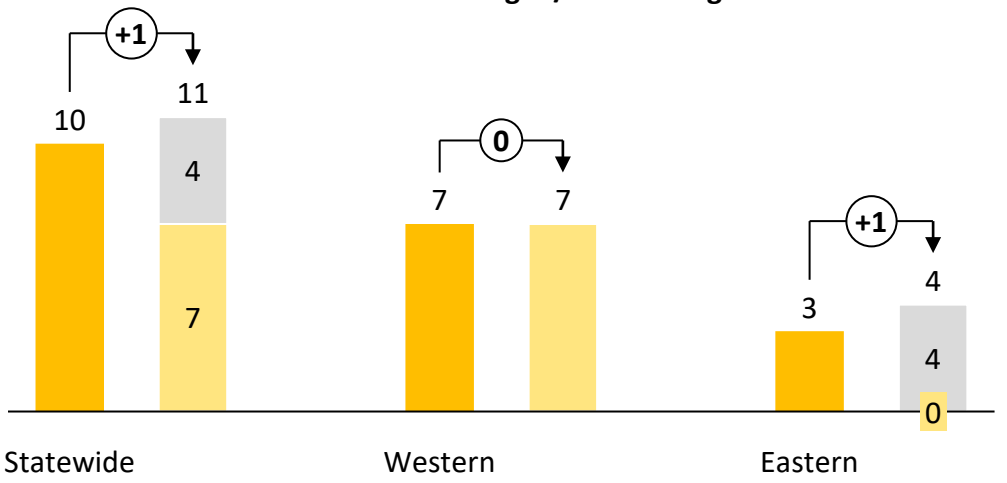
Physician Demand from Vermonters
2020 Vermont Physicians
2020 Dartmouth Physicians (40%)

Sources: VHCURES, Definitive Healthcare, IBM MarketScan Commercial Database, Medicare 5% LDS, MGMA 2020 benchmarks for wRVUs.
Note: Analysis is based on wRVUs for claims with a provider specialty falling into the category of Nephrology, and physicians identified in Definitive Healthcare falling into the category of Nephrology; any care delivered by APPs and billed under the physician's NPI that therefore reflect a specialty in the category of Nephrology in the VHCURES data may result in demand being somewhat overstated relative to physician supply.

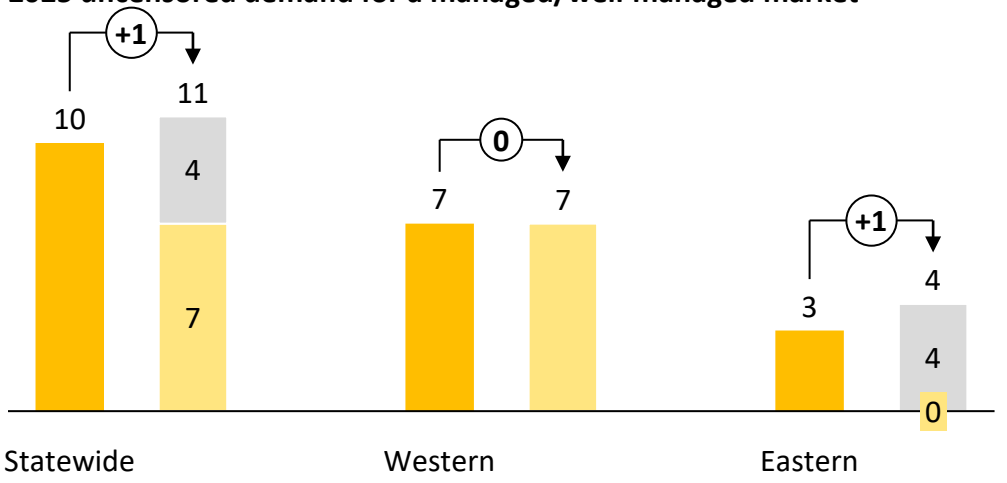
PHYSICIAN NEEDS - VERMONT RESIDENTS – NEUROLOGICAL SURGERY

Vermont demand based on 2019 claims from VHCURES, adjusted to reflect the entire 2020 and projected 2025 Vermont population in each Healthcare Region

2020 uncensored demand for a managed/well-managed market



2025 uncensored demand for a managed/well-managed market



Observations/Considerations

- The supply of Neurosurgeons relative to uncensored demand appears to reflect supply and demand that are in equilibrium on both a statewide basis and by region, with almost no excess capacity
- Vermonters in the Eastern Region rely entirely on Neurosurgeons at Dartmouth to meet their demand
- The demand for Neurosurgeons is not projected to change in 2025

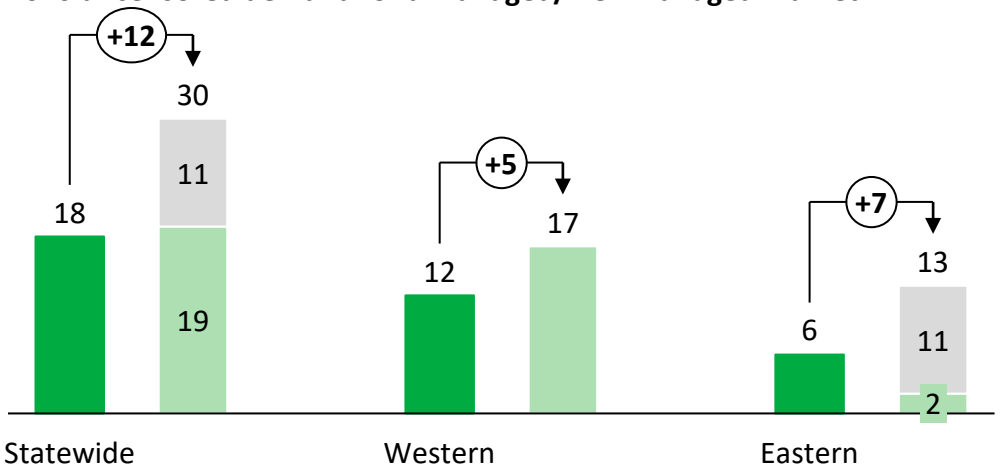
Physician Demand from Vermonters
2020 Vermont Physicians
2020 Dartmouth Physicians (40%)

Sources: VHCURES, Definitive Healthcare, IBM MarketScan Commercial Database, Medicare 5% LDS, MGMA 2020 benchmarks for wRVUs.
Note: Analysis is based on wRVUs for claims with a provider specialty falling into the category of Neurological Surgery, and physicians identified in Definitive Healthcare falling into the category of Neurological Surgery; any care delivered by APPs and billed under the physician's NPI that therefore reflect a specialty in the category of Neurological Surgery in the VHCURES data may result in demand being somewhat overstated relative to physician supply.

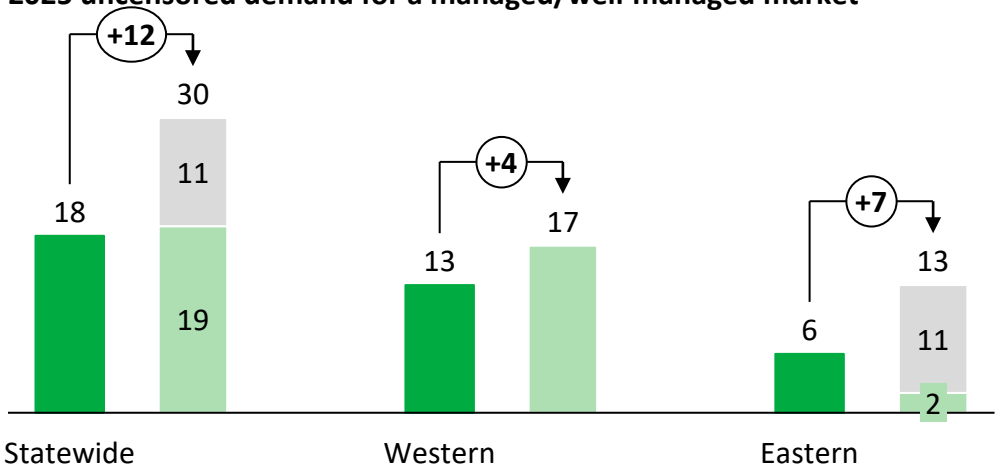
PHYSICIAN NEEDS - VERMONT RESIDENTS - PULMONOLOGY

Vermont demand based on 2019 claims from VHCURES, adjusted to reflect the entire 2020 and projected 2025 Vermont population in each Healthcare Region

2020 uncensored demand for a managed/well-managed market



2025 uncensored demand for a managed/well-managed market



Observations/Considerations

- The supply of Pulmonologists relative to uncensored demand appears to reflect a sufficient supply on both a statewide basis and by region
- Vermonters in the Eastern Region rely heavily on Pulmonologists at Dartmouth to meet their demand
- The demand for Pulmonologists is not projected to change significantly in 2025

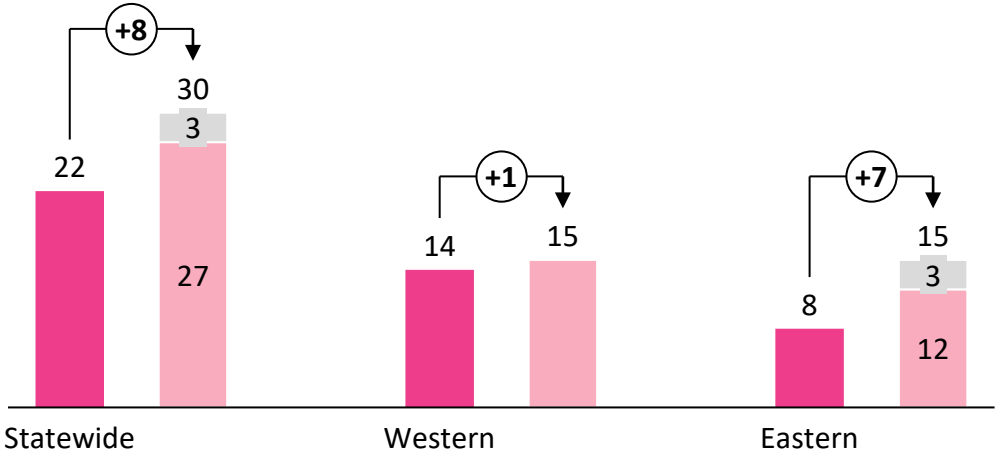
Physician Demand from Vermonters
2020 Vermont Physicians
2020 Dartmouth Physicians (40%)

Sources: VHCURES, Definitive Healthcare, IBM MarketScan Commercial Database, Medicare 5% LDS, MGMA 2020 benchmarks for wRVUs.
Note: Analysis is based on wRVUs for claims with a provider specialty falling into the category of Pulmonology, and physicians identified in Definitive Healthcare falling into the category of Pulmonology; any care delivered by APPs and billed under the physician's NPI that therefore reflect a specialty in the category of Pulmonology in the VHCURES data may result in demand being somewhat overstated relative to physician supply.

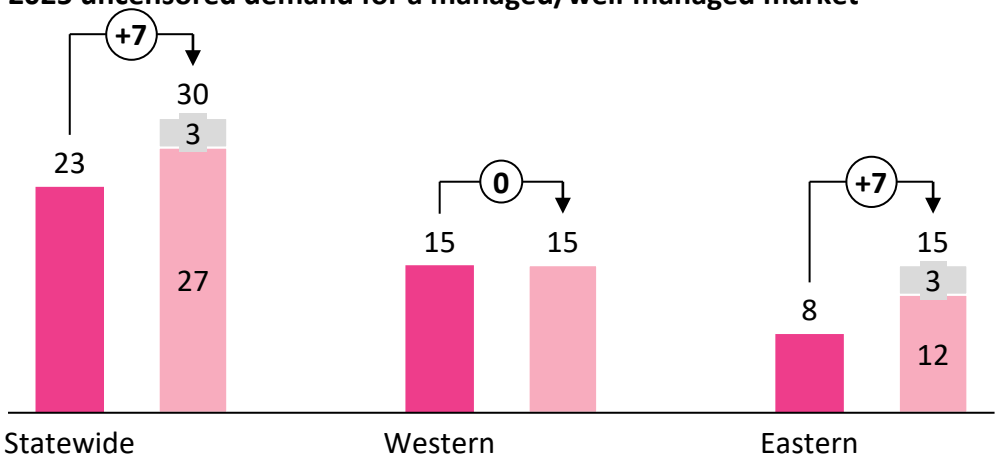
PHYSICIAN NEEDS - VERMONT RESIDENTS – PODIATRY

Vermont demand based on 2019 claims from VHCURES, adjusted to reflect the entire 2020 and projected 2025 Vermont population in each Healthcare Region

2020 uncensored demand for a managed/well-managed market



2025 uncensored demand for a managed/well-managed market



Observations/Considerations

- The supply of Podiatrists relative to uncensored demand appears to reflect a sufficient supply on both a statewide basis and by region. The Western Region may have greater demand than implied here due to Podiatrists at UVM Medical Center also treating patients from out of state, whose demand is not included
- Vermonters in the Eastern Region can have their demand for Podiatrists met without relying on Dartmouth providers
- The demand for Podiatrists is not projected to change significantly in 2025

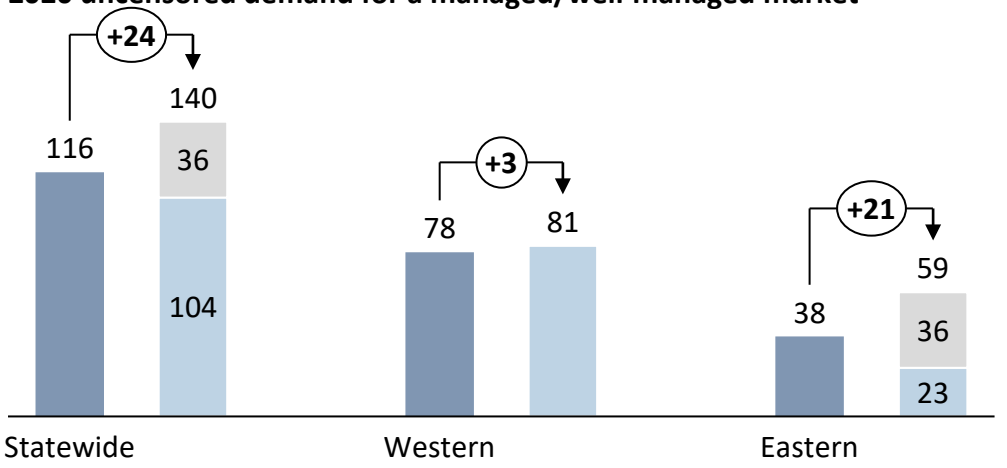
Physician Demand from Vermonters
2020 Vermont Physicians
2020 Dartmouth Physicians (40%)

Sources: VHCURES, Definitive Healthcare, IBM MarketScan Commercial Database, Medicare 5% LDS, MGMA 2020 benchmarks for wRVUs.
Note: Analysis is based on wRVUs for claims with a provider specialty falling into the category of Podiatry, and physicians identified in Definitive Healthcare falling into the category of Podiatry; any care delivered by APPs and billed under the physician's NPI that therefore reflect a specialty in the category of Podiatry in the VHCURES data may result in demand being somewhat overstated relative to physician supply.

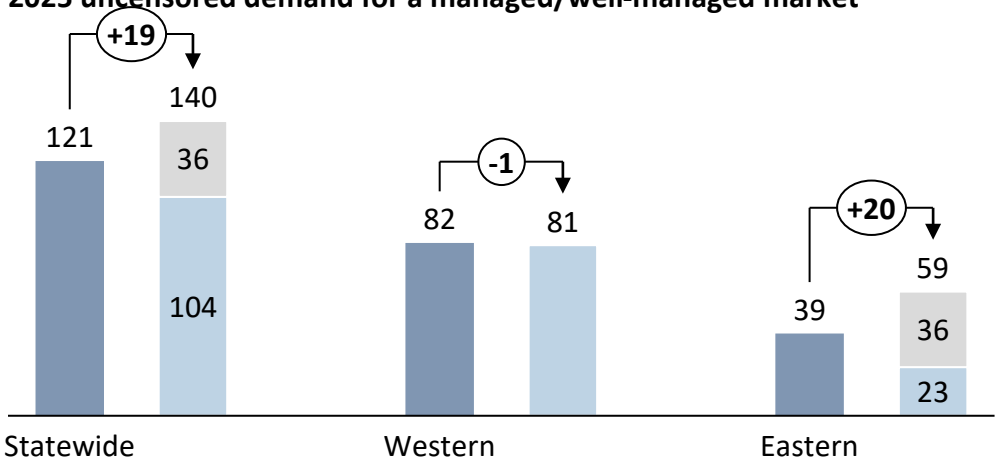
PHYSICIAN NEEDS - VERMONT RESIDENTS – RADIOLOGY

Vermont demand based on 2019 claims from VHCURES, adjusted to reflect the entire 2020 and projected 2025 Vermont population in each Healthcare Region

2020 uncensored demand for a managed/well-managed market



2025 uncensored demand for a managed/well-managed market



Observations/Considerations

- The supply of Radiologists relative to uncensored demand appears to reflect a sufficient supply on both a statewide basis and by region. The Western Region may have greater demand than implied here due to Radiologists at UVM Medical Center also treating patients from out of state, whose demand is not included
- Vermonters in the Eastern Region rely heavily on Radiologists at Dartmouth to meet their demand
- An increase in demand for Radiologists in 2025 is projected to produce a deficit relative to current supply

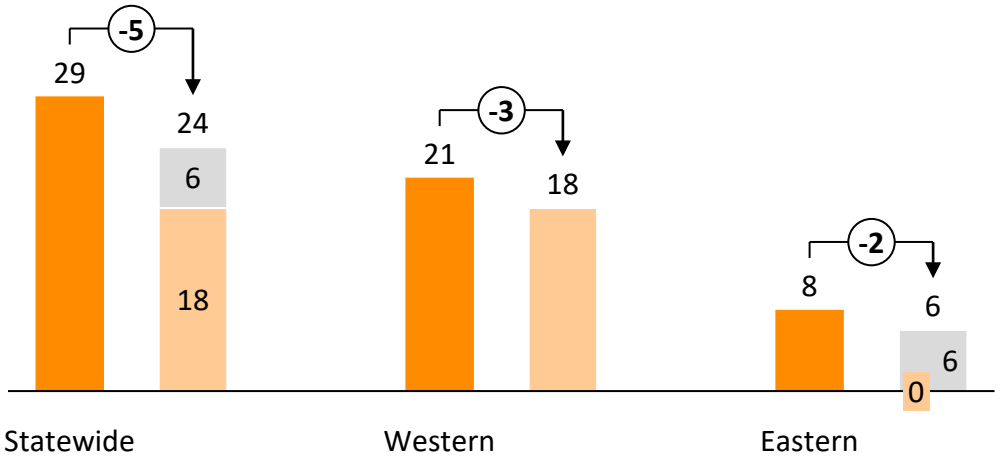
Physician Demand from Vermonters
2020 Vermont Physicians
2020 Dartmouth Physicians (40%)

Sources: VHCURES, Definitive Healthcare, IBM MarketScan Commercial Database, Medicare 5% LDS, MGMA 2020 benchmarks for wRVUs.
Note: Analysis is based on wRVUs for claims with a provider specialty falling into the category of Radiology, and physicians identified in Definitive Healthcare falling into the category of Radiology; any care delivered by APPs and billed under the physician's NPI that therefore reflect a specialty in the category of Radiology in the VHCURES data may result in demand being somewhat overstated relative to physician supply.

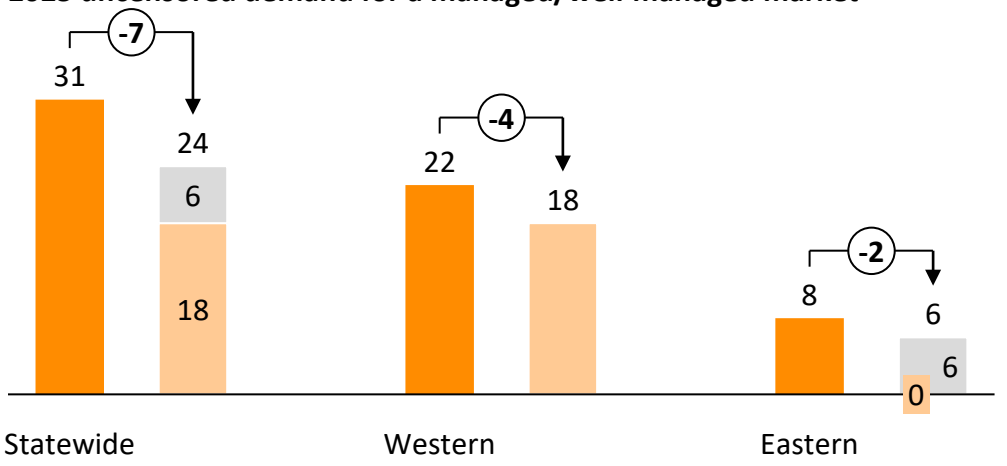
PHYSICIAN NEEDS - VERMONT RESIDENTS – RHEUMATOLOGY

Vermont demand based on 2019 claims from VHCURES, adjusted to reflect the entire 2020 and projected 2025 Vermont population in each Healthcare Region

2020 uncensored demand for a managed/well-managed market



2025 uncensored demand for a managed/well-managed market



Observations/Considerations

- The supply of Rheumatologists relative to uncensored demand appears to reflect a shortfall on a statewide basis, with a larger a deficit in the Western Region, and that deficit may be greater than implied here due to rheumatologists at UVM Medical Center also treating patients from out of state, whose demand is not included
- Vermonters in the Eastern Region rely entirely on Rheumatologists at Dartmouth to meet their demand
- The demand for Rheumatologists is projected to increase marginally by 2025, leading to a larger deficit related to current supply

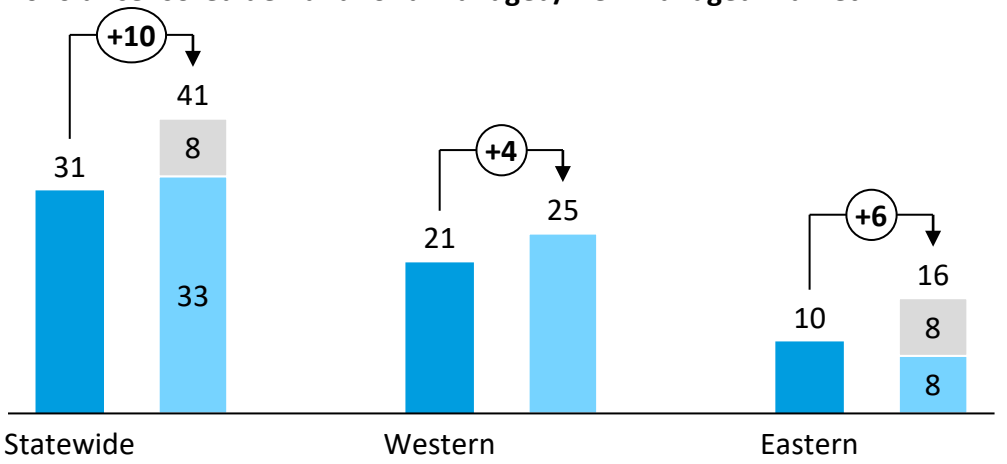
Physician Demand from Vermonters
2020 Vermont Physicians
2020 Dartmouth Physicians (40%)

Sources: VHCURES, Definitive Healthcare, IBM MarketScan Commercial Database, Medicare 5% LDS, MGMA 2020 benchmarks for wRVUs.
Note: Analysis is based on wRVUs for claims with a provider specialty falling into the category of Rheumatology, and physicians identified in Definitive Healthcare falling into the category of Rheumatology; any care delivered by APPs and billed under the physician's NPI that therefore reflect a specialty in the category of Rheumatology in the VHCURES data may result in demand being somewhat overstated relative to physician supply.

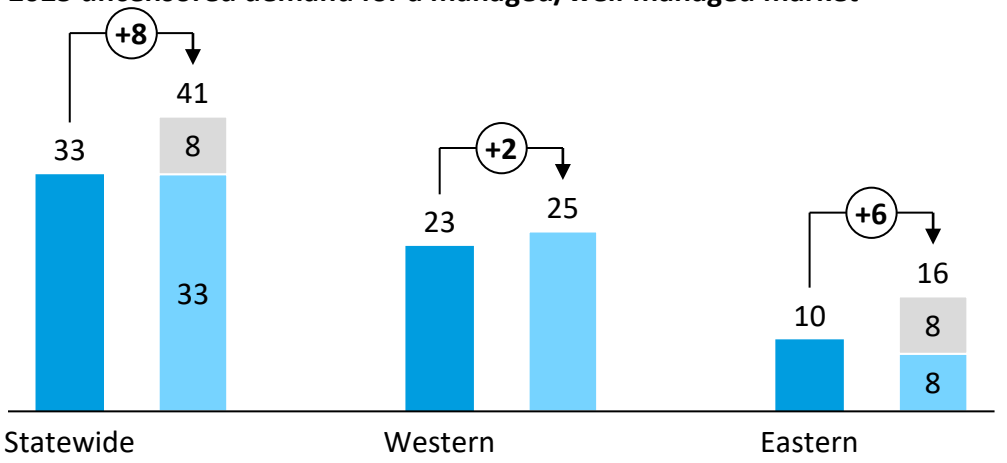
PHYSICIAN NEEDS - VERMONT RESIDENTS – UROLOGY

Vermont demand based on 2019 claims from VHCURES, adjusted to reflect the entire 2020 and projected 2025 Vermont population in each Healthcare Region

2020 uncensored demand for a managed/well-managed market



2025 uncensored demand for a managed/well-managed market



Observations/Considerations

- The supply of Urologists relative to uncensored demand appears to reflect a sufficient supply on both a statewide basis and by region. The Western Region may have greater demand than implied here due to Urologists at UVM Medical Center also treating patients from out of state, whose demand is not included
- Vermonters in the Eastern Region somewhat rely on Urologists at Dartmouth to meet their demand
- The demand for Urologists is not projected to change significantly in 2025

Physician Demand from Vermonters
2020 Vermont Physicians
2020 Dartmouth Physicians (40%)

Sources: VHCURES, Definitive Healthcare, IBM MarketScan Commercial Database, Medicare 5% LDS, MGMA 2020 benchmarks for wRVUs.
Note: Analysis is based on wRVUs for claims with a provider specialty falling into the category of Urology, and physicians identified in Definitive Healthcare falling into the category of Urology; any care delivered by APPs and billed under the physician's NPI that therefore reflect a specialty in the category of Urology in the VHCURES data may result in demand being somewhat overstated relative to physician supply.

5

PCP AND SPECIALIST VISIT PATTERNS

PCP AND SPECIALIST OFFICE VISITS FOR CHRONIC MEMBERS

Questions

- How accessible are PCPs and Specialists in Vermont and has this changed utilization patterns over time?
- How do key utilization metrics change over time or vary by geography for Vermont?
- How do key utilization metrics compare for Vermont to the peer states?

Data Sources

- 2016 to 2020 VHCURES
  - Members were assigned to a single type of coverage each month based on the primary insurance indicator field
  - Members with both Medicare and Medicaid primary flags (i.e., dual eligible) were assigned to Medicare
  - 2020 results are shown but are likely impacted by the pandemic which may lead to differing results when compared to prior years
- 2019 IBM Watson MarketScan Commercial Database
  - Used for Commercial peer state comparison

Assumptions

- Office visits were flagged based on the presence of a procedure code between 99201 and 99215
- Only chronic members were included in the analysis and the chronic conditions were assigned each year based on diagnosis code information within that year
- Chronic conditions were identified based on diagnoses codes and utilized the Clinical Classification Software Refined as published by the Agency for Healthcare Research and Quality and includes the following: Anxiety, Asthma, CKD, COPD, Depression, Diabetes, Heart Disease
- When combining chronic conditions, the following groups were utilized
  - High Cost: Members with at least one of CKD, COPD, Heart Disease
  - Medium Cost: Members with no high cost conditions and at least one of Depression, Diabetes
  - Low Cost: Members with only Anxiety and/or Asthma

PCP AND SPECIALIST OFFICE VISITS FOR CHRONIC MEMBERS

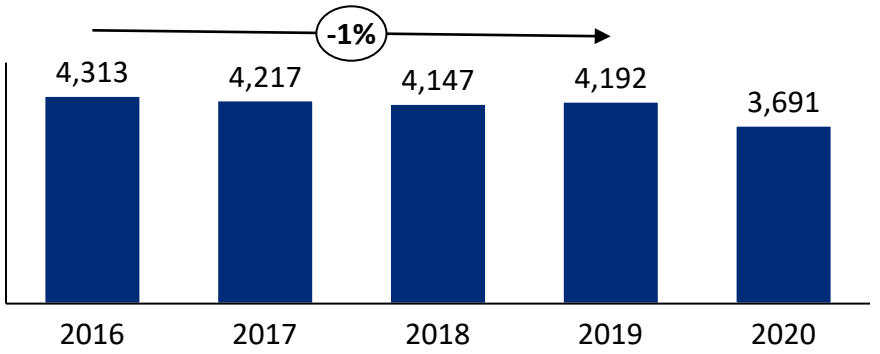
Methodology

1. Segment members into cohorts based on year, coverage type, Region, cumulative chronic conditions, and PCP/Specialist utilization
2. Pull all desired office visits (i.e., 99201-99215) for professional services
3. Group services into PCP/Specialist categories based on physician type for each office visit
   a. The following specialty types are considered PCP: Family Practice, Geriatric, Internal Medicine, Nurse Practitioner, OBGYN, Pediatric, Physician Assistant, Urgent Care
4. Physician type is determined using taxonomy codes for VHCURES and specialty type groupings for MarketScan and Medicare 5% LDS
5. The PCP/Specialist designation was determined based on the mix of designations for known specialty types within the same diagnosis code grouping for each claim where detailed specialty type was unknown (e.g., multi-specialty, blank)
6. Limitations in exact mapping of specialty type required custom mapping for conducting this analysis, this mapping is available in Appendix A
7. Wait time information was only utilized for PCP and Specialist visits which were considered a linked follow-up based on the following criteria
   - The PCP and Specialist visit had the same primary diagnosis code grouping
   - The member did not have a different Specialist visit with the same primary diagnosis code grouping in the prior 12 months
   - The Specialist visit occurred within 365 days of the PCP visit
   - Wait times are summarized only for years 2017 through 2019 to allow for consistent lookback periods and to remove the impact of COVID-19 from the results

PCP VISIT UTILIZATION

PCP utilization is steady year-over-year, with no significant Regional differences in trend

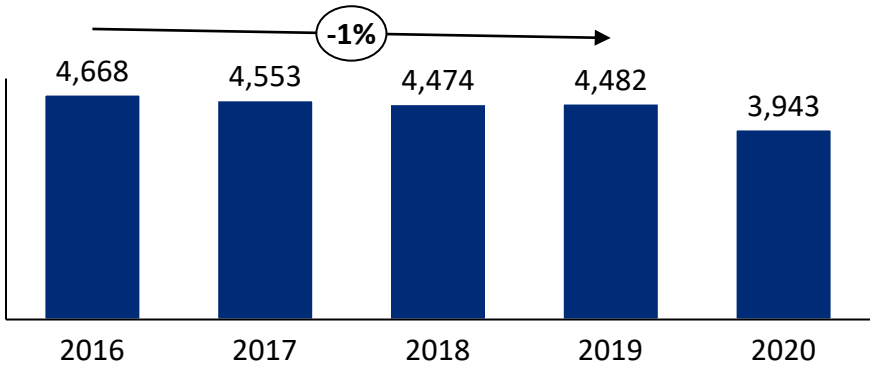
PCP utilization per 1K chronic members, Vermont



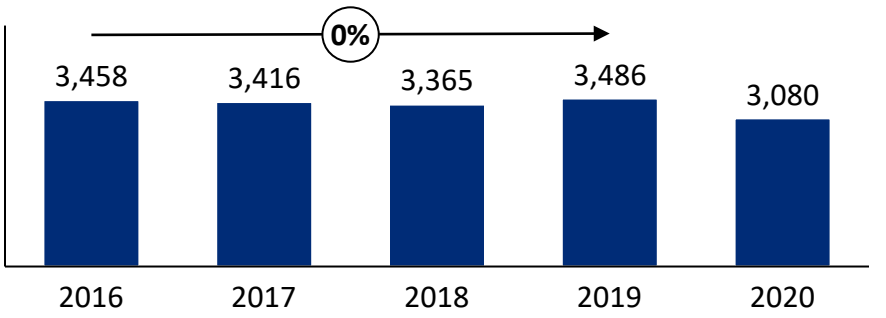
Key Takeaways

- The Western Region demonstrates substantially higher PCP utilization patterns than the Eastern Region and makes up a larger portion of the population

PCP utilization per 1K chronic members, Vermont Western Region



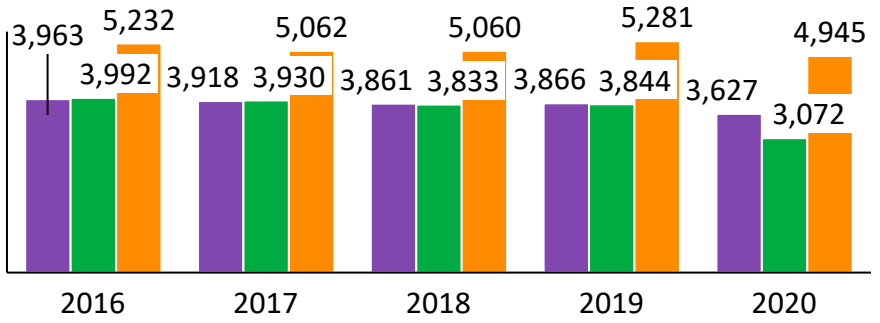
PCP utilization per 1K chronic members, Vermont Eastern Region



PCP VISIT UTILIZATION

All coverage types demonstrate fairly steady PCP utilization over time

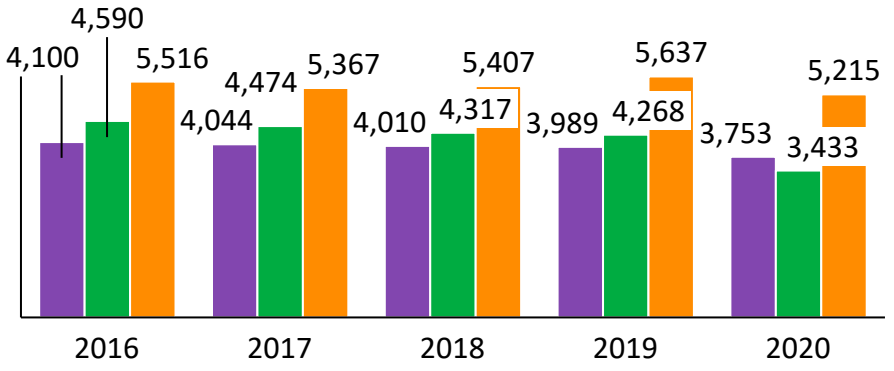
PCP utilization per 1K chronic members, Vermont by Coverage Type



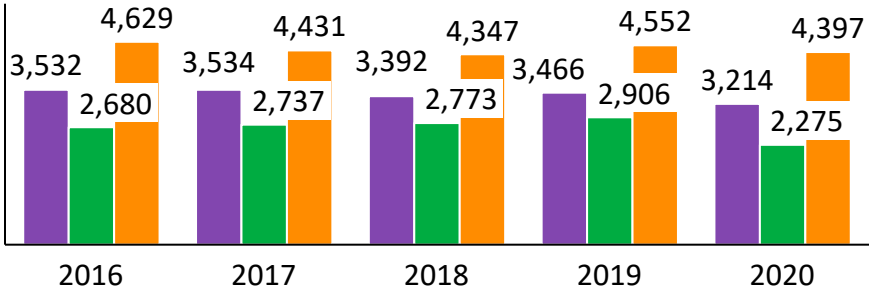
Key Takeaways

- The utilization difference between regions is the largest for the Medicare coverage type
- Overall PCP utilization between Commercial and Medicare is similar, but it varies by region

PCP utilization per 1K chronic members, Vermont Western Region by Coverage Type



PCP utilization per 1K chronic members, Vermont Eastern Region by Coverage Type

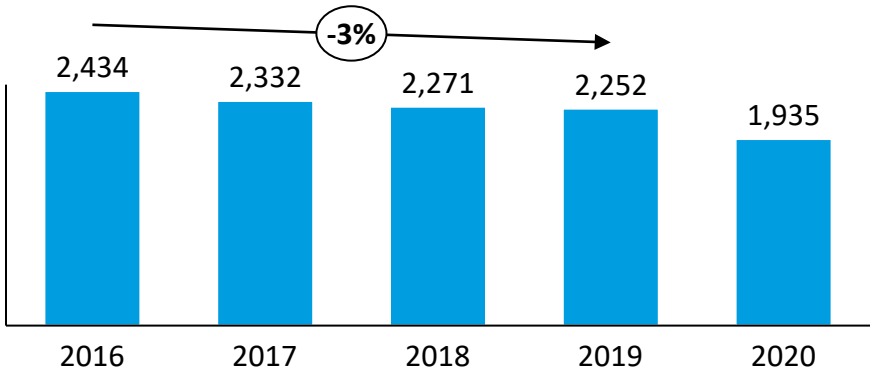


Commercial Medicare Medicaid

SPECIALIST VISIT UTILIZATION

Specialist visits are decreasing at similar rates (~3%) throughout all Regions and are doing so more rapidly than PCP visits

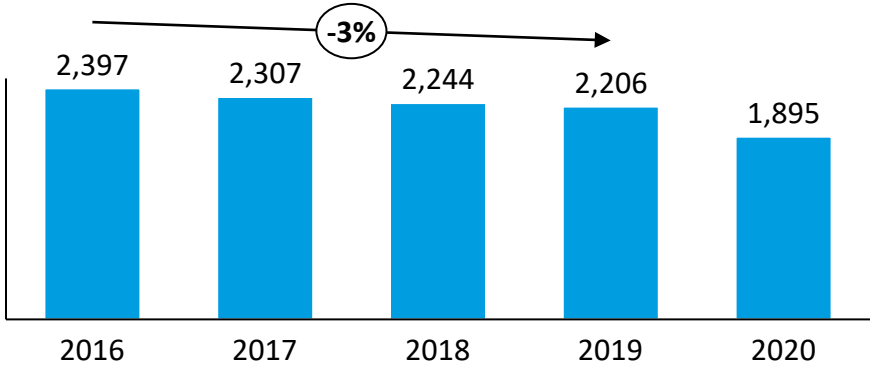
Specialist utilization per 1K chronic members, Vermont



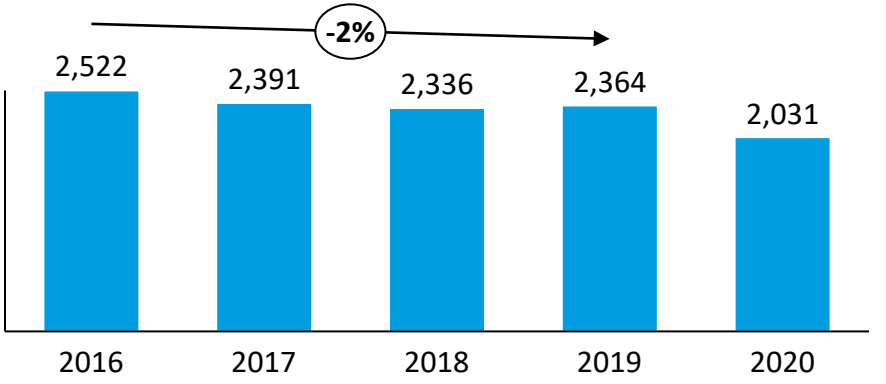
Key Takeaways

- The Western Region observed about 1% more decline in Specialist utilization year over year
- Specialist utilization is higher in the Eastern Region, which is the opposite of PCP utilization

Specialist utilization per 1K chronic members, Vermont Western Region



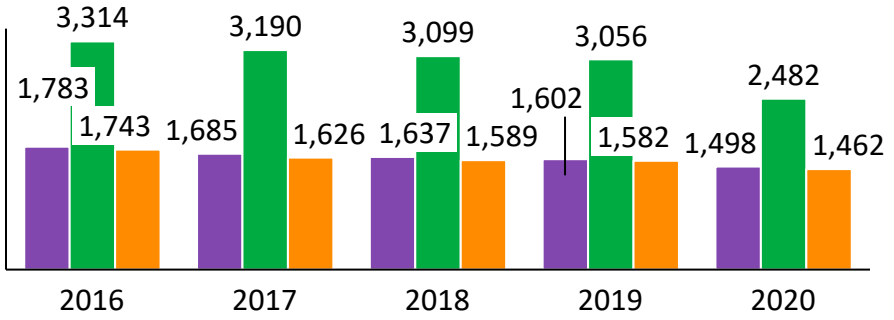
Specialist utilization per 1K chronic members, Vermont Eastern Region



SPECIALIST VISIT UTILIZATION

All coverage types demonstrate similar Specialist utilization patterns over time

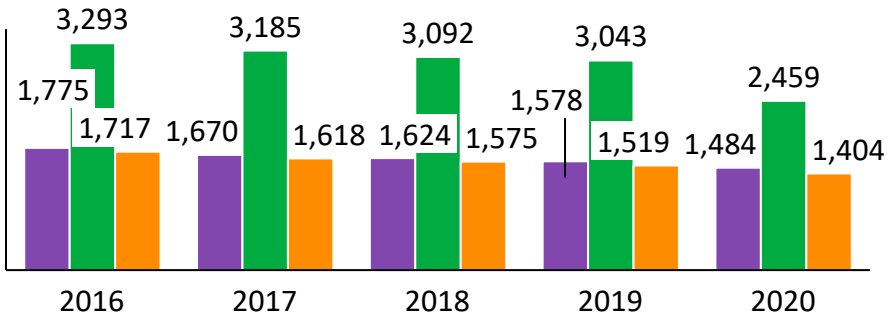
Specialist utilization per 1K chronic members, Vermont by Coverage Type



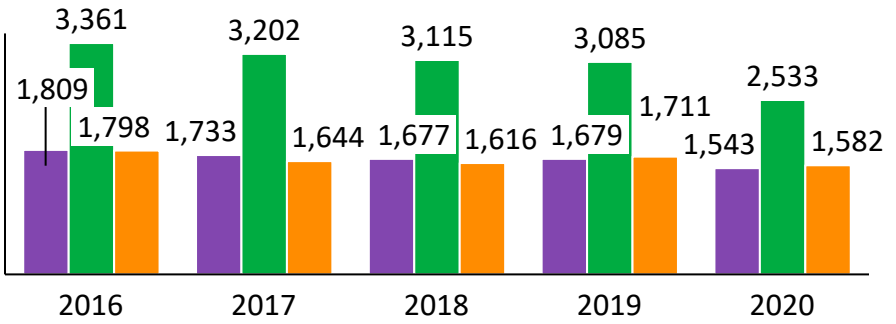
Key Takeaways

- From 2016 to 2019, Specialist utilization trend was negative for all coverage types in both regions
- Commercial and Medicaid have similar Specialist utilization
- Medicaid Specialist utilization is lower than other coverage types, which is the opposite of PCP utilization trends for this coverage type

Specialist utilization per 1K chronic members, Vermont Western Region



Specialist utilization per 1K chronic members, Vermont Eastern Region

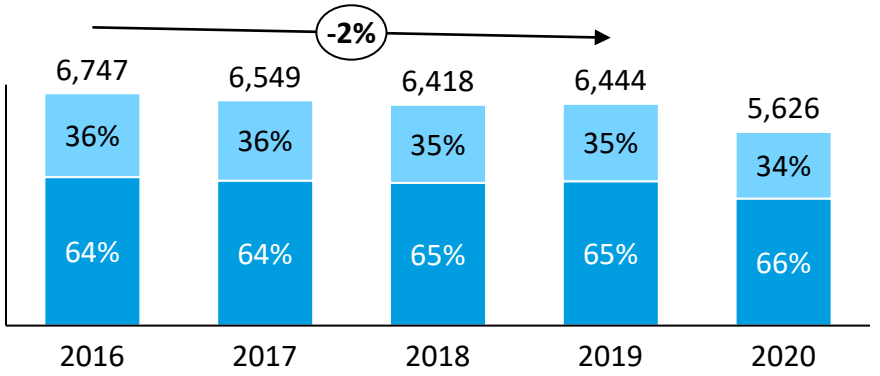


Commercial Medicare Medicaid

PCP AND SPECIALIST VISIT UTILIZATION

PCP visit percentage has grown slightly over time, with each Region demonstrating a similar trend as the State

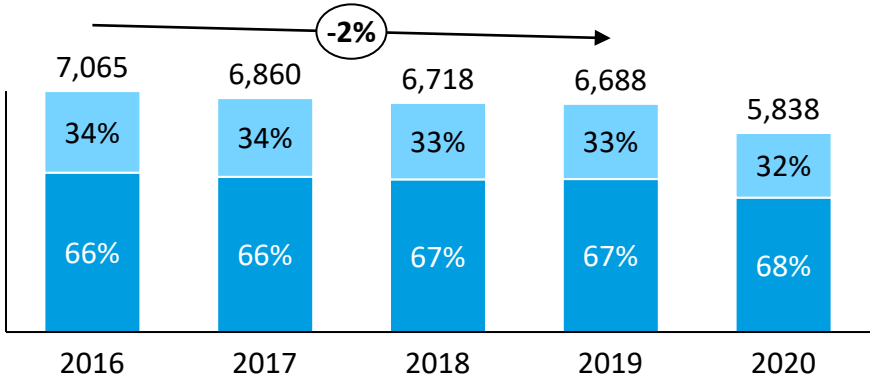
Combined PCP and Specialist utilization per 1K chronic members, Vermont



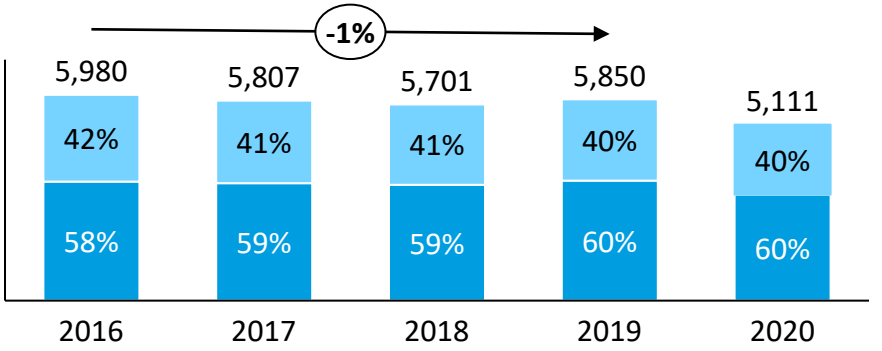
Key Takeaways

- The Western Region consistently has a higher reliance on PCPs (~+7%) than the Eastern Region
- Utilization trends are similar for both regions

Combined PCP and Specialist utilization per 1K chronic members, Vermont Western Region



Combined PCP and Specialist utilization per 1K chronic members, Vermont Eastern Region

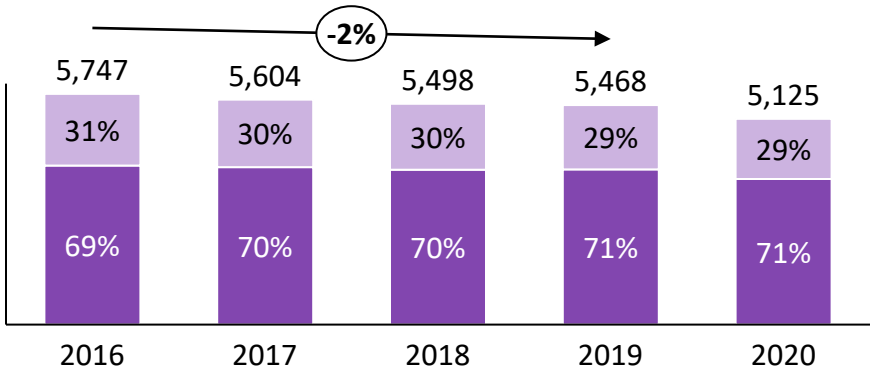


PCP Specialist

PCP AND SPECIALIST VISIT UTILIZATION: COMMERCIAL

Commercial coverage type is more reliant on PCP care over time when compared to the State

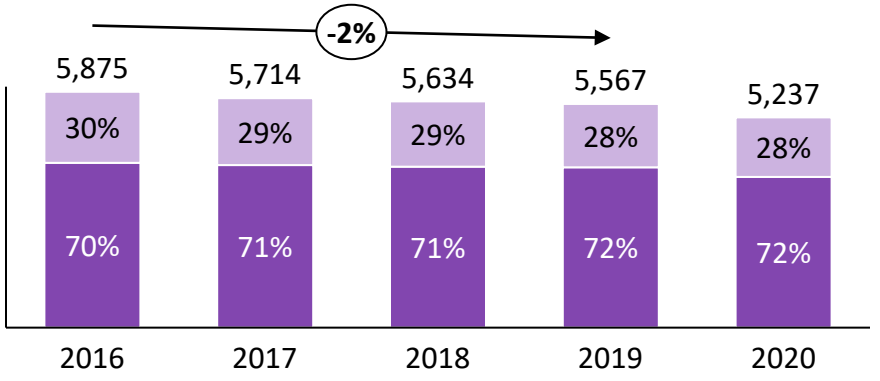
Combined PCP and Specialist utilization per 1K chronic members, Vermont



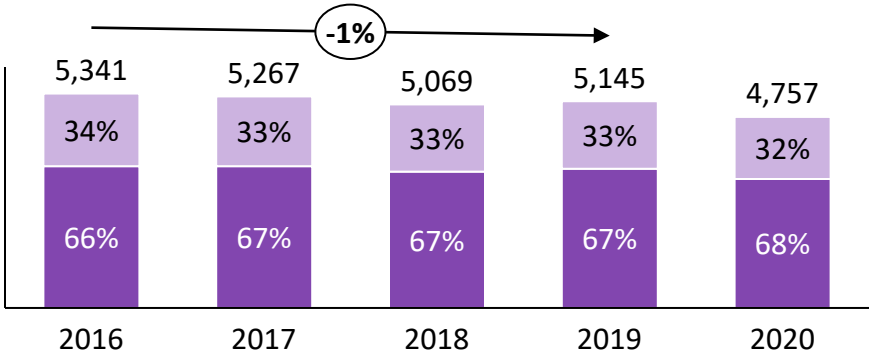
Key Takeaways

- Overall utilization is lower than the State average for all years
- The Commercial coverage type demonstrates a consistent care split pattern over time
- The Western Region consistently has a higher reliance on PCPs (~+4%) than the Eastern Region

Combined PCP and Specialist utilization per 1K chronic members, Vermont Western Region



Combined PCP and Specialist utilization per 1K chronic members, Vermont Eastern Region

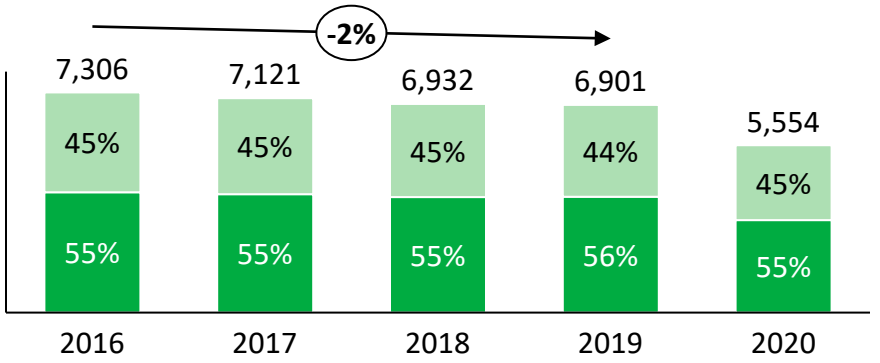


PCP Specialist

PCP AND SPECIALIST VISIT UTILIZATION: MEDICARE

The Western Region consistently has a significantly higher reliance on PCPs (~+12%) than the Eastern Region

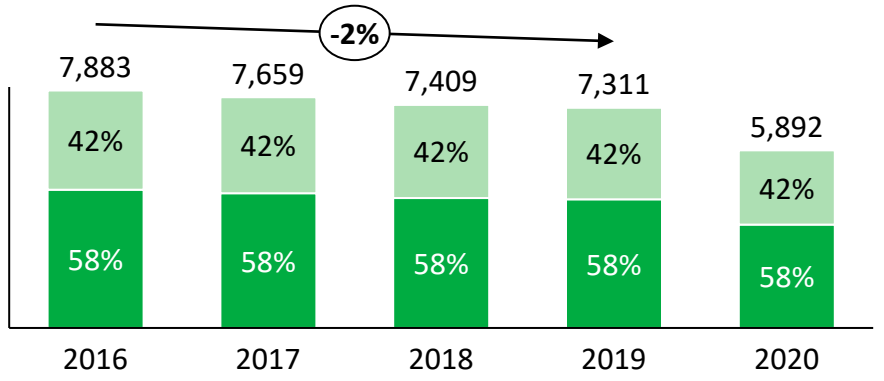
Combined PCP and Specialist utilization per 1K chronic members, Vermont



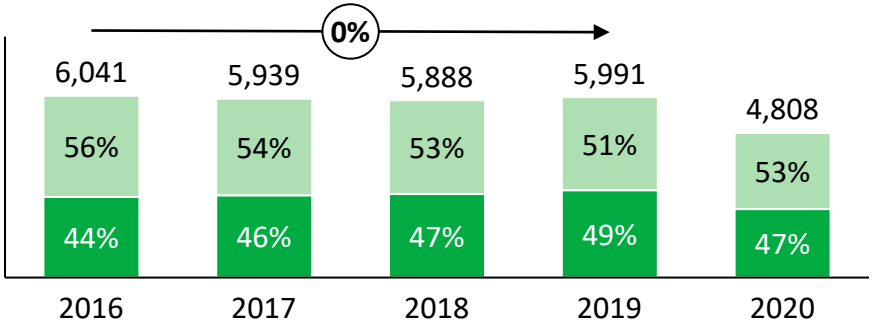
Key Takeaways

- There is a shift of about +5% in the percentage of PCP utilization in the Eastern Region over time
- The Western Region has a larger decline in overall utilization over time compared to the Eastern Region

Combined PCP and Specialist utilization per 1K chronic members, Vermont Western Region



Combined PCP and Specialist utilization per 1K chronic members, Vermont Eastern Region

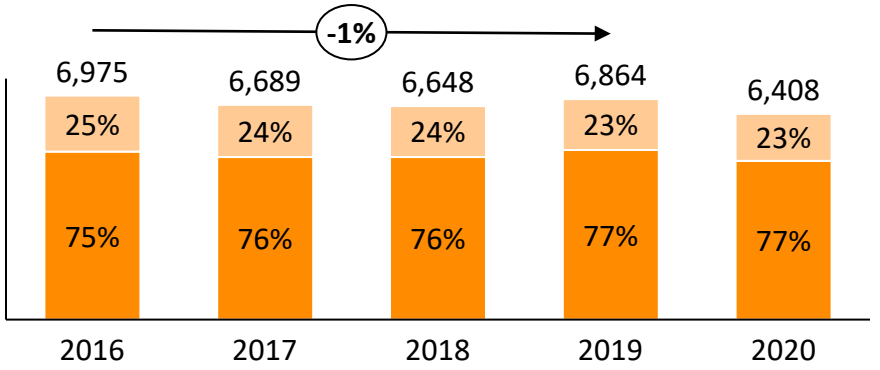


PCP Specialist

PCP AND SPECIALIST VISIT UTILIZATION: MEDICAID

The Medicaid coverage type utilizes far fewer Specialists when compared to other coverage types

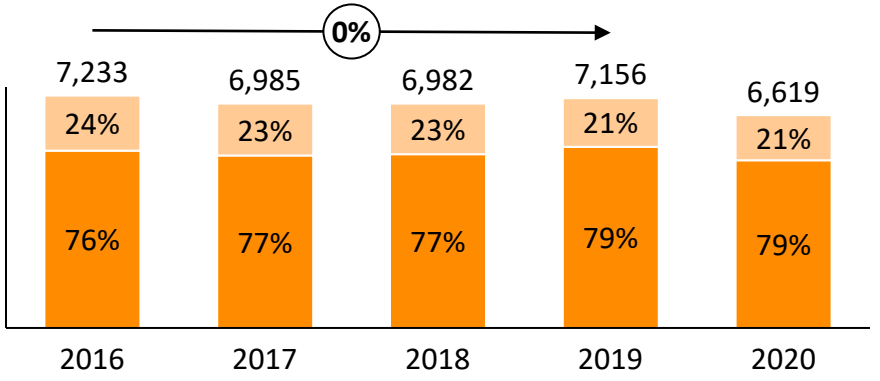
Combined PCP and Specialist utilization per 1K chronic members, Vermont



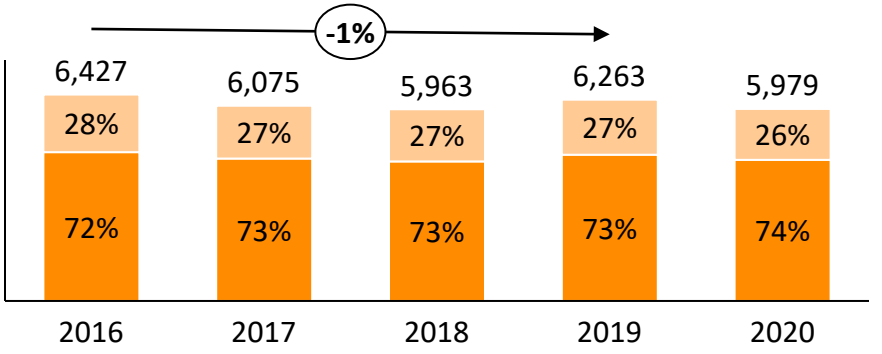
Key Takeaways

- Overall utilization is higher than the State average for all years, though trends are consistent with the State
- Medicaid coverage type is substantially more dependent on PCPs than Specialists for both regions when compared to Commercial and Medicare coverage types
- The Western Region consistently has a higher reliance on PCPs (~+4%) than the Eastern Region

Combined PCP and Specialist utilization per 1K chronic members, Vermont Western Region



Combined PCP and Specialist utilization per 1K chronic members, Vermont Eastern Region

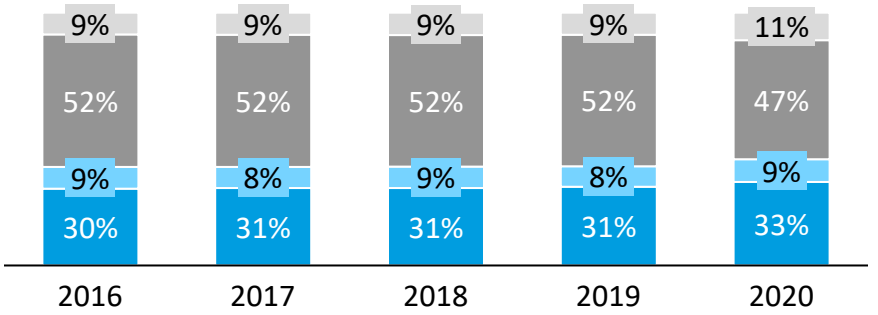


PCP Specialist

DISTRIBUTION OF MEMBERS BY MANAGEMENT TYPE

Majority of the chronic members are managed by both PCPs and Specialists with distribution of management types remaining steady over time

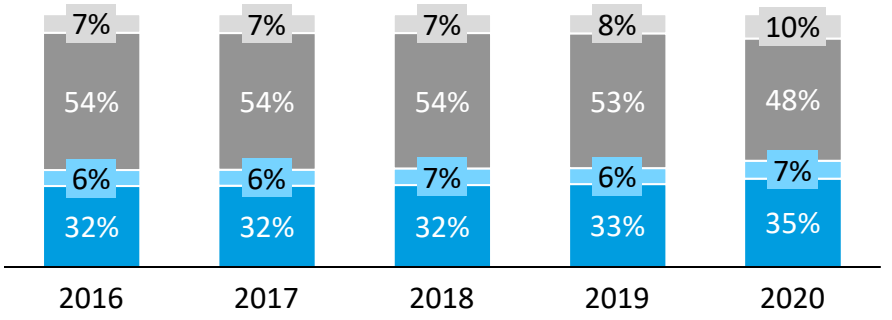
Distribution of management type for chronic members, Vermont



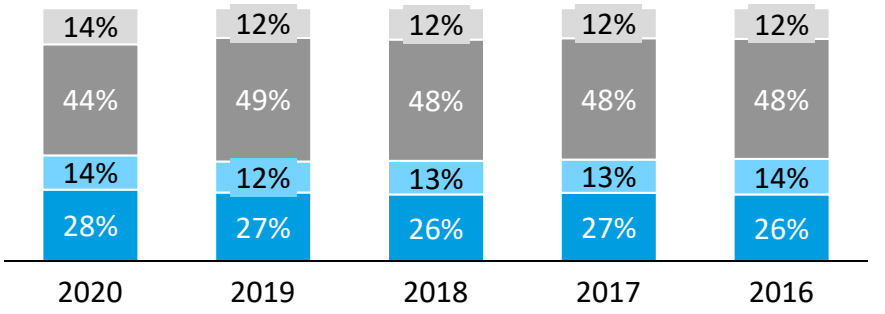
Key Takeaways

- Western Region is more reliant on both PCP and Specialist management than the Eastern Region (~+6%)

Distribution of management type for chronic members, Vermont Western Region



Distribution of management type for chronic members, Vermont Eastern Region

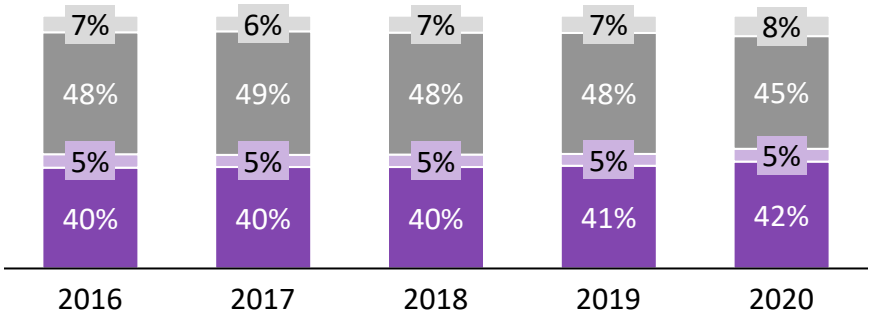


PCP Only | Specialist Only | Both PCP and Specialist | Neither

DISTRIBUTION OF MEMBERS BY MANAGEMENT TYPE: COMMERCIAL

Demonstrating similar trends to the State in total, the majority of the chronic population is managed by both PCPs and Specialists for the Commercial coverage type

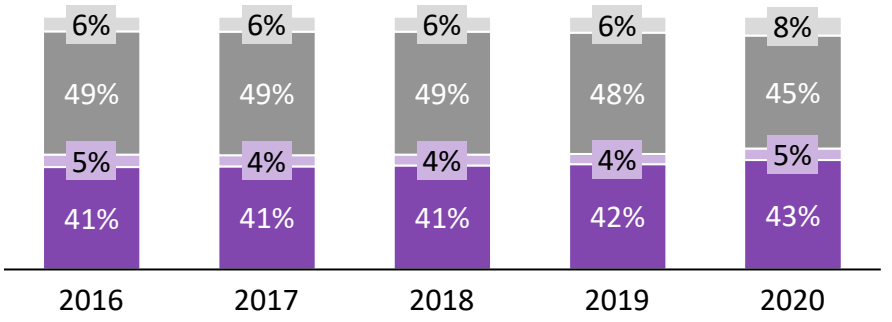
Distribution of management type for chronic members, Vermont



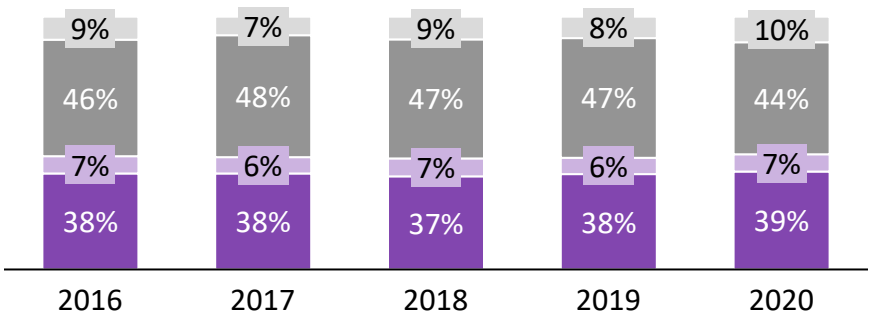
Key Takeaways

- The distribution of PCP Only and Specialist Only managed members remained constant over time
- A larger portion of the population is managed by a PCP Only when compared to the State

Distribution of management type for chronic members, Vermont Western Region



Distribution of management type for chronic members, Vermont Eastern Region

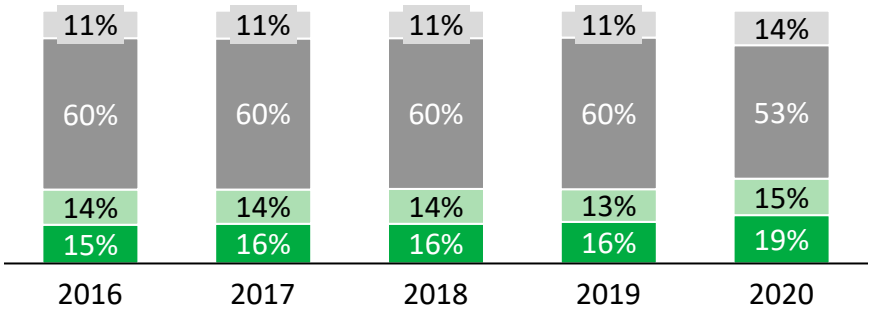


PCP Only | Specialist Only | Both PCP and Specialist | Neither

DISTRIBUTION OF MEMBERS BY MANAGEMENT TYPE: MEDICARE

The Eastern region is more reliant on Specialist Only management each year, while more members in the Western Region receive are managed by PCP Only or both PCPs and Specialists

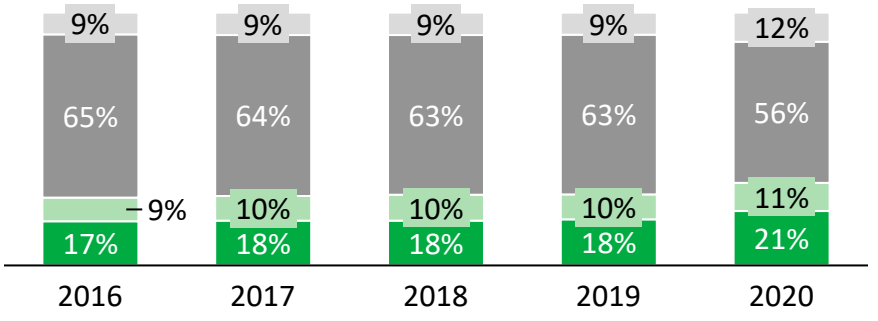
Distribution of management type for chronic members, Vermont



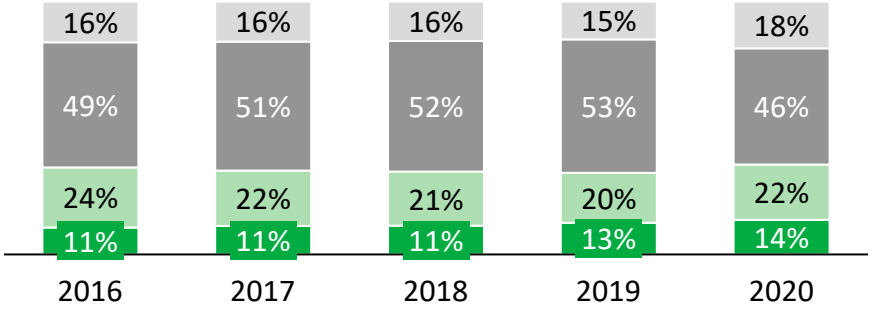
Key Takeaways

- There is a larger share of management by both PCPs and Specialists compared to the State in total
- Members only managed by a PCP is much lower than other coverage types

Distribution of management type for chronic members, Vermont Western Region



Distribution of management type for chronic members, Vermont Eastern Region

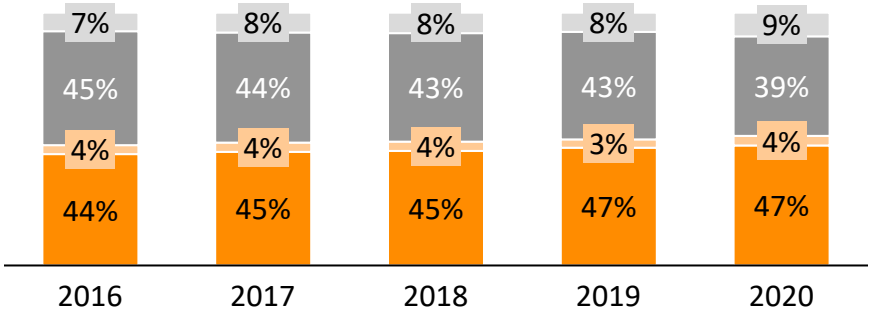


PCP Only | Specialist Only | Both PCP and Specialist | Neither

DISTRIBUTION OF MEMBERS BY MANAGEMENT TYPE: MEDICAID

The Medicaid coverage type becomes slightly more reliant on PCP Only care over time

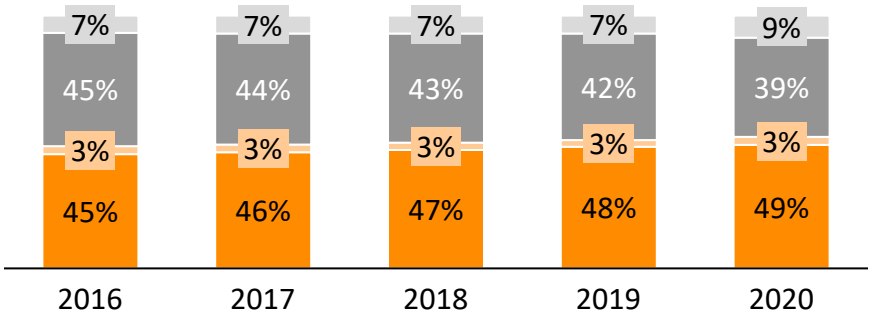
Distribution of management type for chronic members, Vermont



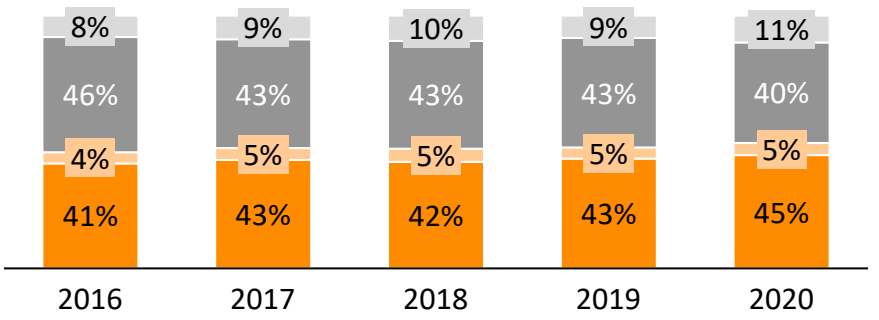
Key Takeaways

- The Medicaid coverage type observed a similar distribution of PCP Only and both PCP and Specialist care management types, particularly in the East
- Both Regions have a similar portion of population managed by both PCPs and Specialists

Distribution of management type for chronic members, Vermont Western Region



Distribution of management type for chronic members, Vermont Eastern Region

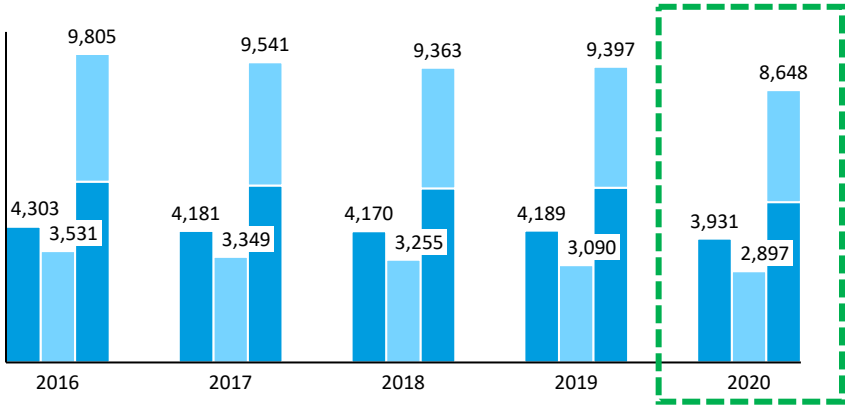


PCP Only | Specialist Only | Both PCP and Specialist | Neither

UTILIZATION OF PCP AND SPECIALIST VISITS BY MANAGEMENT TYPE

Members managed by both PCPs and Specialists have higher utilization in each category than those managed by only a PCP or Specialist

Combined PCP and Specialist utilization per 1K by management type for chronic members, Vermont

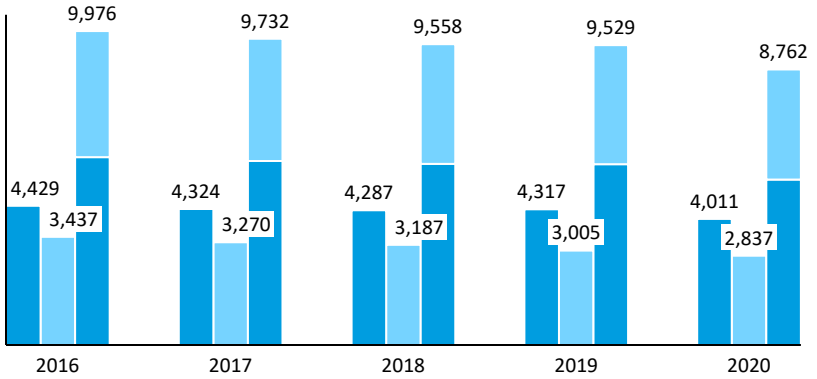


Key Takeaways

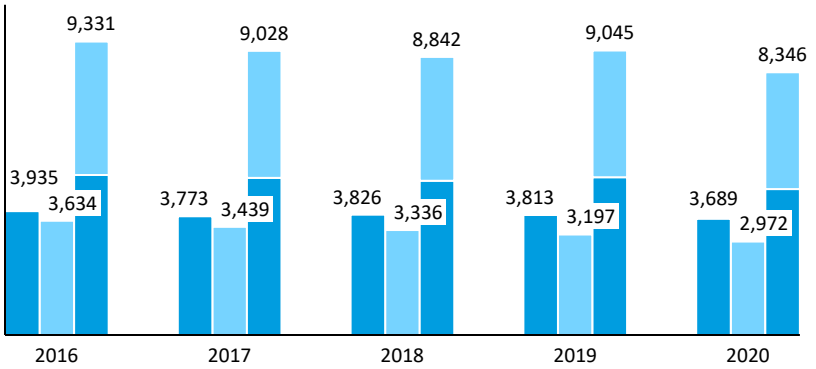
- Utilization for all management types is lower in the Eastern Region than in the Western Region

Management type (left to right): PCP Only, Specialist Only, Both PCPs and Specialists

Combined PCP and Specialist utilization per 1K by management type for chronic members, Vermont Western Region



Combined PCP and Specialist utilization per 1K by management type for chronic members, Vermont Eastern Region

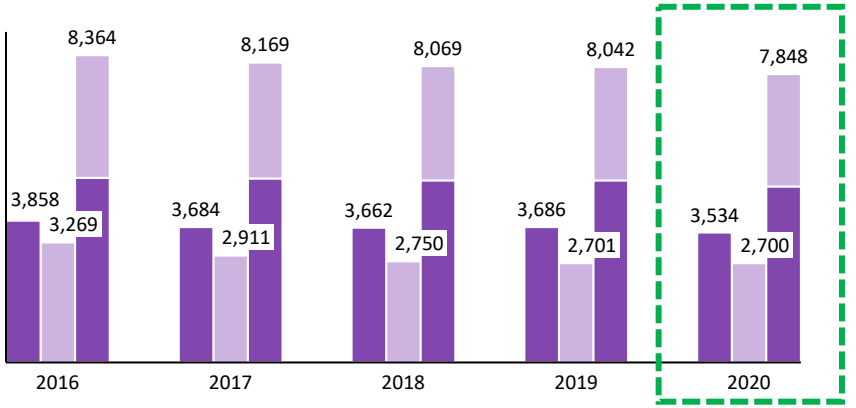


PCP Specialist

UTILIZATION OF PCP AND SPECIALIST VISITS BY MANAGEMENT TYPE: COMMERCIAL

Utilization for all three managements types is considerably lower for the Commercial coverage type than the State in total

Commercial PCP and Specialist utilization per 1K by management type for chronic members, Vermont

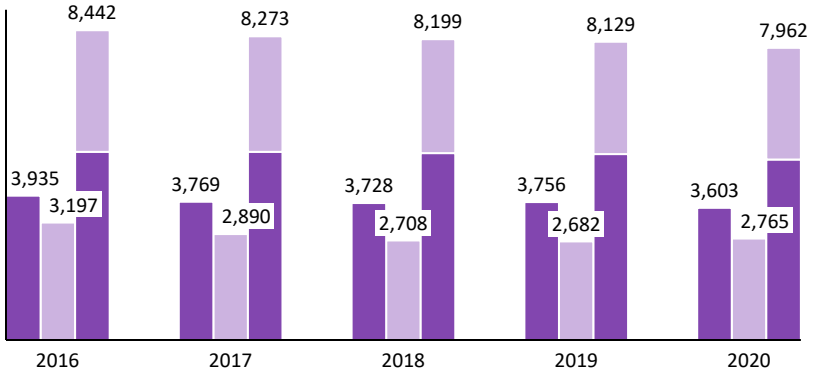


Key Takeaways

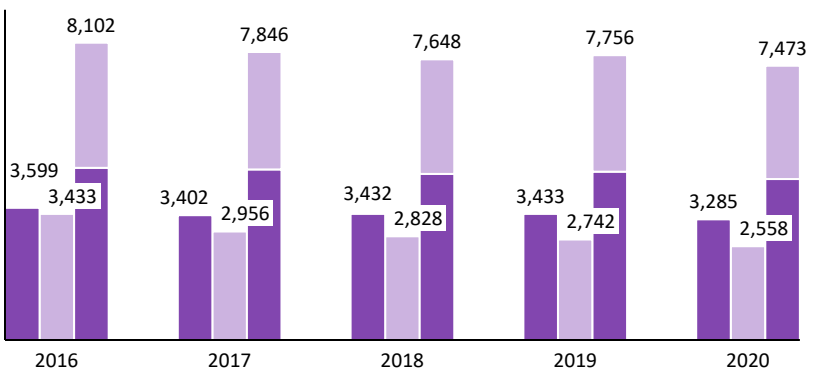
- The Eastern Region has slightly lower utilization than the Western Region for all three management types

Management type (left to right): PCP Only, Specialist Only, Both PCPs and Specialists

Commercial PCP and Specialist utilization per 1K by management type for chronic members, Vermont Western Region



Commercial PCP and Specialist utilization per 1K by management type for chronic members, Vermont Eastern Region

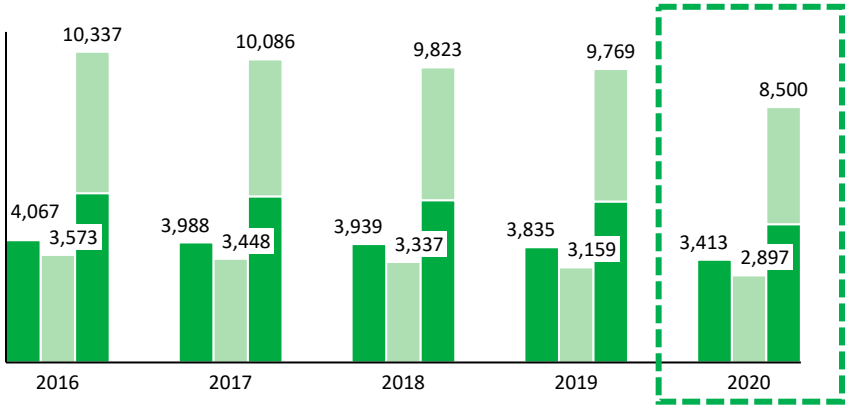


PCP Specialist

UTILIZATION OF PCP AND SPECIALIST VISITS BY MANAGEMENT TYPE: MEDICARE

Utilization patterns for the both PCP and Specialist management type is higher than the State in total

Medicare PCP and Specialist utilization per 1K by management type for chronic members, Vermont

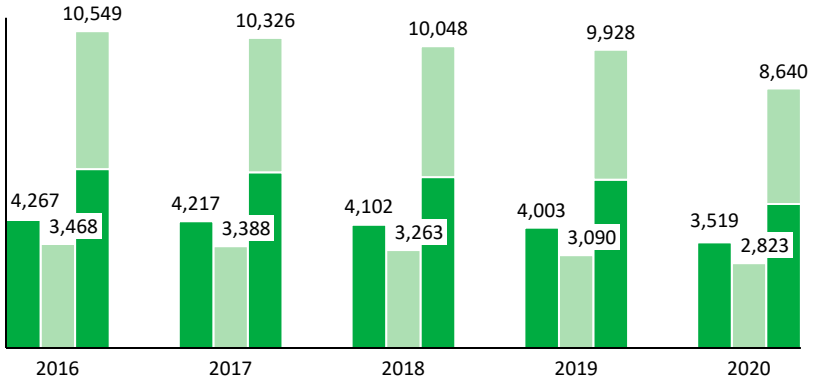


Key Takeaways

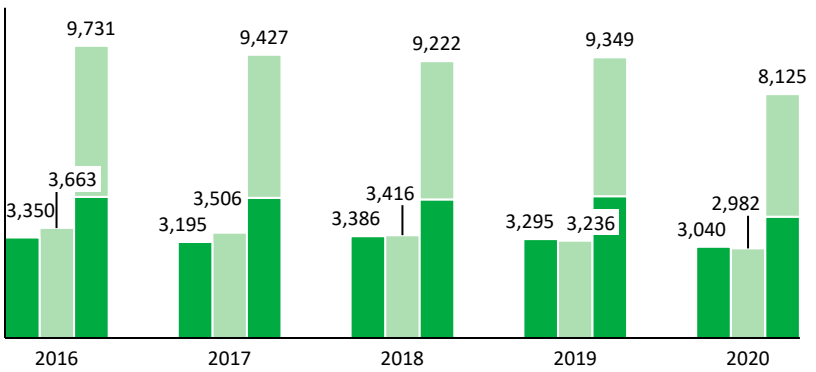
- Western Region PCP only managed members experienced much higher utilization patterns than the Eastern Region, although members managed either by Specialist only or both PCPs and Specialists demonstrate closer utilization between regions

Management type (left to right): PCP Only, Specialist Only, Both PCPs and Specialists

Medicare PCP and Specialist utilization per 1K by management type for chronic members, Vermont Western Region



Medicare PCP and Specialist utilization per 1K by management type for chronic members, Vermont Eastern Region

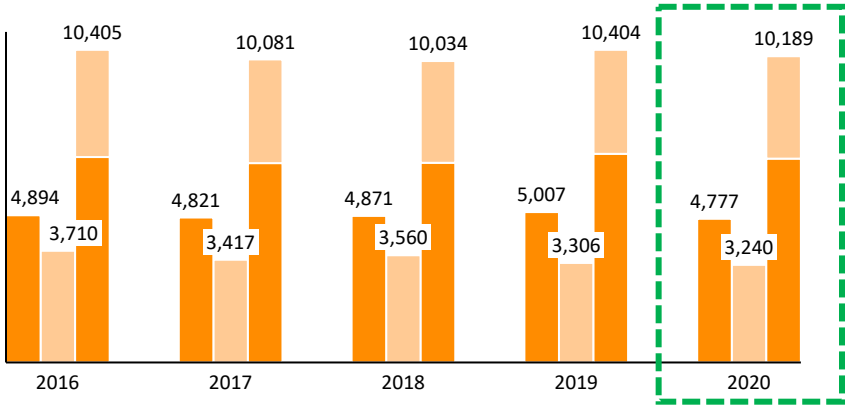


PCP Specialist

UTILIZATION OF PCP AND SPECIALIST VISITS BY MANAGEMENT TYPE: MEDICAID

Medicaid members have higher utilization in the Western Region when managed by only a PCP or both PCPs and Specialists

Medicare PCP and Specialist utilization per 1K by management type for chronic members, Vermont

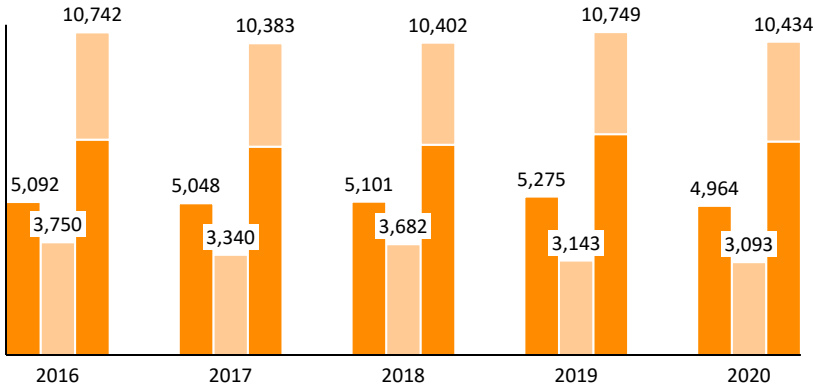


Key Takeaways

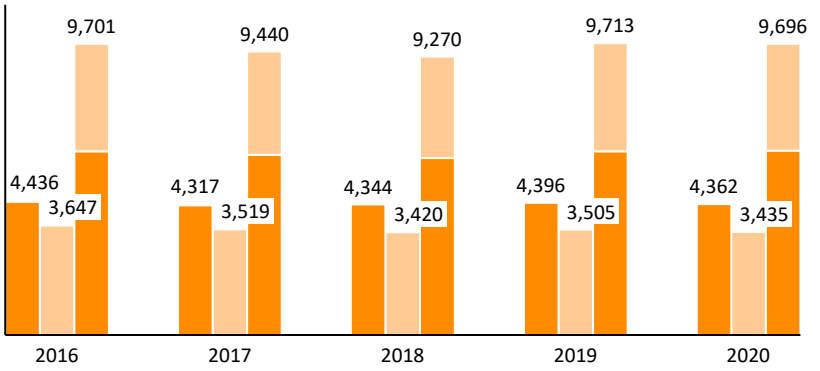
- The Medicaid coverage type experienced higher utilization patterns for PCP only management type when compared to other coverage types

Management type (left to right): PCP Only, Specialist Only, Both PCPs and Specialists

Medicare PCP and Specialist utilization per 1K by management type for chronic members, Vermont Western Region



Medicare PCP and Specialist utilization per 1K by management type for chronic members, Vermont Eastern Region

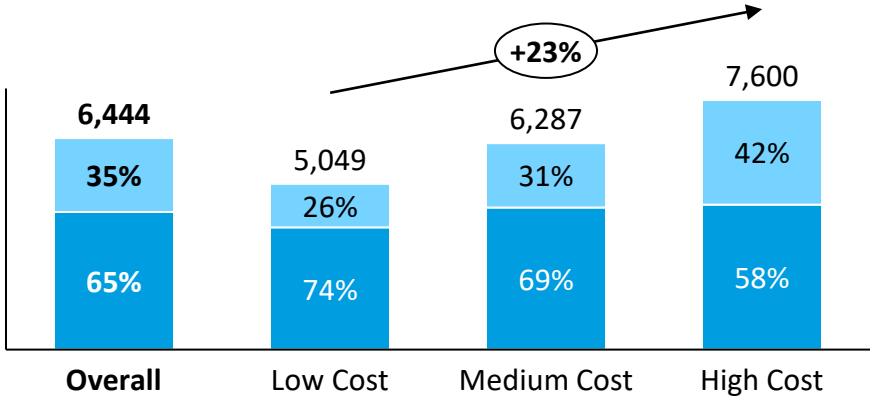


PCP Specialist

PCP & SPECIALIST VISITS BY REGION AND CHRONIC CONDITION GROUP: 2019

The percentage of visits by a Specialist increases as cost increases

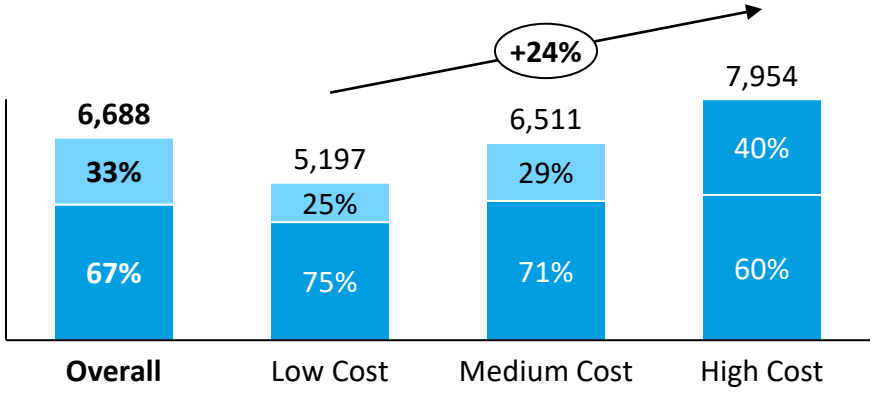
Combined office visit utilization by chronic condition group per 1K, Vermont



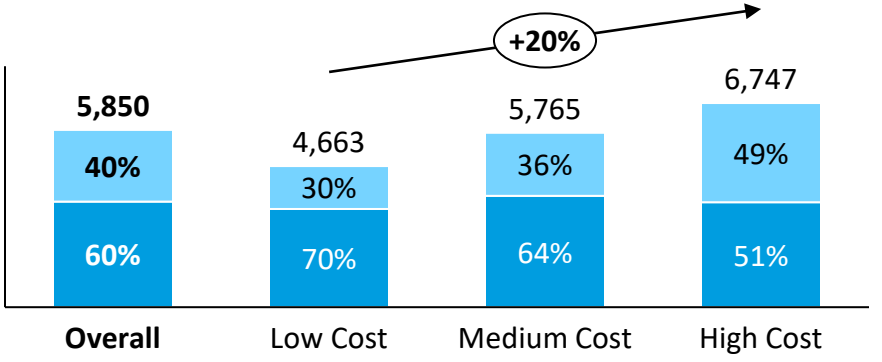
Key Takeaways

- All chronic condition groups rely more on Specialist care in the Eastern Region than the Western Region

Combined office visit utilization by chronic condition group per 1K, Vermont Western Region



Combined office visit utilization by chronic condition group per 1K, Vermont Eastern Region

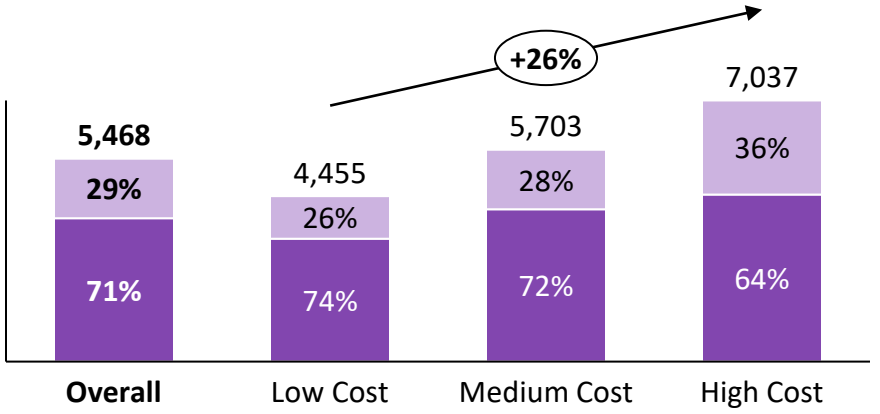


PCP Specialist

PCP & SPECIALIST VISITS BY REGION AND CHRONIC CONDITION GROUP: 2019 COMMERCIAL

Utilization trend between chronic condition groups is consistent across Regions

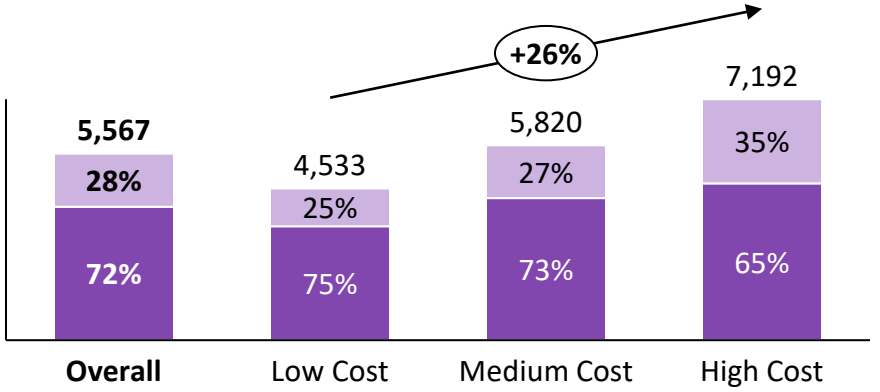
Combined office visit utilization by chronic condition group per 1K, Vermont



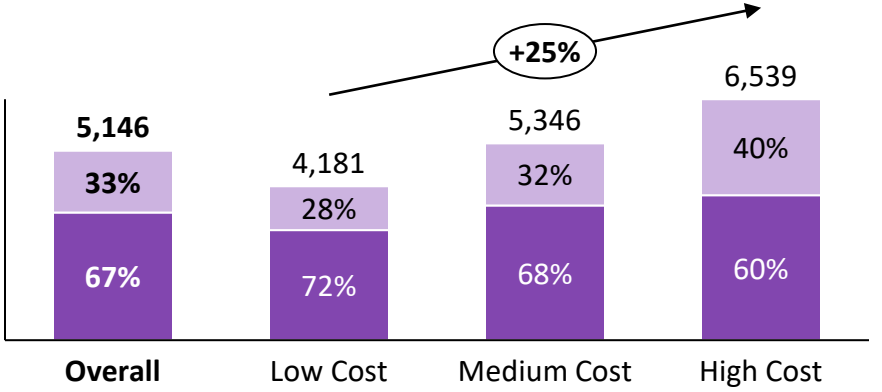
Key Takeaways

- Both regions observed an increased reliance on Specialist utilization within the high cost group
- All chronic condition groups rely more on Specialist care in the Eastern Region than the Western Region

Combined office visit utilization by chronic condition group per 1K, Vermont Western Region



Combined office visit utilization by chronic condition group per 1K, Vermont Eastern Region

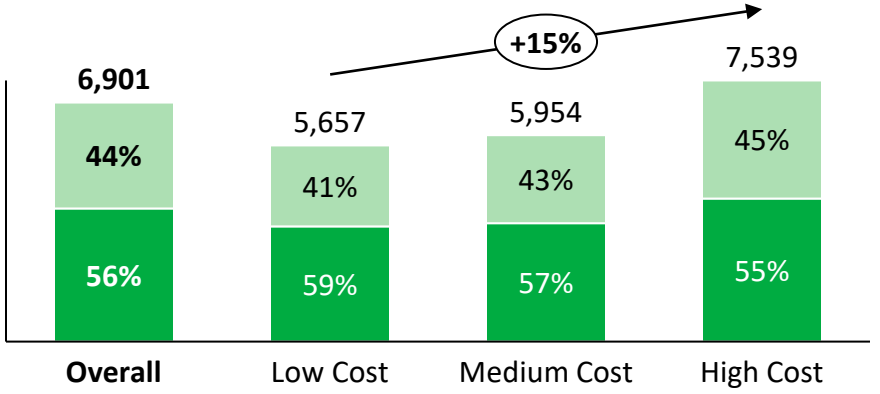


PCP Specialist

PCP & SPECIALIST VISITS BY REGION AND CHRONIC CONDITION GROUP: 2019 MEDICARE

Utilization trend between chronic condition groups is consistent across Regions and lower than other coverage types by ~12%

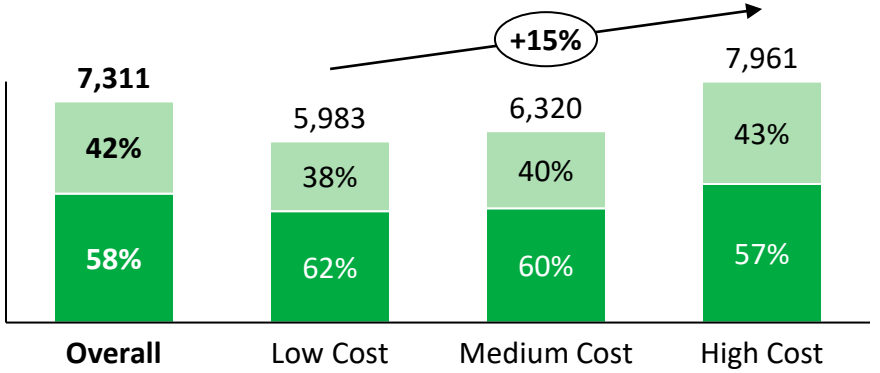
Combined office visit utilization by chronic condition group per 1K, Vermont



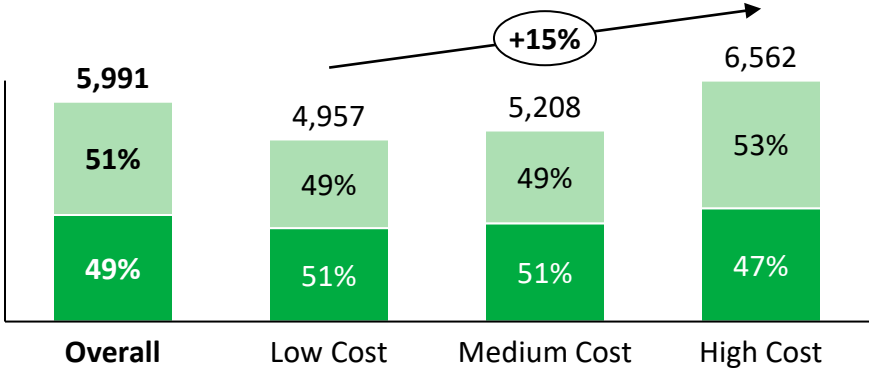
Key Takeaways

- Medicare trends in utilization are similar, although the Western Region has substantially higher utilization rates across all chronic condition groups
- Reliance on PCPs is much higher in the Western Region (~+10%) across all chronic condition groups compared to the Eastern Region

Combined office visit utilization by chronic condition group per 1K, Vermont Western Region



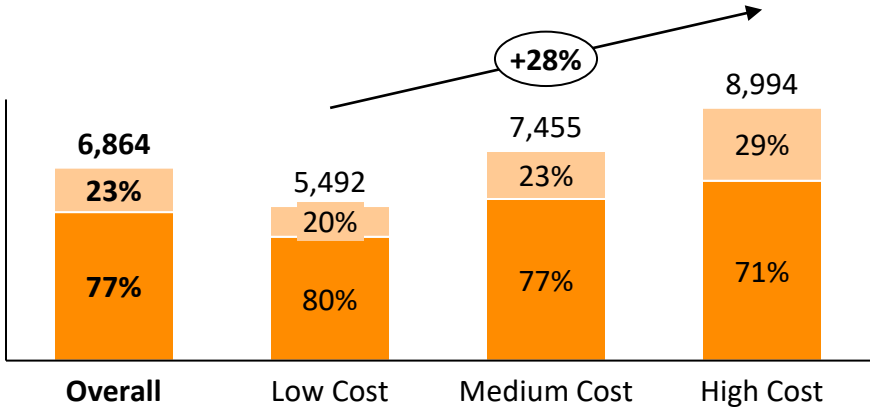
Combined office visit utilization by chronic condition group per 1K, Vermont Eastern Region



PCP & SPECIALIST VISITS BY REGION AND CHRONIC CONDITION GROUP: 2019 MEDICAID

Utilization trend between chronic condition groups is about 3% higher in the Eastern Region than the Western Region

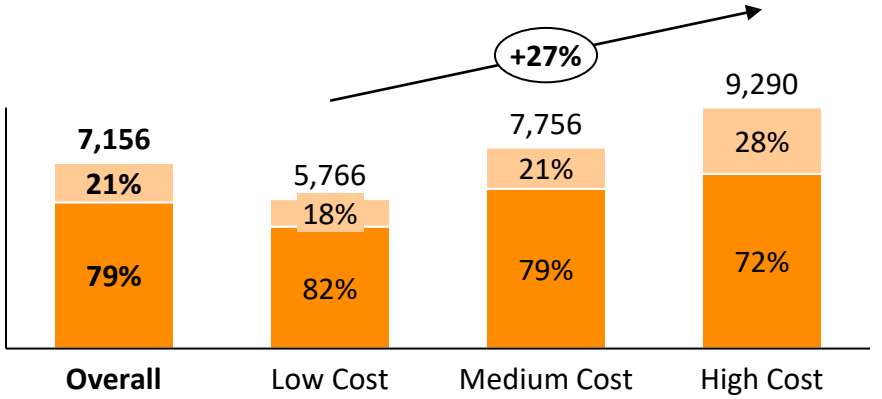
Combined office visit utilization by chronic condition group per 1K, Vermont



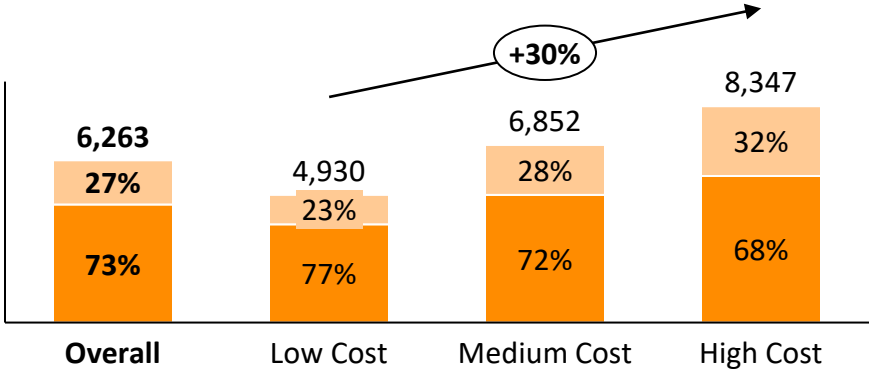
Key Takeaways

- Reliance on PCPs is higher in the Western Region (~+5%) across all chronic condition groups compared to the Eastern Region
- Both regions observed an increased reliance on Specialist utilization as the cost level increases

Combined office visit utilization by chronic condition group per 1K, Vermont Western Region



Combined office visit utilization by chronic condition group per 1K, Vermont Eastern Region

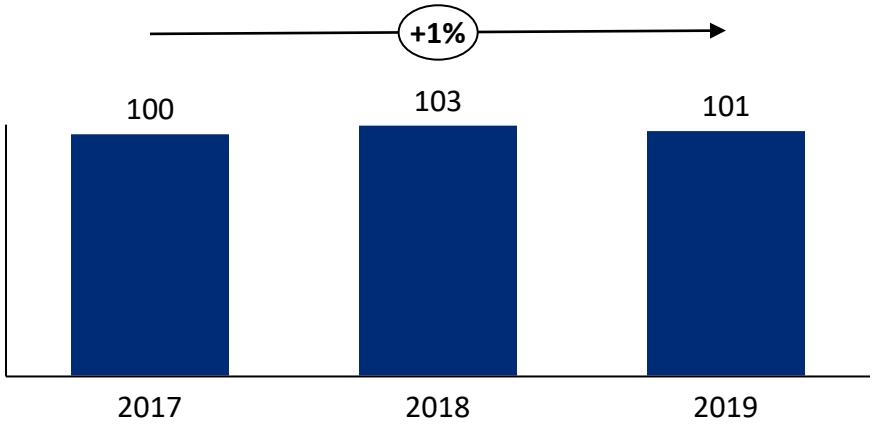


PCP Specialist

TIME BETWEEN PCP AND FOLLOW-UP SPECIALIST VISIT

Average wait times have remained steady over time

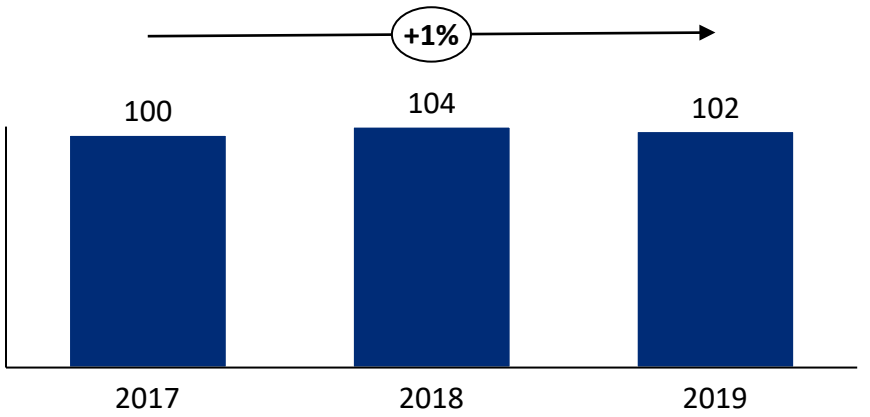
Average days between PCP and follow-up Specialist visit, Vermont



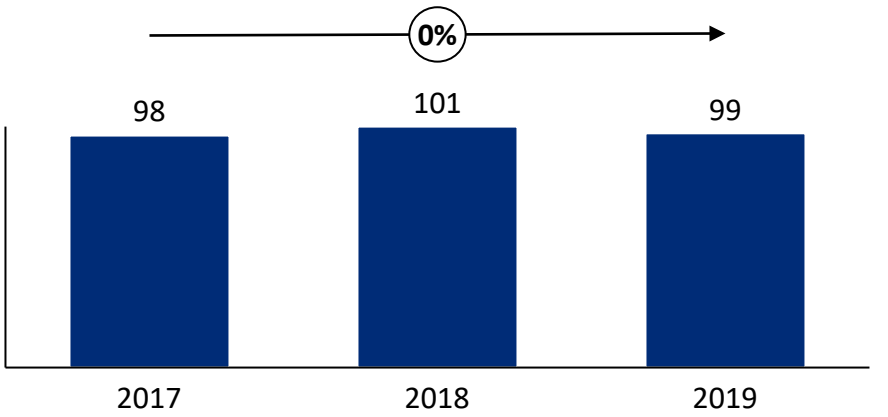
Key Takeaways

- Trends are consistent by region but there is a consistent, slightly longer wait time in the Western Region (~+3 days)

Average days between PCP and follow-up Specialist visit, Vermont Western Region



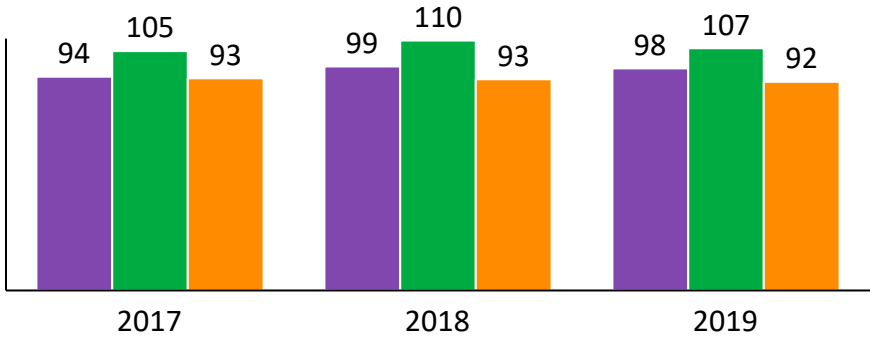
Average days between PCP and follow-up Specialist visit, Vermont Eastern Region



TIME BETWEEN PCP AND FOLLOW-UP SPECIALIST VISIT

Commercial and Medicare coverage types demonstrate a slight increase in wait times while Medicaid wait times remain consistent over time

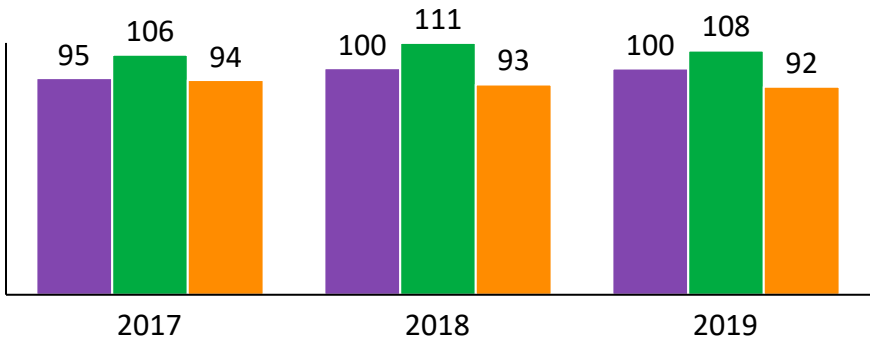
Average days between PCP and follow-up Specialist visit, Vermont by Coverage Type



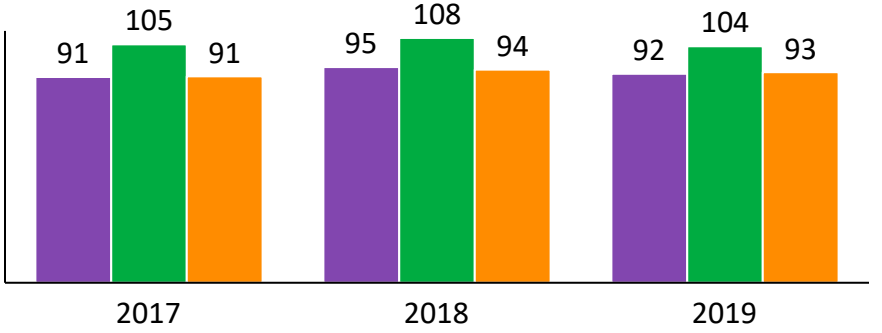
Key Takeaways

- The Medicare coverage type consistently observed the longest wait time
- In general, wait times are longer in the Western Region with the largest difference in the Commercial coverage type

Average time between PCP and follow-up Specialist visit, Vermont Western Region by Coverage Type



Average time between PCP and follow-up Specialist visit, Vermont Eastern Region by Coverage Type

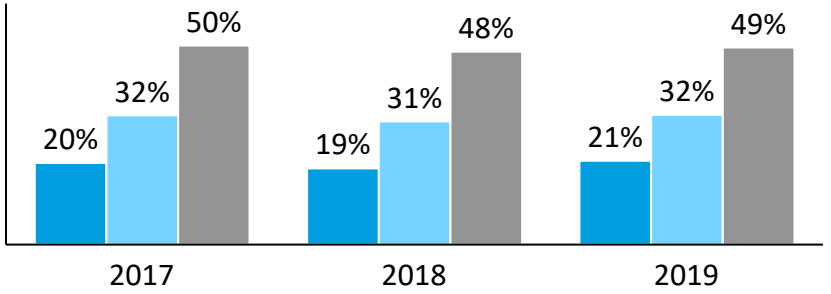


Commercial Medicare Medicaid

PERCENTAGE OF FOLLOW-UP SPECIALIST VISITS THAT OCCUR WITHIN X DAYS

Wait times within X days remain fairly consistent over time

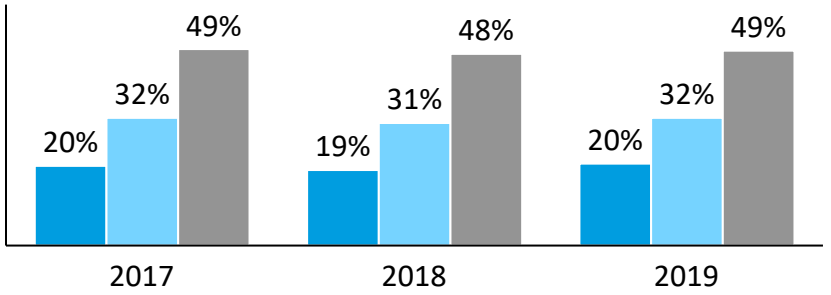
Percentage of follow-up Specialist visits that occur within X days, Vermont



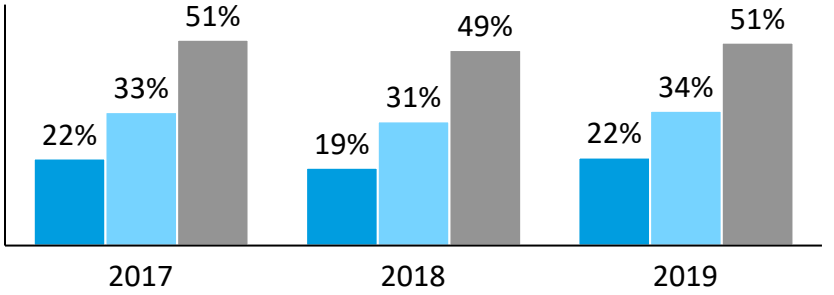
Key Takeaways

- The Eastern Region demonstrates a slightly higher portion of the follow-up specialist visits occur within X days

Percentage of follow-up Specialist visits that occur within X days, Vermont Western Region



Percentage of follow-up Specialist visits that occur within X days, Vermont Eastern Region

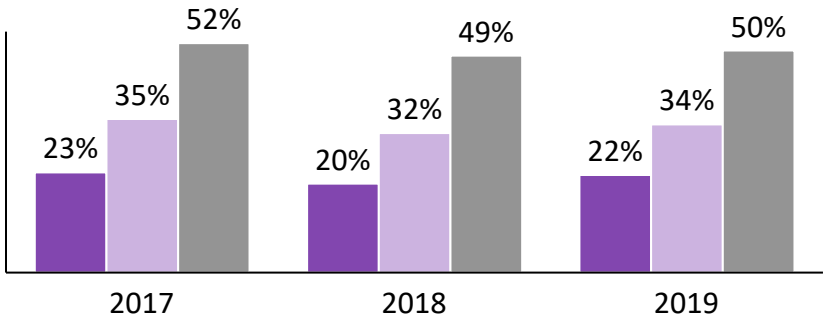


14 days 28 days 60 days

PERCENTAGE OF FOLLOW-UP SPECIALIST VISITS THAT OCCUR WITHIN X DAYS: COMMERCIAL

Roughly half of the chronic Commercial follow-up visits occur within 60 days

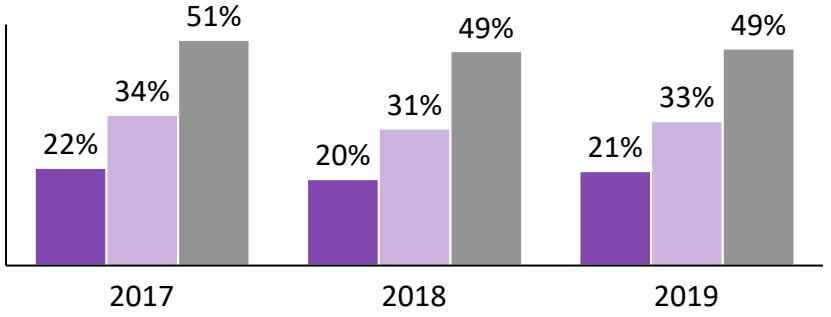
Percentage of follow-up Specialist visits that occur within X days, Vermont



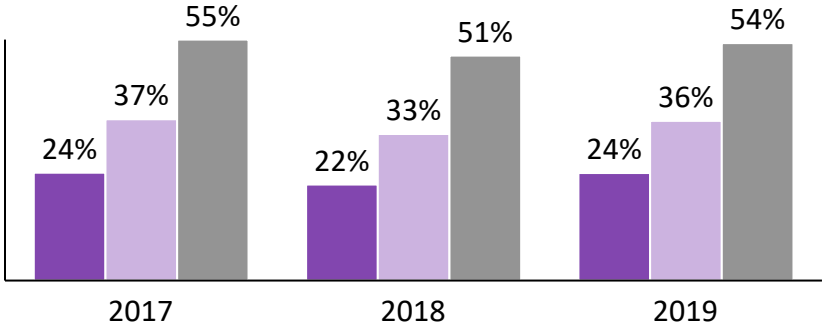
Key Takeaways

- Wait time results are generally in-line with the State in total
- Percentage of follow-up visits within X days are slightly higher for the Eastern Region than the Western Region

Percentage of follow-up Specialist visits that occur within X days, Vermont Western Region



Percentage of follow-up Specialist visits that occur within X days, Vermont Eastern Region

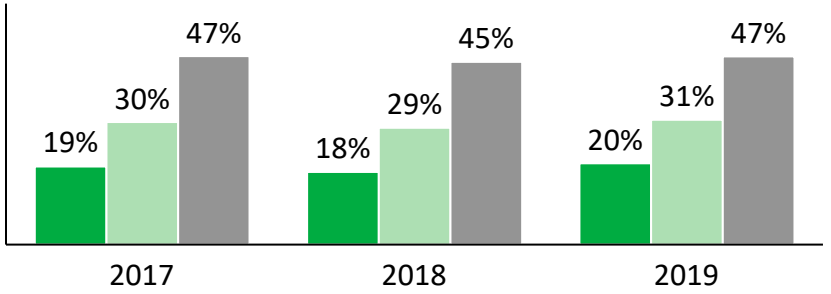


14 days 28 days 60 days

PERCENTAGE OF FOLLOW-UP SPECIALIST VISITS THAT OCCUR WITHIN X DAYS: MEDICARE

Wait time distributions are slightly lower when compared to the State in total for the Medicare coverage type

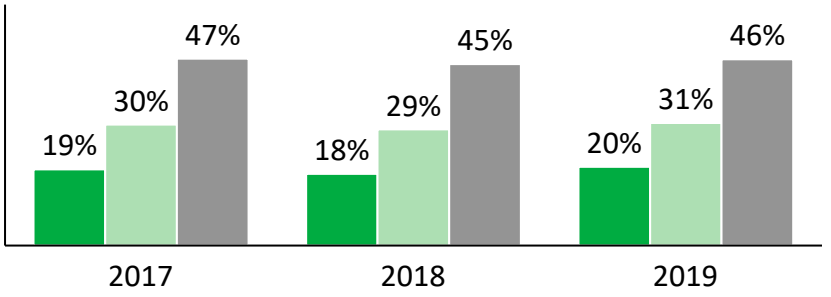
Percentage of follow-up Specialist visits that occur within X days, Vermont



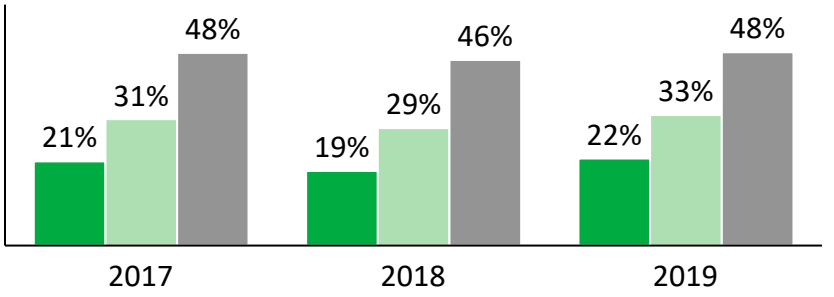
Key Takeaways

- Fewer follow-up specialist visits occurred within X days when compared to Vermont in total
- Wait times remained consistent over time by region and in total

Percentage of follow-up Specialist visits that occur within X days, Vermont Western Region



Percentage of follow-up Specialist visits that occur within X days, Vermont Eastern Region

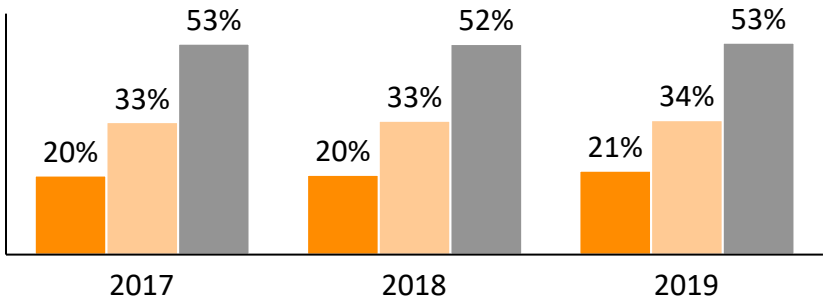


14 days 28 days 60 days

PERCENTAGE OF FOLLOW-UP SPECIALIST VISITS THAT OCCUR WITHIN X DAYS: MEDICAID

The Medicaid coverage type has a higher portion of follow-up visits occurring within 60 days when compared to Vermont in total

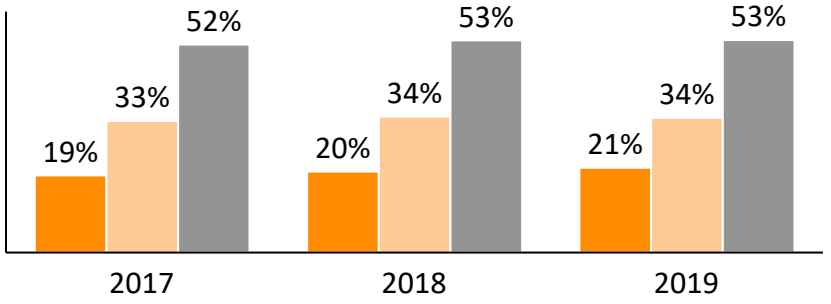
Percentage of follow-up Specialist visits that occur within X days, Vermont



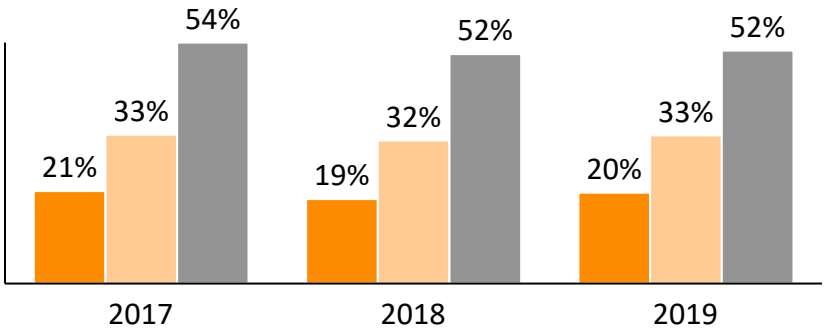
Key Takeaways

- Results are fairly consistent by region, but the Western Region is showing a slight increase in the portion of follow-up visits occurring within 14 days

Percentage of follow-up Specialist visits that occur within X days, Vermont Western Region



Percentage of follow-up Specialist visits that occur within X days, Vermont Eastern Region

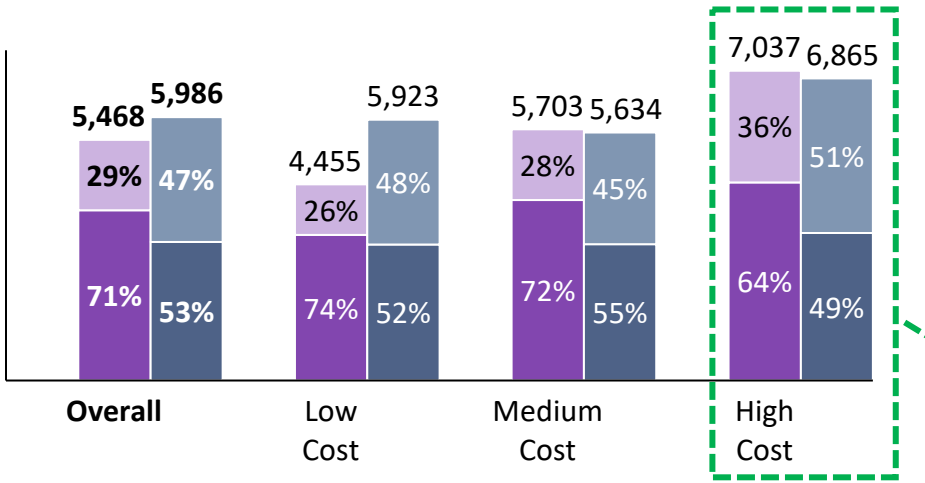


14 days 28 days 60 days

PCP & SPECIALIST VISITS BY REGION VS. PEER STATES[1]: COMMERCIAL 2019

Combined utilization in Vermont is less than that of its peer states for both Regions, but is more similar in the Western Region

Combined office visit utilization per 1K, Vermont

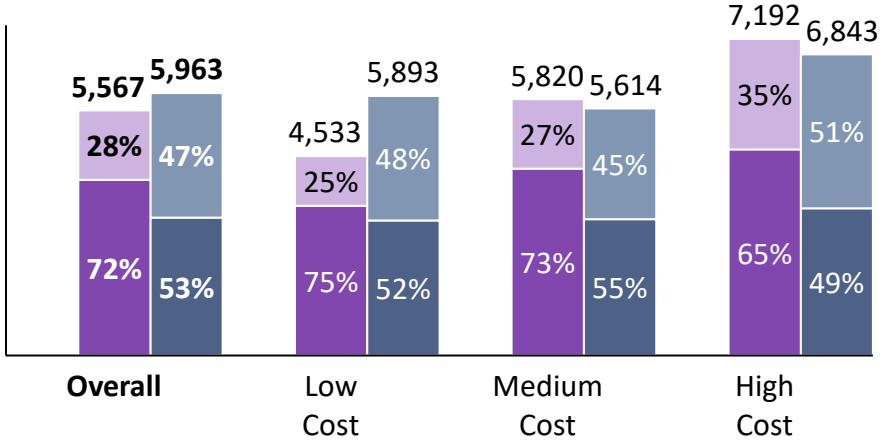


Key Takeaways

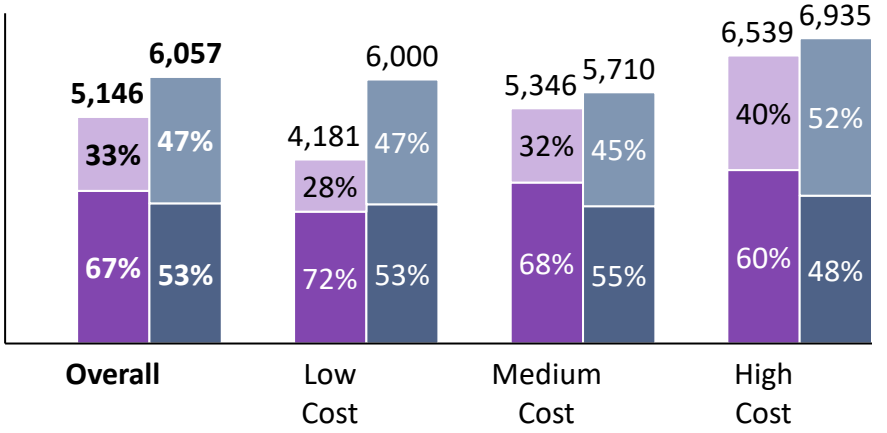
- There is less of an overall office visit utilization gap for members with higher overall cost than for members with lower overall cost
- The split between PCP and Specialist is impacted by differing levels of detail with specialty type identification among the various data sources, and is mainly driven by more NP/PA identification in the Vermont data

Left to Right: Vermont (PCP: Dark Purple, Specialist: Light Purple)
Peer States (PCP: Dark Grey, Specialist: Light Grey)

Combined office visit utilization per 1K, Vermont Western Region



Combined office visit utilization per 1K, Vermont Eastern Region

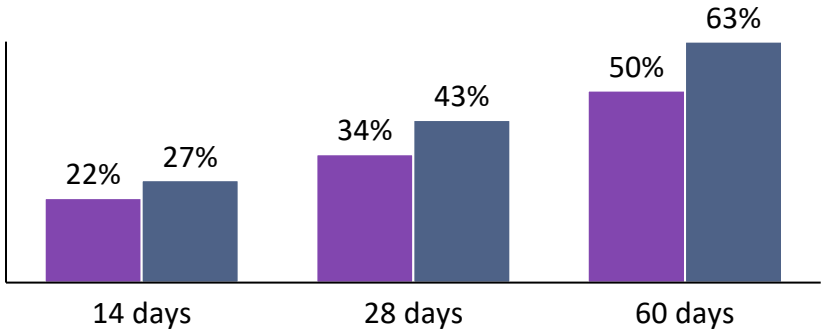


[1] Members included in the peer group were drawn from CBSAs identified as managed or well managed, and utilized propensity matching to ensure a mix by demographics and chronic conditions similar to that of the Vermont Commercial population represented in VHCURES

PERCENTAGE OF FOLLOW-UP SPECIALIST VISITS THAT OCCUR WITHIN X DAYS IN VERMONT VS. PEER STATES[1]: COMMERCIAL 2019

Follow-up visits with a specialist occur more quickly in the peer states than in Vermont

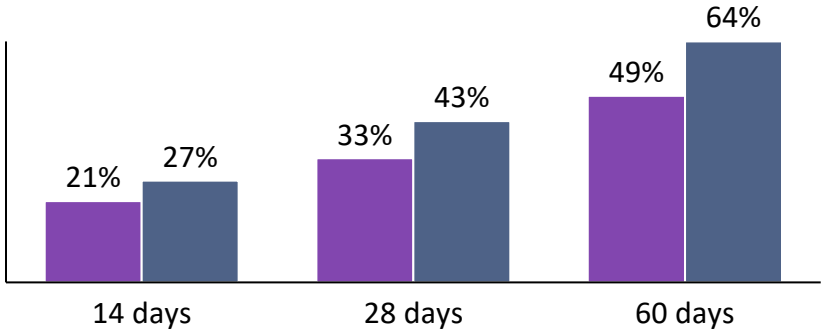
Percentage of follow-up Specialist visits that occur within X days



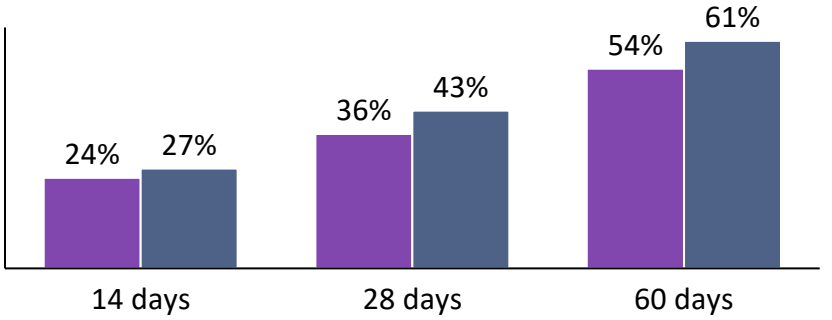
Key Takeaways

- Fewer follow-up visits with a specialist occur within 14, 28 or 60 days in Vermont than in the peer states
- The percentages do not differ significantly between the Eastern Region ad the Western Region

Percentage of follow-up Specialist visits that occur within X days, Western Region



Percentage of follow-up Specialist visits that occur within X days, Vermont Eastern Region



Vermont Peer States

[1] Members included in the peer group were drawn from CBSAs identified as managed or well managed, and utilized propensity matching to ensure a mix by demographics and chronic conditions similar to that of the Vermont Commercial population represented in VHCURES

6

BEHAVIORAL HEALTH FACILITIES

BEHAVIORAL HEALTH FACILITIES

Question

- Does Vermont have sufficient mental health capacity (in beds) to meet population demand?
- How do key utilization metrics change in Vermont over time?
- How do key utilization metrics in Vermont compare to the peer markets?

Data Sources

- 2016 to 2020 VHCURES
  - Members were assigned to a single coverage type each month based on the primary insurance indicator field
  - Members with both Medicare and Medicaid primary flags (i.e., dual eligible) were assigned to Medicare
  - While 2020 results are included, they are likely impacted by the COVID-19 pandemic which may lead to differing results when compared to prior years
- 2019 IBM Watson MarketScan Commercial Database
  - Used for Commercial peer state comparison
  - Limited to PPO members
- 2019 Medicare 5% LDS
  - Used for Medicare peer state comparison
  - Includes dual eligible members

BEHAVIORAL HEALTH FACILITIES

Assumptions

- Behavioral Health events, including both Mental Health and Substance Abuse (MHSA), were flagged based on the presence of a primary diagnosis code beginning with F present on a claim
  - Codes in the range F70-F79 were excluded
  - Codes in the range F10-F19 were considered substance abuse
- Inpatient hospital admissions were based on the Type of Setting field for VHCURES, as a reliable Place of Service was not present in the data, and the presence of place of service 21 for MarketScan and the Medicare 5% LDS
  - Claims without an admit and discharge date were not used in the length of stay or readmission rate calculations
- Emergency Department (ED) visits were based on the presence of place of service 23 for professional claims and revenue code 250-259 or procedure codes 99281-99289 for outpatient facility claims
  - Utilization is counted for each unique member and date of service combination
- Observation visits were based on the presence of revenue code 762 for facility claims
  - Utilization is counted for each unique member and date of service combination
- An admit is considered a readmission when it occurred within 30 days of a prior MHSA discharge
- For ED time metrics, claims were limited to each member's 2nd or later ED visit in a given year

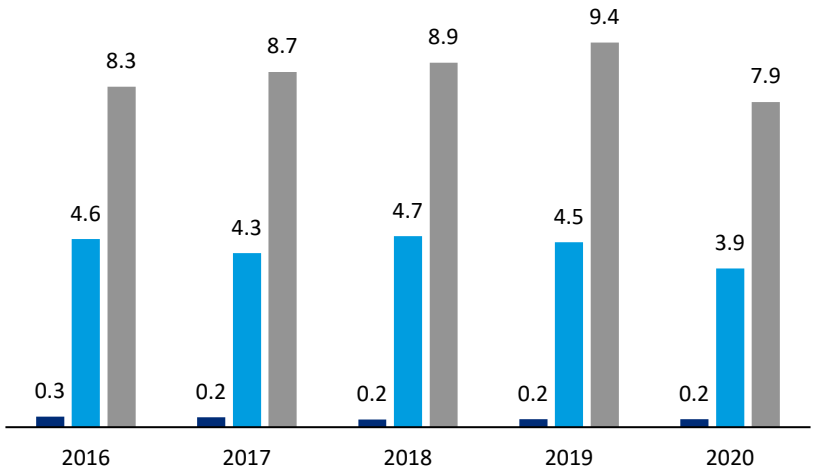
Methodology

1. Segment members into cohorts based on year, coverage type, and region
2. Pull all desired MHSA inpatient, ED, and observation services
3. Group services into MHSA categories based on primary diagnosis code (i.e., MH vs SA)
4. Summarize utilization metrics by type of service, MHSA category, and member cohort
5. Summarize inpatient length of stay and readmission metrics by MHSA category and member cohort
6. Summarize ED time metrics by MHSA category and member cohort
7. Repeat the above steps for all data sources
8. Compare metrics by member groupings, year (VHCURES only), and across data sources to determine key insights

UTILIZATION PER 1K MHSA SERVICES OVER TIME: COMMERCIAL

Utilization for ED visits is consistently higher in the Western Region in recent years

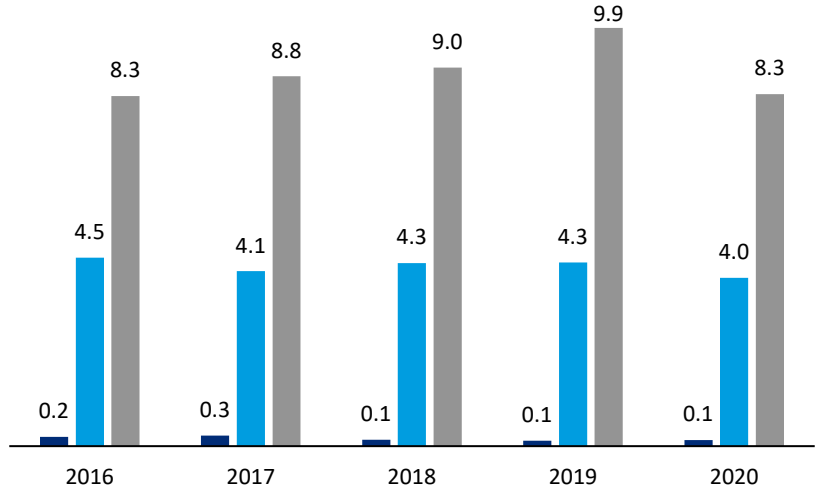
Utilization per 1K MHSA services, Vermont



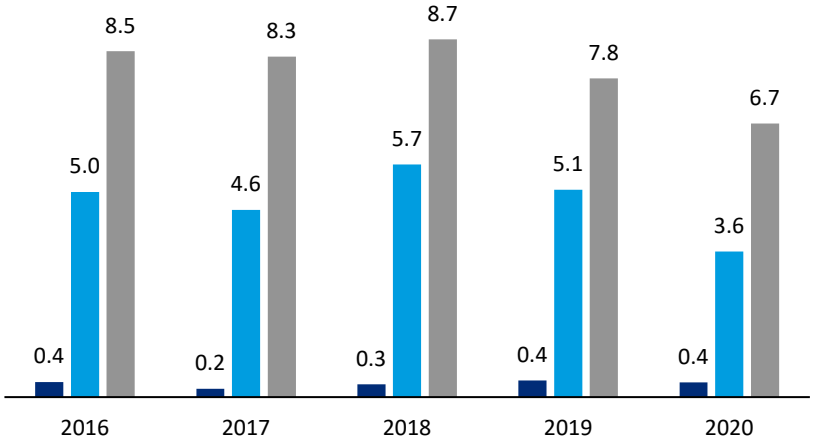
Key Takeaways

- ED Utilization increased steadily from 2016 to 2019 in the Western Region, offsetting a decrease in the Eastern Region
- Utilization of other MHSA services studied remained relatively stable over time
- Observed decreases in MHSA admissions and ED visits in 2020 are likely due to the COVID-19 pandemic which is consistent with national trends

Utilization per 1K MHSA services, Vermont Western Region



Utilization per 1K MHSA services, Vermont Eastern Region

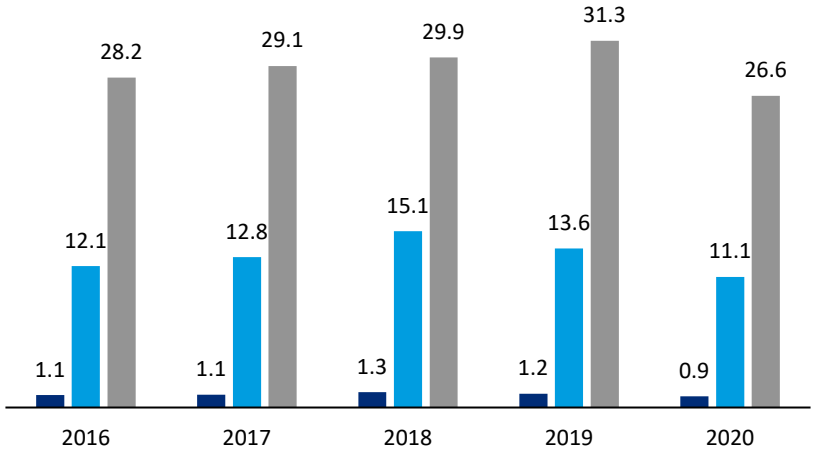


Observation IP ED

UTILIZATION PER 1K FOR MHSA SERVICES OVER TIME: MEDICARE

A steady increase in utilization can be observed from 2016 to 2019 for all MHSA services studied

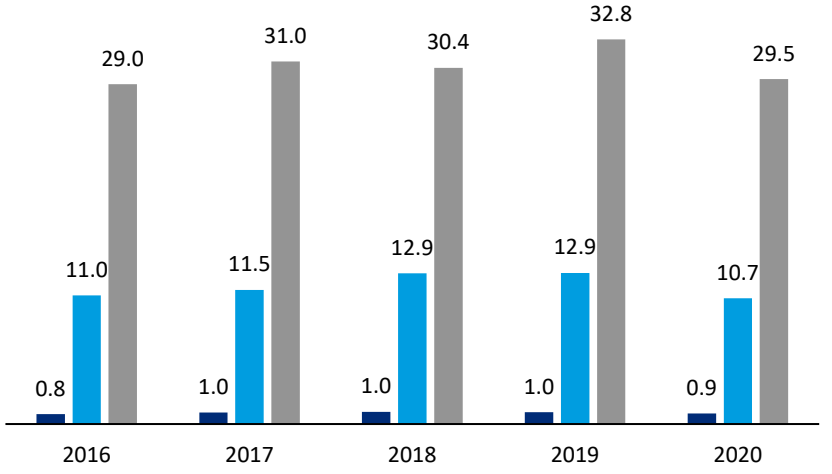
Utilization per 1K for MHSA services, Vermont



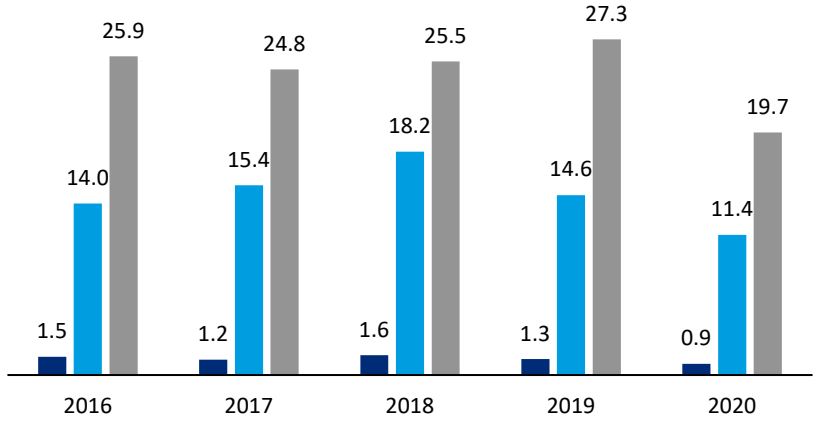
Key Takeaways

- ED utilization steadily increased from 2016 to 2019 in total with varying changes by Region
- Inpatient admissions spiked in the Eastern Region in 2018
- Observed decreases in MHSA admissions and ED visits in 2020 are likely due to the COVID-19 pandemic which is consistent with national trends

Utilization per 1K for MHSA services, Vermont Western Region



Utilization per 1K for MHSA services, Vermont Eastern Region

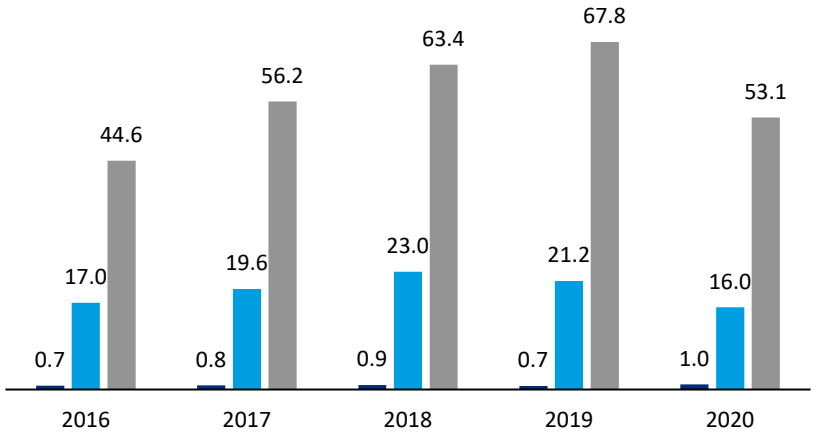


Observation IP ED

UTILIZATION PER 1K FOR MHSA SERVICES OVER TIME: MEDICAID

Large increases in ED utilization for MHSA services has been observed from 2016 to 2019

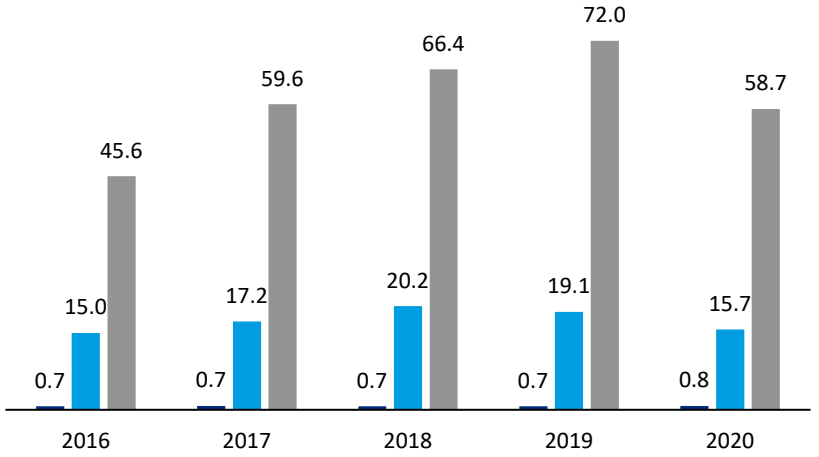
Utilization per 1K for MHSA services, Vermont



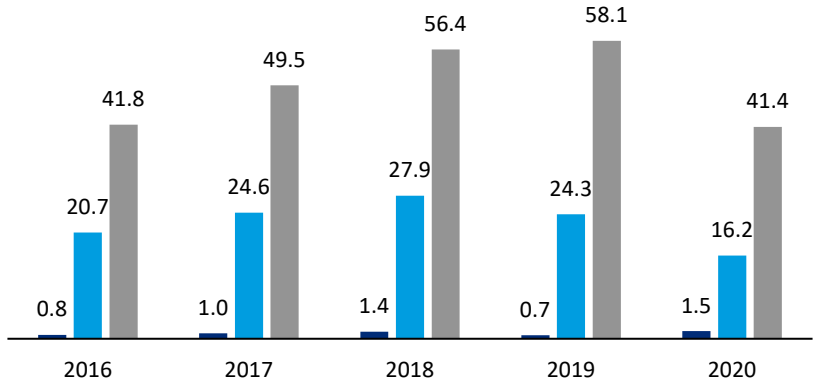
Key Takeaways

- The increase in ED utilization for MHSA services from 2016 to 2019 was observed across both Regions, however the increase was much greater in the Western Region
- Inpatient admissions spiked in 2018, with the largest impact being in the Eastern Region
- Observed decreases in MHSA admissions and ED visits in 2020 are likely due to the COVID-19 pandemic which is consistent with national trends

Utilization per 1K for MHSA services, Vermont Western Region



Utilization per 1K for MHSA services, Vermont Eastern Region

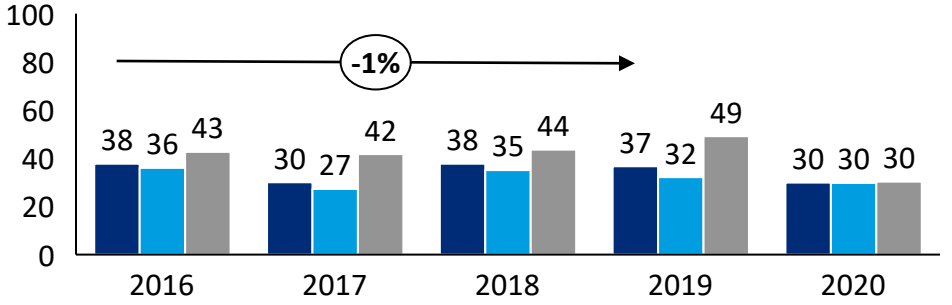


Observation IP ED

TIME BETWEEN MHSA ED VISITS: COMMERCIAL

A decrease in average time between MHSA ED visits has been observed in the Eastern Region

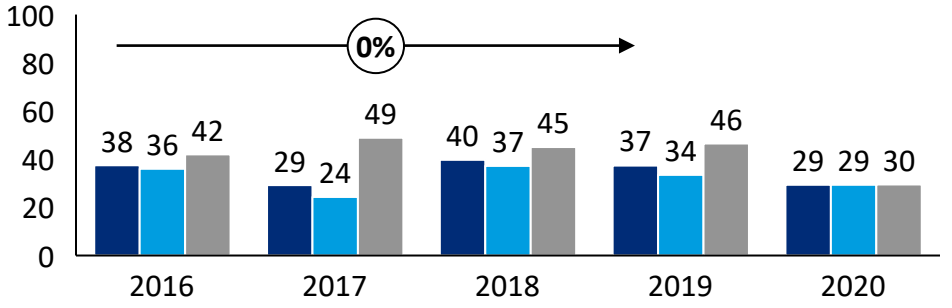
Average number of days between MHSA ED visits, Vermont



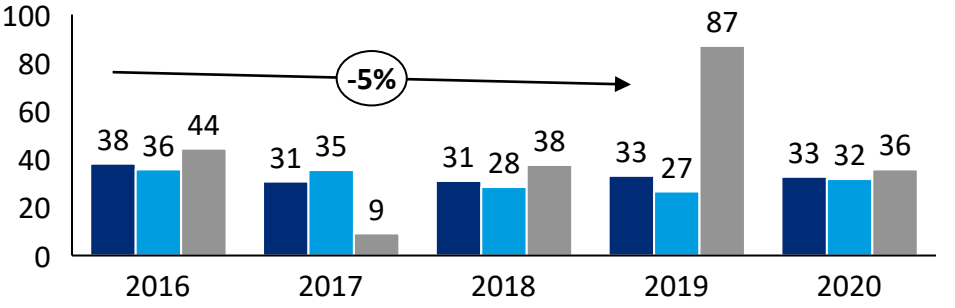
Key Takeaways

- Time between ED visits for MHSA services has fluctuated over time
- Given the variation from 2016 to 2019, it is hard to draw a strong conclusion on the trend
- In general, time between visits is longer for substance abuse

Average number of days between MHSA ED visits, Vermont Western Region



Average number of days between MHSA ED visits, Vermont Eastern Region

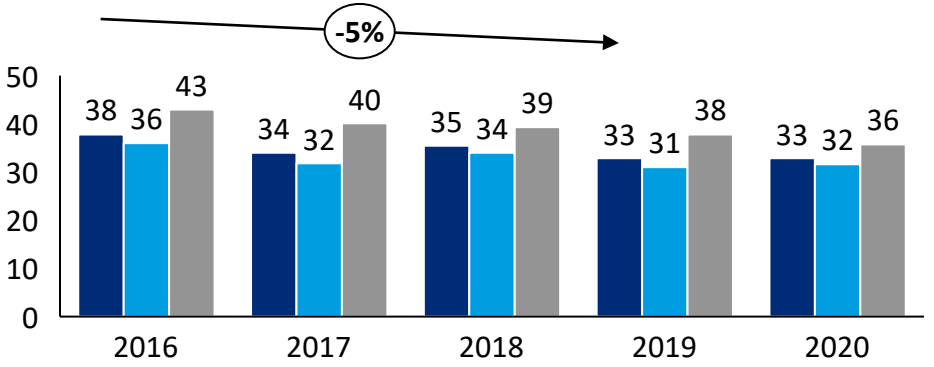


Total Mental Health Substance Abuse

TIME BETWEEN MHSA ED VISITS: MEDICARE

A decrease in average time between MHSA ED visits has been observed in the Western Region

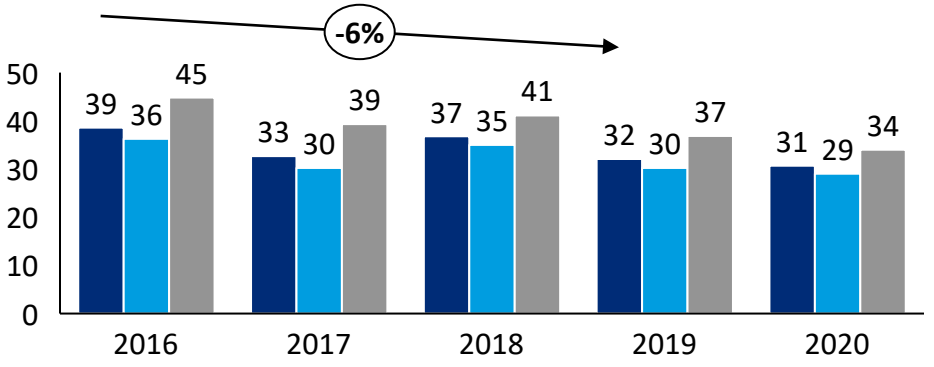
Average number of days between MHSA ED visits, Vermont



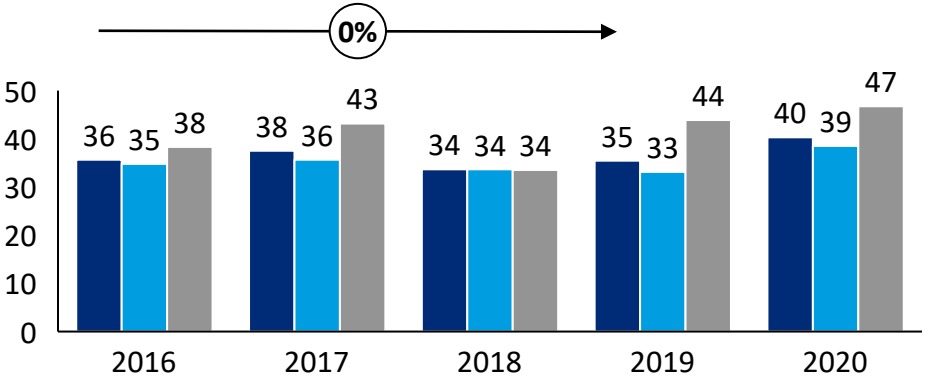
Key Takeaways

- The Regions do not change in tandem (i.e., when the Eastern Region increases in a year, the Western Region decreases)
- Time between ED visits for MHSA services has been relatively stable in the Eastern Region
- In general, time between visits is longer for substance abuse

Average number of days between MHSA ED visits, Vermont Western Region



Average number of days between MHSA ED visits, Vermont Eastern Region

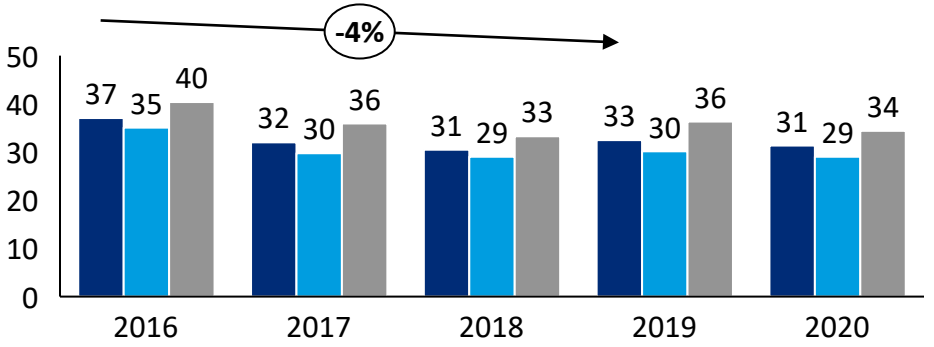


Total Mental Health Substance Abuse

TIME BETWEEN MHSA ED VISITS: MEDICAID

The average time between MHSA ED visits has decreased between ~4% and ~5% per year across regions

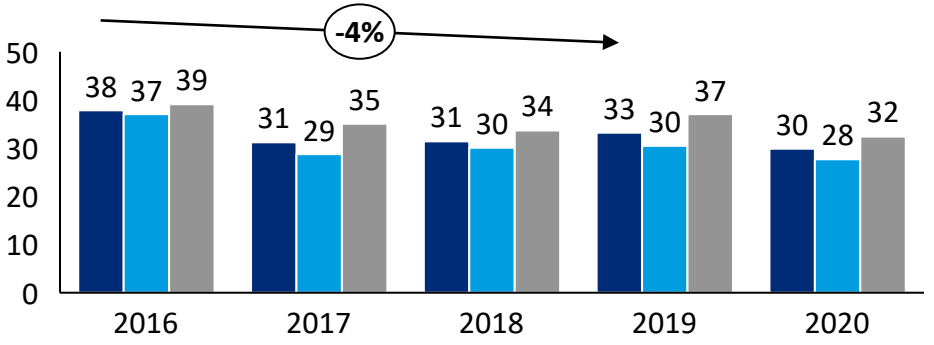
Average number of days between MHSA ED visits, Vermont



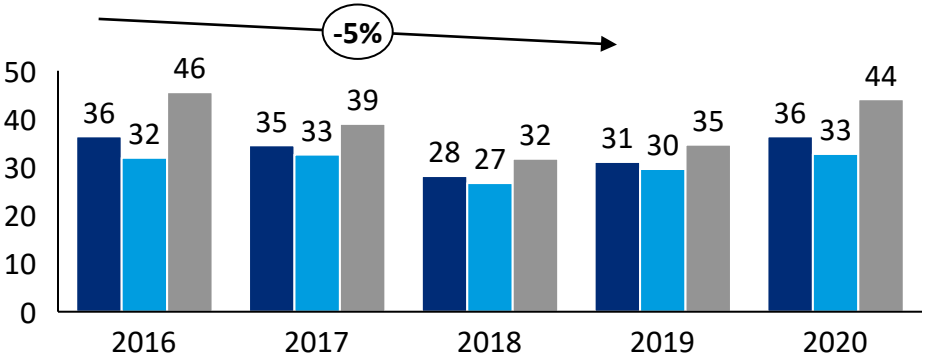
Key Takeaways

- Time between MHSA ED visits remained relatively stable from 2017 to 2020 in total after a decrease from 2016 to 2017
- The Eastern Region observed more annual fluctuation from 2017 to 2020
- In general, time between visits is longer for substance abuse

Average number of days between MHSA ED visits, Vermont Western Region



Average number of days between MHSA ED visits, Vermont Eastern Region

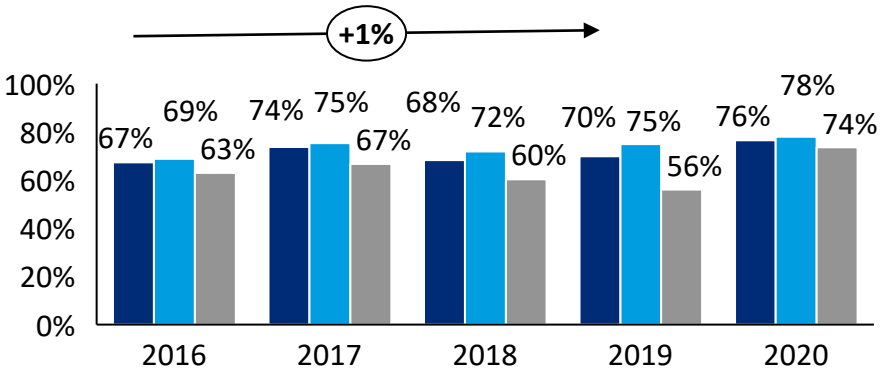


Total Mental Health Substance Abuse

PERCENTAGE OF MHSA ED VISITS WITHIN 30 DAYS OF ANOTHER MHSA ED VISIT: COMMERCIAL

ED visits within 30 days of a prior MHSA visit have increased ~6% in the Eastern Region

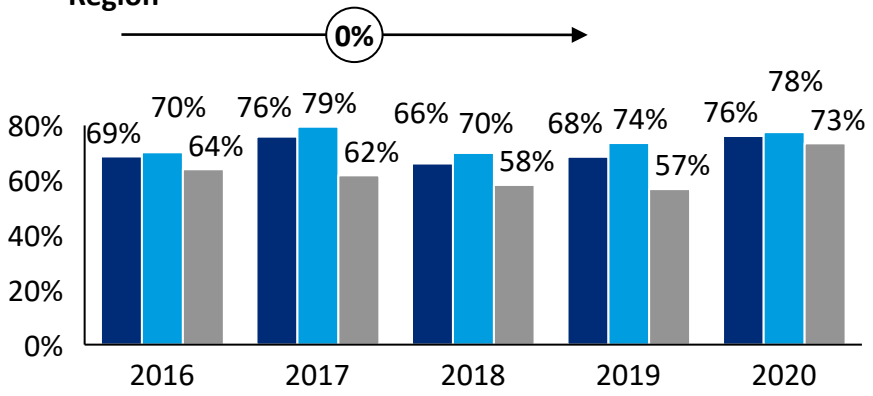
Percentage of MHSA ED Visits Within 30 days, Vermont



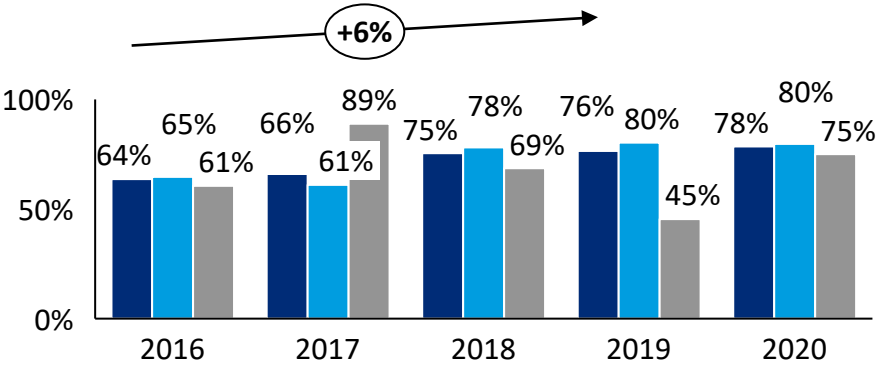
Key Takeaways

- The percentage of ED visits within 30 days has remained fairly steady in Vermont from 2016 to 2019 outside of a spike in 2017, however there is significant variation by Region
- In general, the percentage of visits within 30 days is slightly less for substance abuse visits in recent years

Percentage of MHSA ED Visits Within 30 days, Vermont Western Region



Percentage of MHSA ED Visits Within 30 days, Vermont Eastern Region

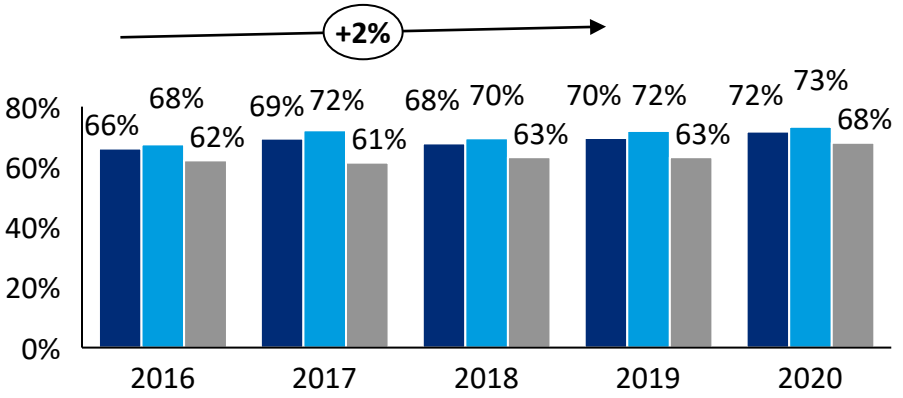


Total Mental Health Substance Abuse

PERCENTAGE OF MHSA ED VISITS WITHIN 30 DAYS OF ANOTHER MHSA ED VISIT: MEDICARE

Growth in the percentage of ED visits within 30 days is driven by the Western Region at 3% per annum

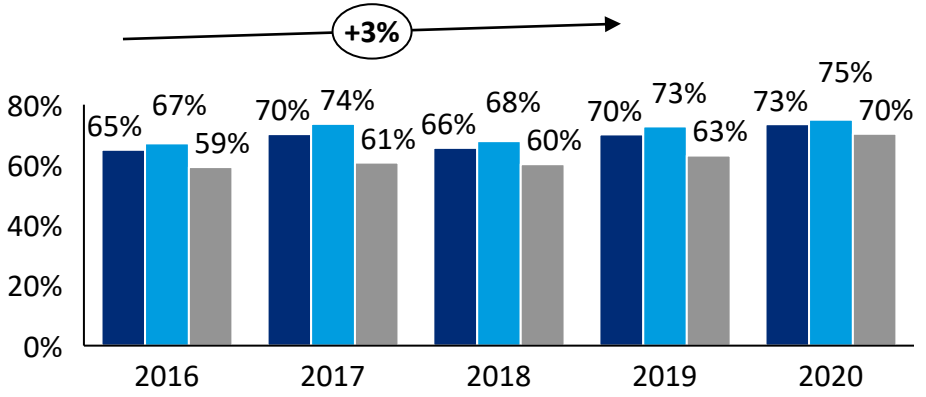
Percentage of MHSA ED Visits Within 30 days, Vermont



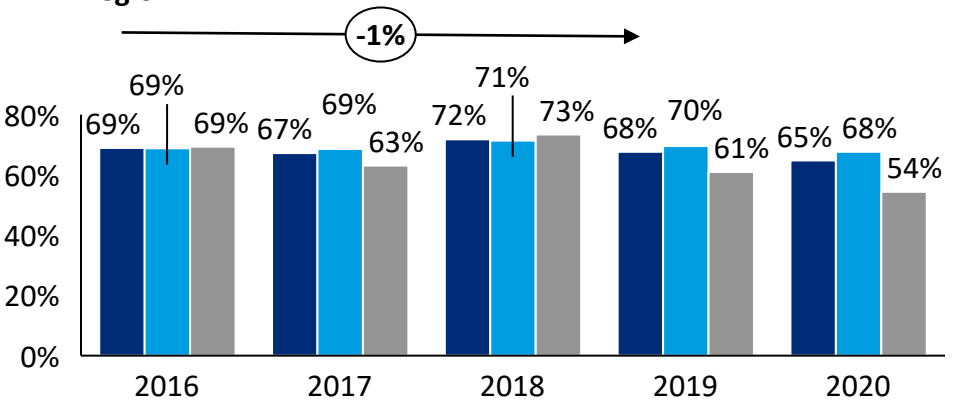
Key Takeaways

- The percentage of ED visits within 30 days has remained fairly steady across years in the Eastern Region
- In general, the percentage of visits within 30 days is less for substance abuse visits

Percentage of MHSA ED Visits Within 30 days, Vermont Western Region



Percentage of MHSA ED Visits Within 30 days, Vermont Eastern Region

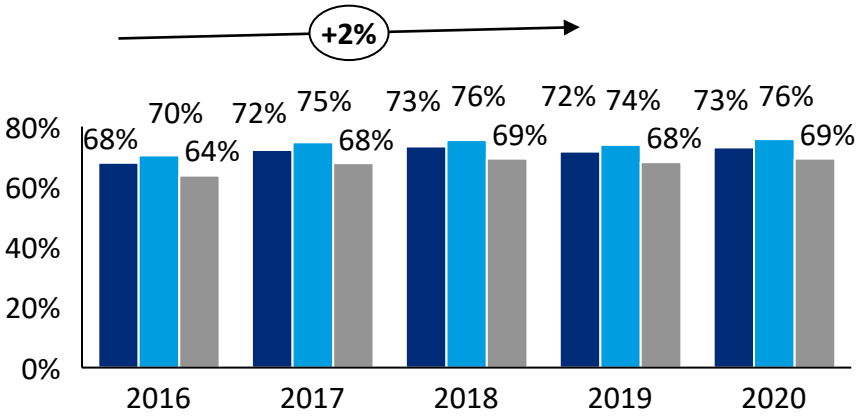


Total Mental Health Substance Abuse

PERCENTAGE OF MHSA ED VISITS WITHIN 30 DAYS OF ANOTHER MHSA ED VISIT: MEDICAID

There has been little change in the percentage of ED visits within 30 days after an increase from 2016 to 2017

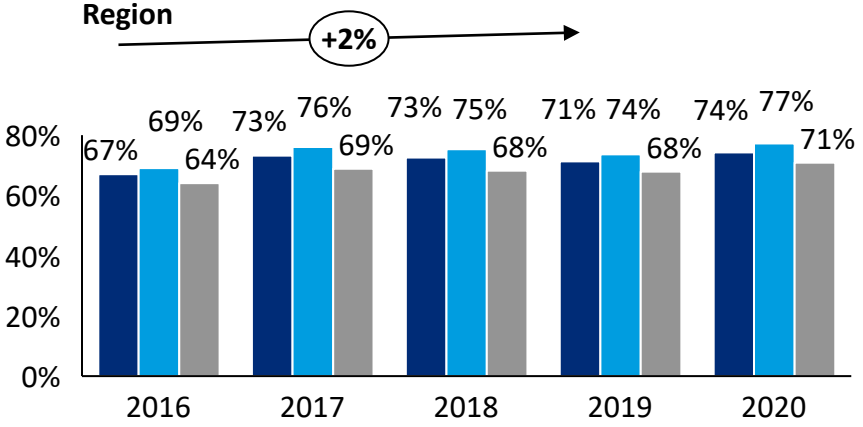
Percentage of MHSA ED Visits Within 30 days, Vermont



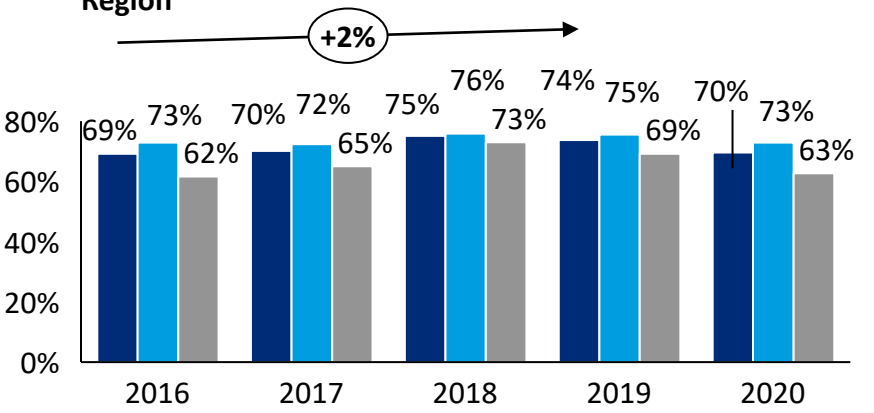
Key Takeaways

- Results in the Western Region have been flat since 2017, but there was an increase in 2018 in the Eastern Region that persisted into 2019
- In general, the percentage of visits within 30 days is slightly less for substance abuse visits

Percentage of MHSA ED Visits Within 30 days, Vermont Western Region



Percentage of MHSA ED Visits Within 30 days, Vermont Eastern Region

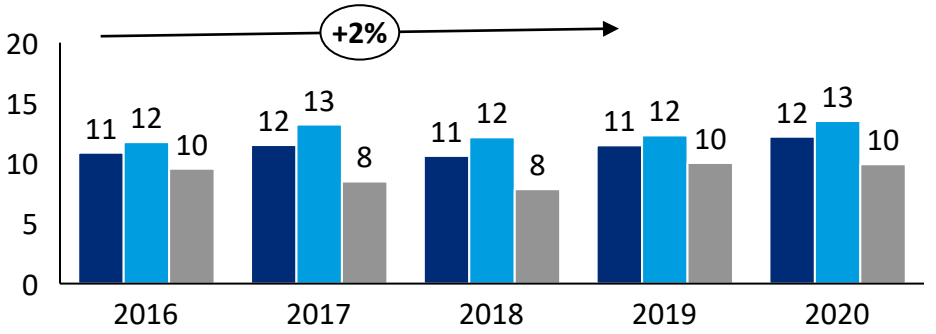


Total Mental Health Substance Abuse

AVERAGE LENGTH OF STAY FOR MHSA INPATIENT ADMISSIONS: COMMERCIAL

A strong increase in the average length of stay is observed in the Eastern Region, largely occurring in 2018 and then remaining at those levels

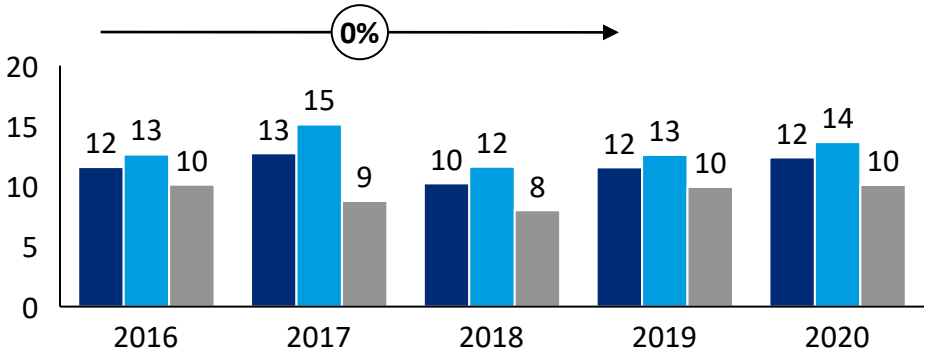
Average length of stay for MHSA inpatient admissions, Vermont



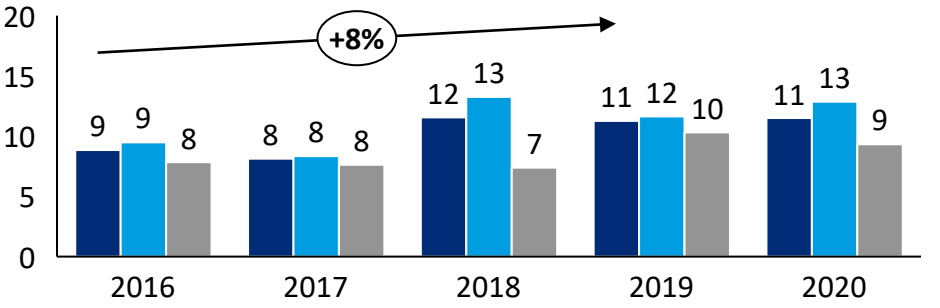
Key Takeaways

- The average MHSA length of stay has remained consistently in the 11-to-12-day range in Vermont
- The average length of stay in the Eastern Region increased significantly between 2017 and 2018, but has remained stable since
- In general, mental health admissions have a longer average length of stay than substance abuse

Average length of stay for MHSA inpatient admissions, Vermont Western Region



Average length of stay for MHSA inpatient admissions, Vermont Eastern Region

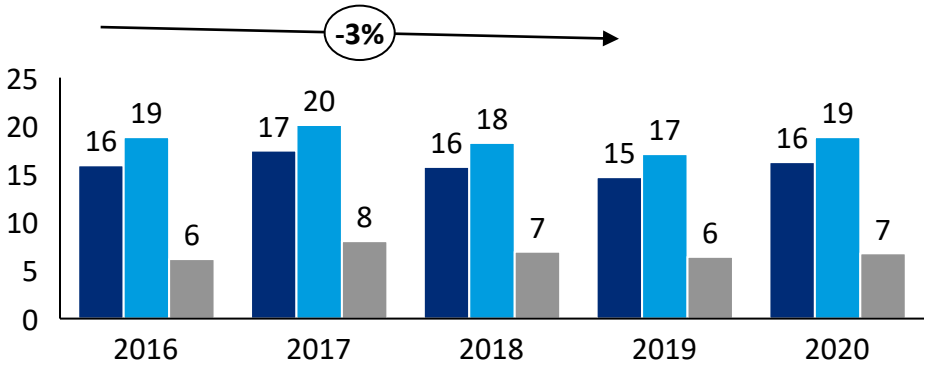


Total Mental Health Substance Abuse

AVERAGE LENGTH OF STAY FOR MHSA INPATIENT ADMISSIONS: MEDICARE

The Medicare coverage type has the longest average length of stay across coverage types, but has been decreasing in recent years

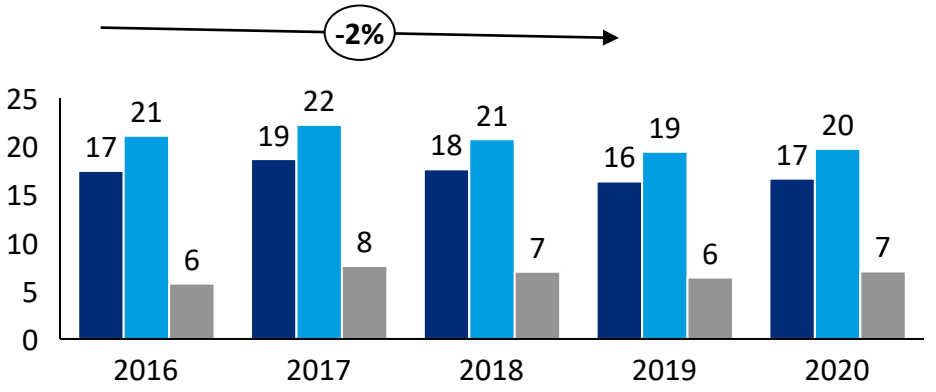
Average length of stay for MHSA inpatient admissions, Vermont



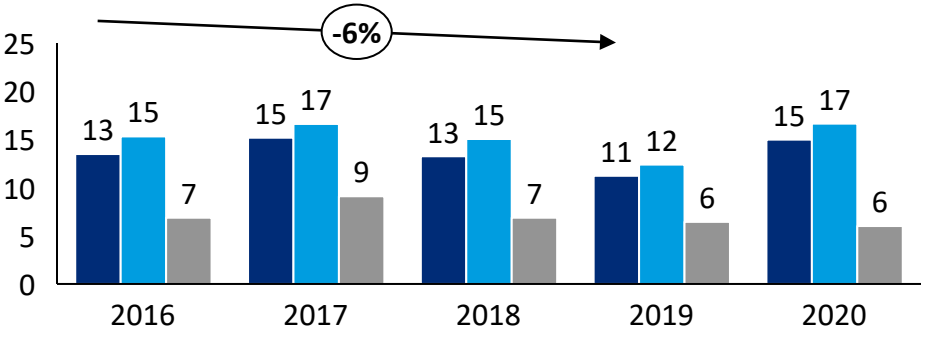
Key Takeaways

- The average MHSA length of stay has remained consistently in the 15-to-17-day range in Vermont
- The Eastern and Western Regions have maintained relatively stable average lengths of stay, but the Western Region has been consistently higher
- In general, mental health admissions have a longer average length of stay than substance abuse

Average length of stay for MHSA inpatient admissions, Vermont Western Region



Average length of stay for MHSA inpatient admissions, Vermont Eastern Region

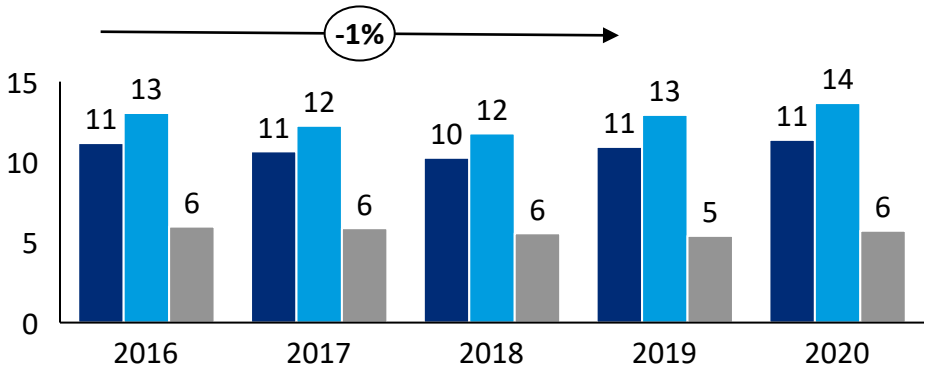


Total Mental Health Substance Abuse

AVERAGE LENGTH OF STAY FOR MHSA INPATIENT ADMISSIONS: MEDICAID

Average length of stay has remained steady since 2016, but with meaningful variation by region

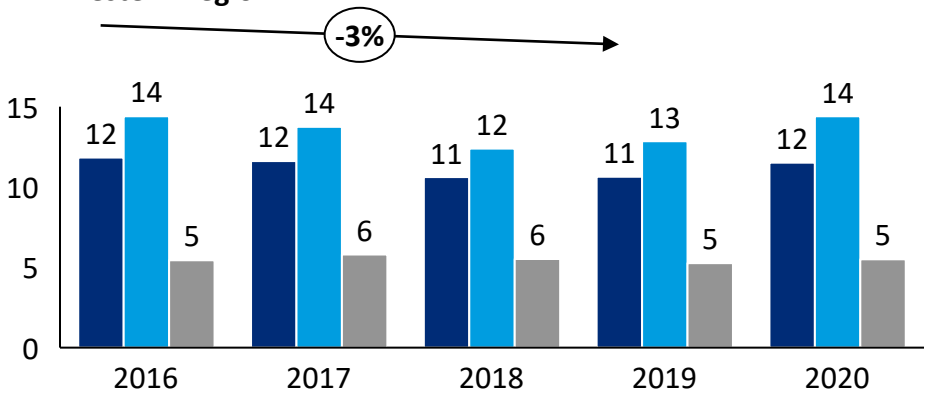
Average length of stay for MHSA inpatient admissions, Vermont



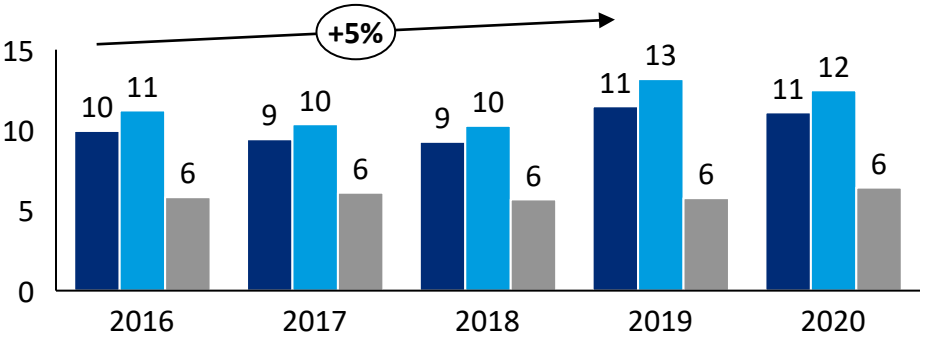
Key Takeaways

- The average MHSA length of stay has remained consistently in the 10-to-11-day range in Vermont
- The Western Region has consistently had a higher average length of stay for mental health admissions
- In general, mental health admissions have a longer average length of stay than substance abuse

Average length of stay for MHSA inpatient admissions, Vermont Western Region



Average length of stay for MHSA inpatient admissions, Vermont Eastern Region

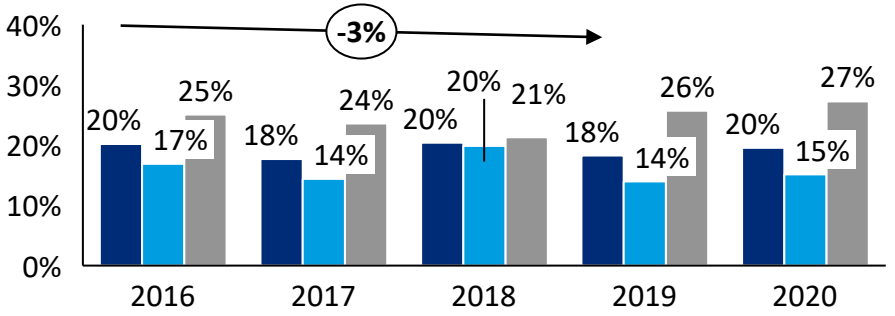


Total Mental Health Substance Abuse

READMISSION RATES FOR MHSA INPATIENT ADMISSIONS: COMMERCIAL

Regions show a significant divergence in trend with the Eastern Region displaying an annual increasing trend of ~7% while the Western Region experienced an opposite annual decrease of ~7%

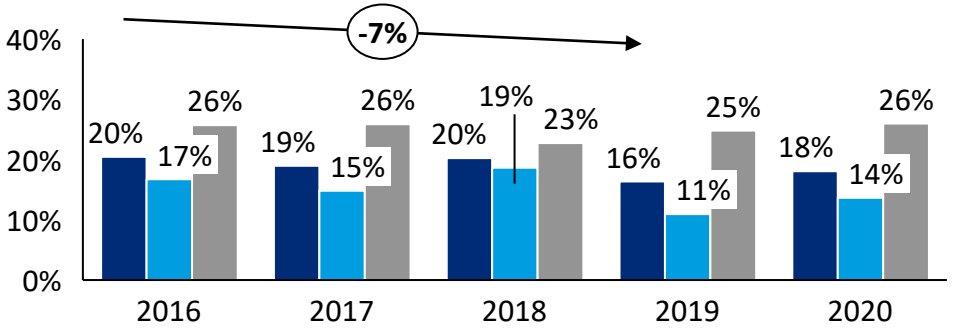
Readmission rates for MHSA inpatient admissions, Vermont



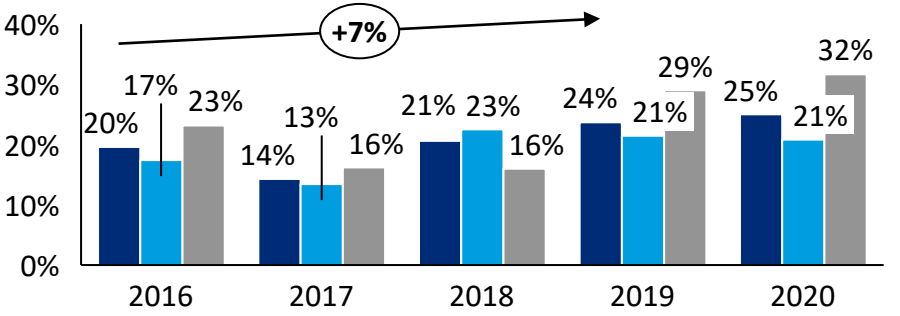
Key Takeaways

- The MHSA readmission rate has remained steady, around 20% since 2016 in Vermont
- Readmission rates in the Western Region have decreased, but the Eastern Region was at a 5-year high in 2020
- In general, the readmission rate is higher for substance abuse admissions

Readmission rates for MHSA inpatient admissions, Vermont Western Region



Readmission rates for MHSA inpatient admissions, Vermont Eastern Region

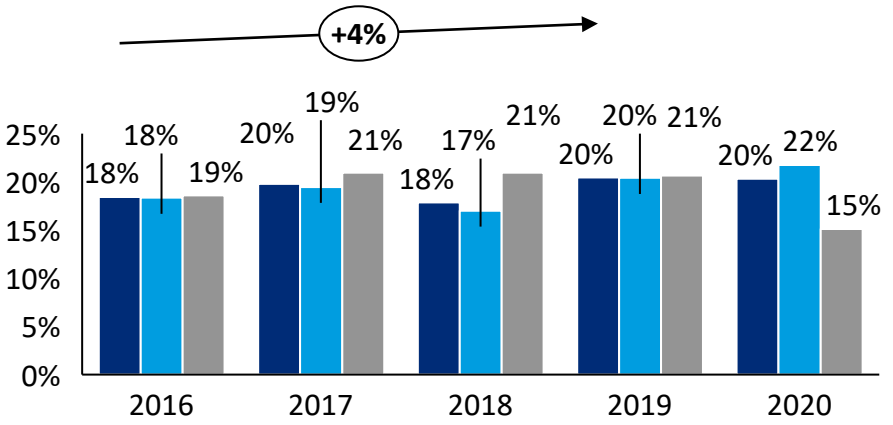


Total Mental Health Substance Abuse

READMISSION RATES FOR MHSA INPATIENT ADMISSIONS: MEDICARE

Readmission rates have fluctuated in both Regions in recent years

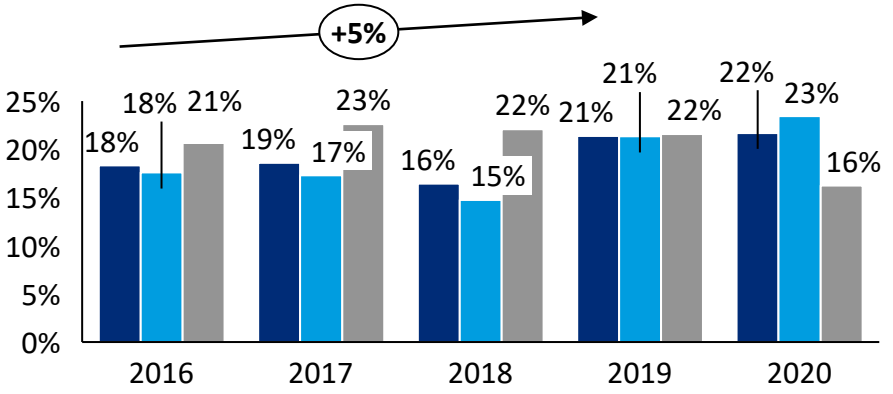
Readmission rates for MHSA inpatient admissions, Vermont



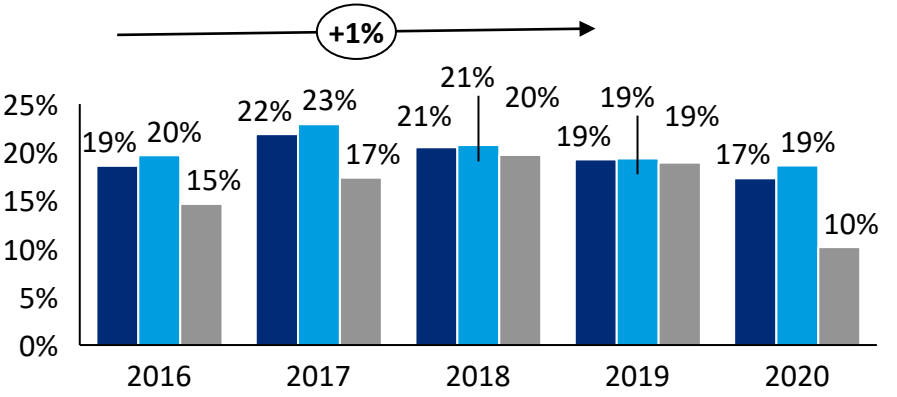
Key Takeaways

- The MHSA readmission rate has increased in recent years remained steady, and has been around 20% since 2016 in Vermont
- Readmission rates in the Western Region have driven the increase since 2018
- Readmission rates are lower for substance abuse admissions in the Eastern Region

Readmission rates for MHSA inpatient admissions, Vermont Western Region



Readmission rates for MHSA inpatient admissions, Vermont Eastern Region

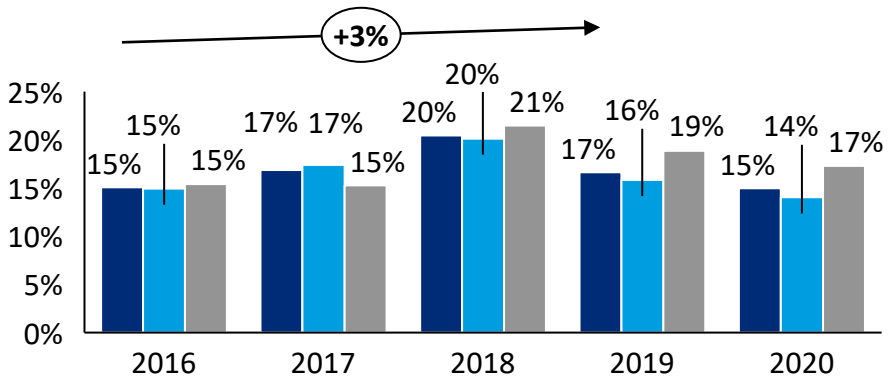


Total Mental Health Substance Abuse

READMISSION RATES FOR MHSA INPATIENT ADMISSIONS: MEDICAID

An increase in readmission rates has been observed in both Regions, with slightly more volatility in the Eastern Region

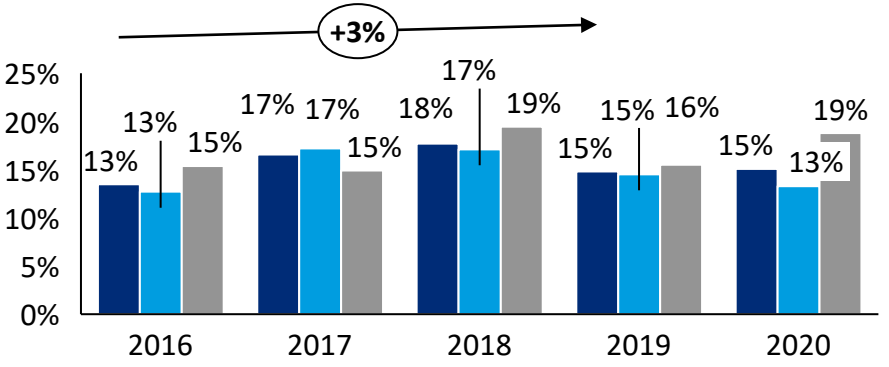
Readmission rates for MHSA inpatient admissions, Vermont



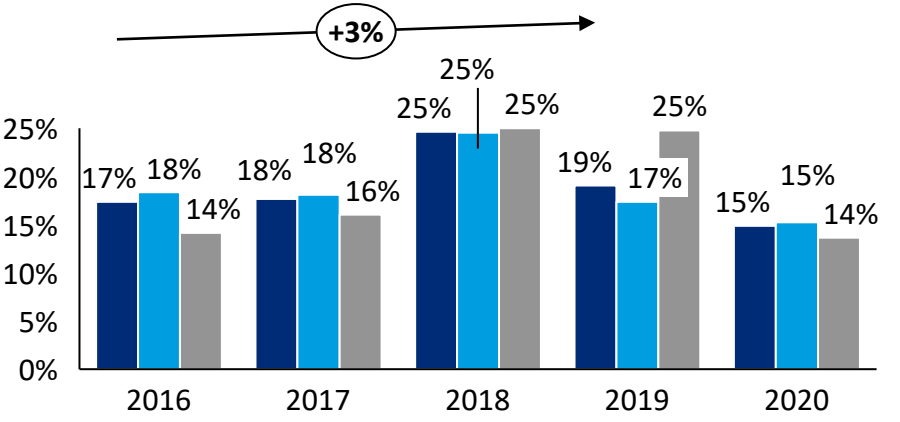
Key Takeaways

- The MHSA readmission rate spiked in 2018 in both Regions
- Readmission rates are higher in the Eastern Region
- In total, readmission rates are similar for mental health and substance abuse

Readmission rates for MHSA inpatient admissions, Vermont Western Region



Readmission rates for MHSA inpatient admissions, Vermont Eastern Region

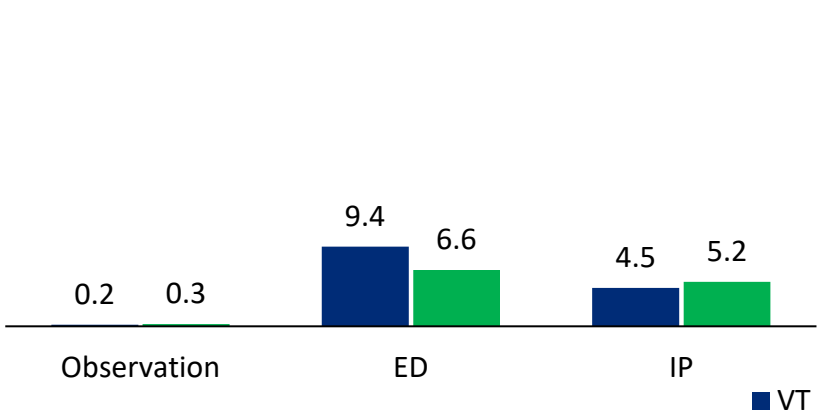


Total Mental Health Substance Abuse

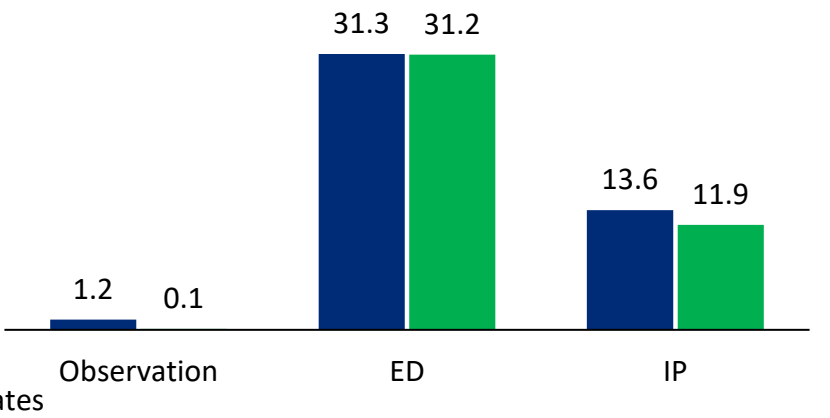
MHSA UTILIZATION COMPARED TO PEER STATES[1]

Commercial members in Vermont utilize the ED more and have fewer inpatient admissions for MHSA services than their peer state counterparts

Commercial Utilization per 1K, Vermont vs. Peer States (2019)



Medicare Utilization per 1K, Vermont vs. Peer States (2019)



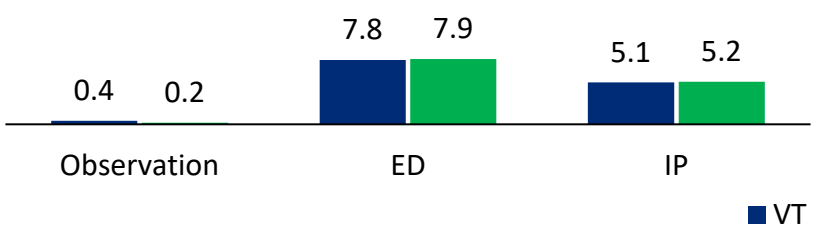
- Limitations in the Vermont dataset required slightly different identification for IP services when compared to Marketscan and the Medicare 5% LDS
- Medicare utilization is consistently higher than Commercial in both Vermont and the peer states
- Commercial members in Vermont utilize the ED more and have fewer inpatient admissions for MHSA services than their peer state counterparts
- Medicare members in Vermont utilize Inpatient hospitals more than their peer state counterparts

[1] Members included in the peer group were drawn from MSAs identified as managed or well managed, and utilized propensity matching to ensure a mix by demographics and chronic conditions similar to that of the Vermont Commercial and Medicare populations represented in VHCURES

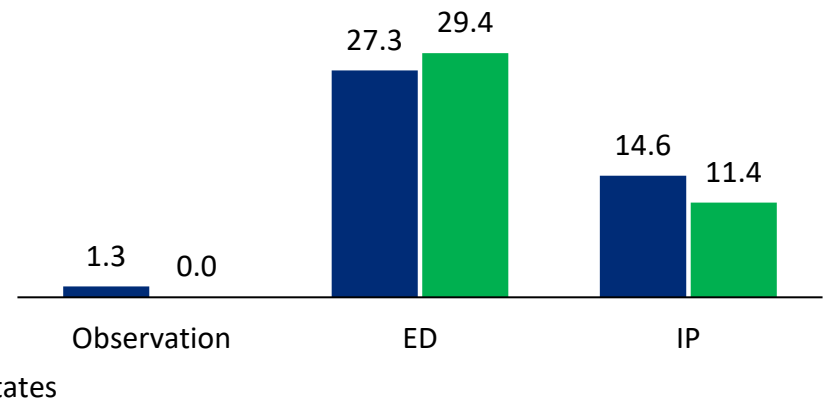
MHSA UTILIZATION COMPARED TO PEER STATES: EASTERN REGION[1]

MHSA utilization is more similar in the Commercial coverage type than the Medicare coverage type

Commercial Utilization per 1K, Eastern Region vs. Peer States (2019)



Medicare Utilization per 1K, Eastern Region vs. Peer States (2019)



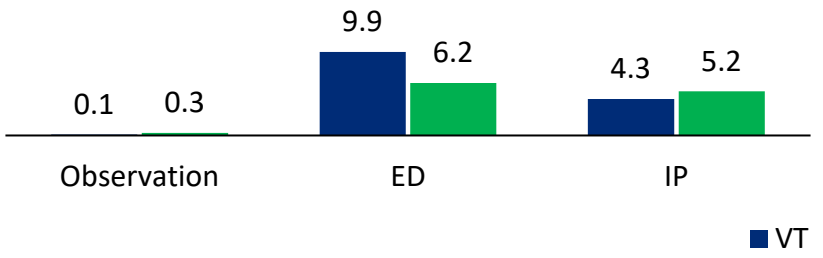
- Limitations in the Vermont dataset required slightly different identification for IP services when compared to Marketscan and the Medicare 5% LDS
- Medicare utilization is consistently higher than Commercial in both Vermont and the peer states
- Commercial members in Vermont utilize the ED and IP for MHSA services at about the same rate as their peer state counterparts
- Medicare members in Vermont utilize inpatient hospitals for MHSA services more than their peer state counterparts

[1] Members included in the peer group were drawn from MSAs identified as managed or well managed, and utilized propensity matching to ensure a mix by demographics and chronic conditions similar to that of the Vermont Commercial and Medicare populations represented in VHCURES

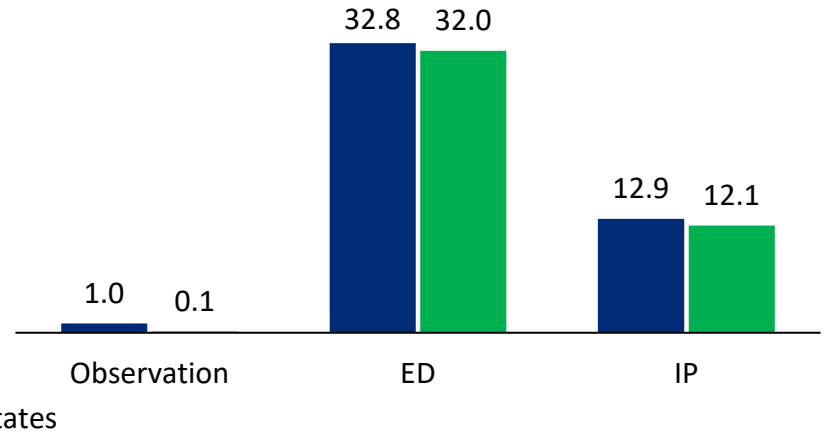
MHSA UTILIZATION COMPARED TO PEER STATES: WESTERN REGION[1]

MHSA utilization is more similar in the Medicare coverage type than the Commercial coverage type

Commercial Utilization per 1K, Western Region vs. Peer States (2019)



Medicare Utilization per 1K, Western Region vs. Peer States (2019)



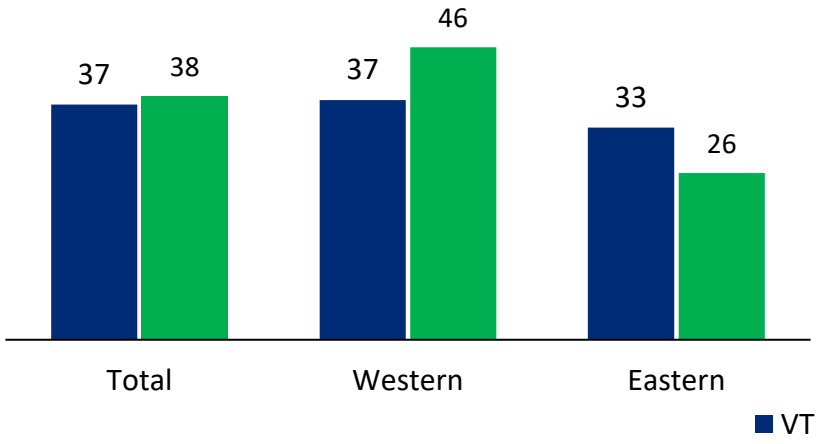
- Limitations in the Vermont dataset required slightly different identification for IP services when compared to Marketscan and the Medicare 5% LDS
- Medicare utilization is consistently higher than Commercial in both Vermont and the peer states
- Commercial members in Vermont utilize the ED more and IP less for MHSA services than their peer state counterparts
- Medicare members in Vermont utilize inpatient hospitals and ED for MHSA services slightly more than their peer state counterparts

[1] Members included in the peer group were drawn from MSAs identified as managed or well managed, and utilized propensity matching to ensure a mix by demographics and chronic conditions similar to that of the Vermont Commercial and Medicare populations represented in VHCURES

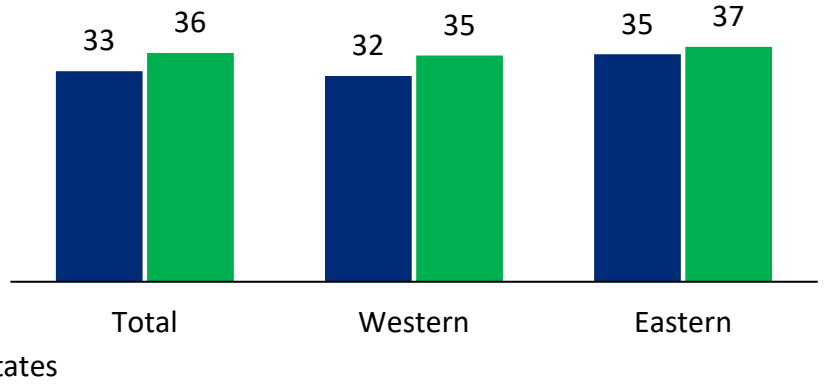
COMPARISON OF TIME BETWEEN ED VISITS RELATED TO MHSA TO PEER STATES[1]

Vermont members tend to have slightly less time between ED visits for MHSA conditions than their peer state counterpart

Commercial Time Between MHSA ED Visits, Vermont vs. Peer States (2019)



Medicare Time Between MHSA ED Visits, Vermont vs. Peer States (2019)



VT Peer States

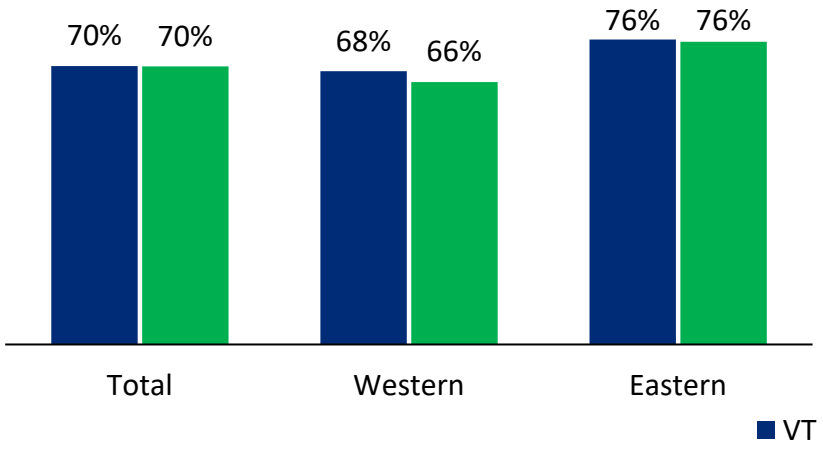
- The time between ED visits is fairly consistent among Regions for the Medicare coverage type
- The time between ED visits is fairly consistent in total for the Commercial coverage type, but varies significantly by Region
  - Members in the Eastern Region return to the ED for a subsequent MHSA visit sooner than in the Western Region
  - Vermont members in the Western Region return to the ED for a subsequent MHSA visit much sooner than their peer state counterparts; the opposite is true in the Eastern Region

[1] Members included in the peer group were drawn from MSAs identified as managed or well managed, and utilized propensity matching to ensure a mix by demographics and chronic conditions similar to that of the Vermont Commercial and Medicare populations represented in VHCURES

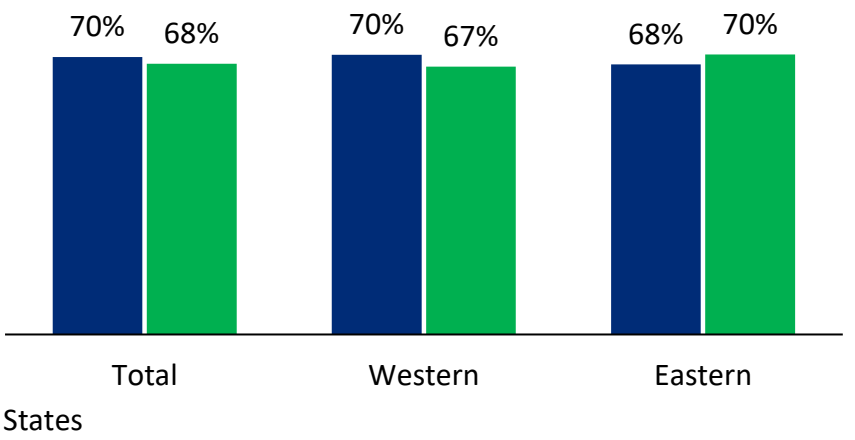
PERCENTAGE OF MHSA ED VISITS WITHIN 30 DAYS COMPARISON TO PEER STATES[1]

A similar percentage of ED visits for MHSA conditions occurring within 30 days of a prior MHSA ED visit was observed between Vermont and the peer states

Percentage of Commercial MHSA ED Visits within 30 days, Vermont vs. Peer States (2019)



Percentage of Medicare MHSA ED Visits within 30 days, Vermont vs. Peer States (2019)



VT Peer States

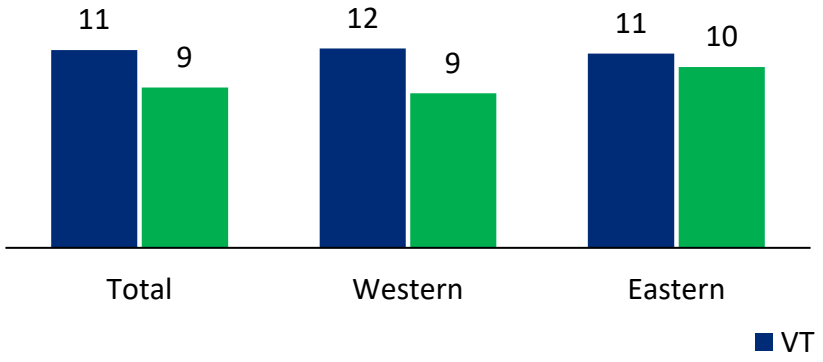
- Vermont Commercial members have a slightly higher percentage of ED visits for MHSA conditions within 30 days of each other in the Eastern Region
- The percentage of visits to the ED for MHSA within 30 days of another MHSA related visit is similar across both coverage types

[1] Members included in the peer group were drawn from MSAs identified as managed or well managed, and utilized propensity matching to ensure a mix by demographics and chronic conditions similar to that of the Vermont Commercial and Medicare populations represented in VHCURES

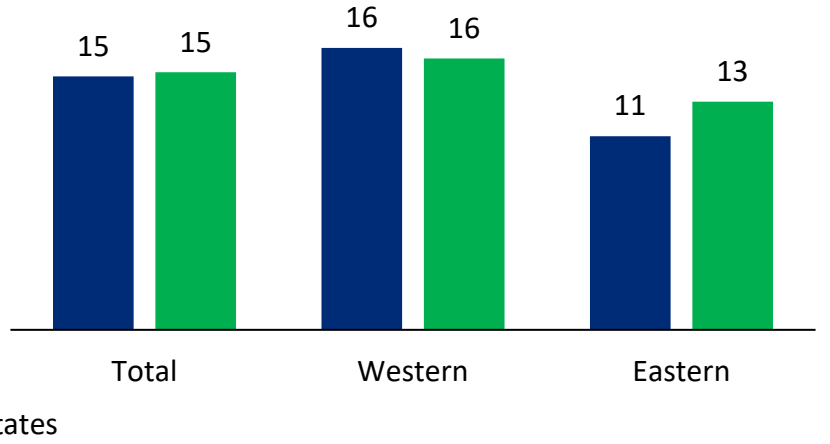
COMPARISON OF INPATIENT MHSA SERVICES TO PEER STATES[1]

Commercial members in Vermont admitted for a MHSA condition tend to stay ~24% longer than in the peer states

Average Length of Stay for Commercial Inpatient MHSA Admissions, Vermont vs. Peer States (2019)



Average Length of Stay for Medicare Inpatient MHSA Admissions, Vermont vs Peer States (2019)



VT Peer States

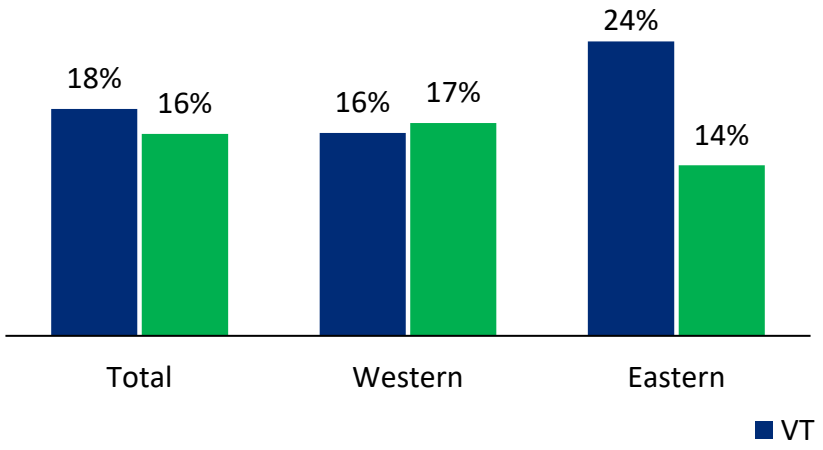
- Limitations in the Vermont dataset required slightly different identification for inpatient services when compared to MarketScan and the Medicare 5% LDS
  - In addition, Vermont claims are limited to inpatient admissions with populated admission and discharge dates
- Commercial members admitted for MHSA conditions tend to on average stay longer than their peer state counterparts

[1] Members included in the peer group were drawn from MSAs identified as managed or well managed, and utilized propensity matching to ensure a mix by demographics and chronic conditions similar to that of the Vermont Commercial and Medicare populations represented in VHCURES

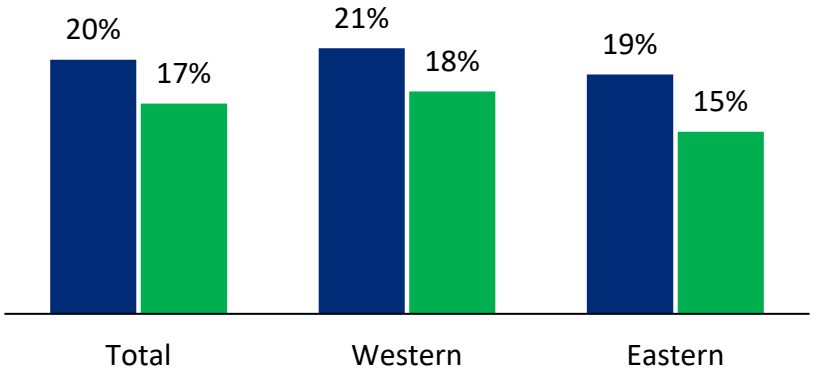
COMPARISON OF INPATIENT READMISSION RATES FOR MHSA TO PEER STATES[1]

Readmission rates are higher than in the peer states for the Medicare coverage type by ~3pts

Readmission Rate for Commercial Inpatient MHSA Admissions, Vermont vs. Peer States (2019)



Readmission Rate for Medicare Inpatient MHSA Admissions, Vermont vs Peer States (2019)



- Limitations in the Vermont dataset required slightly different identification for inpatient services when compared to MarketScan and the Medicare 5% LDS
    - In addition, Vermont claims were limited to inpatient admissions with populated admission and discharge dates
- Vermont members are readmitted for MHSA conditions more frequently than their peer state counterparts except in the Western Region for the Commercial coverage type
- Commercial market readmission rates differ significantly more in the Eastern Region when compared to their peer state counterparts than for the Western Region

[1] Members included in the peer group were drawn from MSAs identified as managed or well managed, and utilized propensity matching to ensure a mix by demographics and chronic conditions similar to that of the Vermont Commercial and Medicare populations represented in VHCURES

7

OUTPATIENT DIAGNOSTIC IMAGING

DIAGNOSTIC IMAGING

Questions

- Are Vermonters utilizing the emergency department to get imaging services done more quickly?
- How do key utilization metrics change over time for Vermont?
- How do key utilization metrics compare for Vermont to the peer markets?

Data Sources

- 2016 to 2020 VHCURES
  - Members were assigned to a single type of coverage each month based on the primary insurance indicator field
  - Members with both Medicare and Medicaid primary flags (i.e., dual eligible) were assigned to Medicare
  - 2020 results are shown but are likely impacted by the pandemic which may lead to differing results when compared to prior years
- 2019 IBM Watson MarketScan Commercial Database
  - Used for Commercial peer state comparison
- 2019 Medicare 5% LDS
  - Used for Medicare peer state comparison
  - Includes dual eligible members

Assumptions

- Imaging services are determined based on procedure code and/or revenue code for each claim line
- Claims with a trauma/accident primary diagnosis code are excluded from the analysis (i.e., those with a primary diagnosis code of T20-T65, V00-V99, W00-W99, X00-X99)
- Utilization is counted for each unique member, date of service, procedure code, modifier combination
- Emergency department visits are based on the presence of place of service 23 for professional services and a combination of procedure and/or revenue codes for outpatient services
- Office visits are based on the presence of procedure codes 99201-99215

DIAGNOSTIC IMAGING

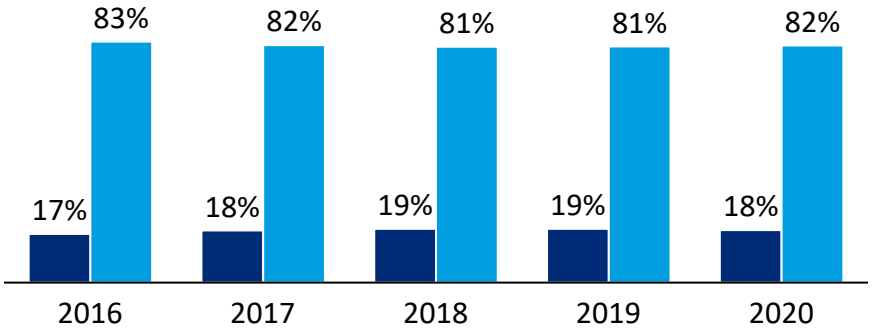
Methodology

1. Segment members into cohorts based on year, product, and region
2. Pull all diagnostic imaging services based on procedure code and/or revenue code
3. Pull all office visits associated with members who had a diagnostic imaging service
4. Group diagnostic imaging services based on the place of service (i.e., ED vs other)
5. Determine the amount of time between a diagnostic imaging service and an office visit, where possible
6. Summarize utilization metrics by type of imaging, place of service, and member cohort
7. Summarize office visit time metrics by type of imaging, place of service, and member cohort
8. Repeat the above steps for the VHCURES population as well as the propensity match Commercial and Medicare benchmark populations
9. Compare metrics by member groupings, year (VHCURES only), and across data sources to determine key takeaways

DIAGNOSTIC IMAGING BY PLACE OF SERVICE OVER TIME: TOTAL

There has been no significant shift in the percentage of diagnostic imaging occurring in an ED over time

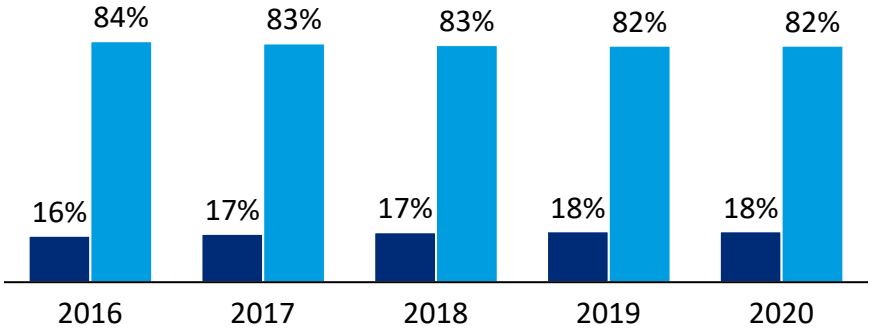
Share of diagnostic imaging by place of service, Vermont



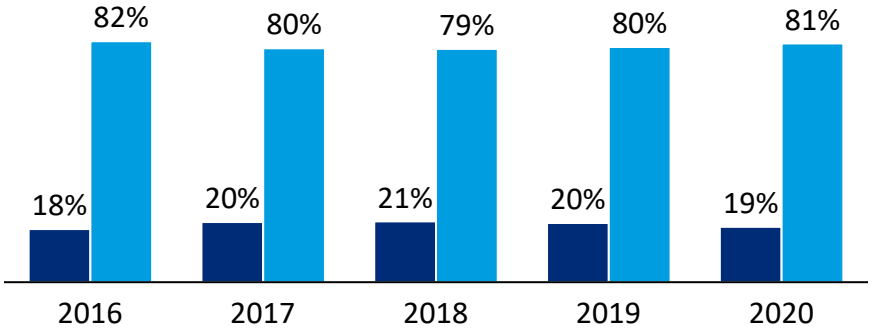
Key Takeaways

- The distribution of diagnostic imaging services remained stable from 2016 to 2020
- The percentage of diagnostic imaging services in an ED was slightly higher in the Eastern Region

Share of diagnostic imaging by place of service, Vermont Western Region



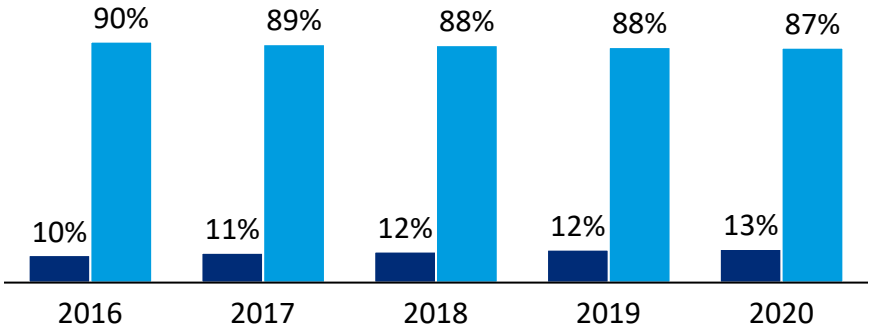
Share of diagnostic imaging by place of service, Vermont Eastern Region



DIAGNOSTIC IMAGING BY PLACE OF SERVICE OVER TIME: COMMERCIAL

The percentage of diagnostic imaging occurring in an ED is slightly higher in the Eastern Region (~+1%)

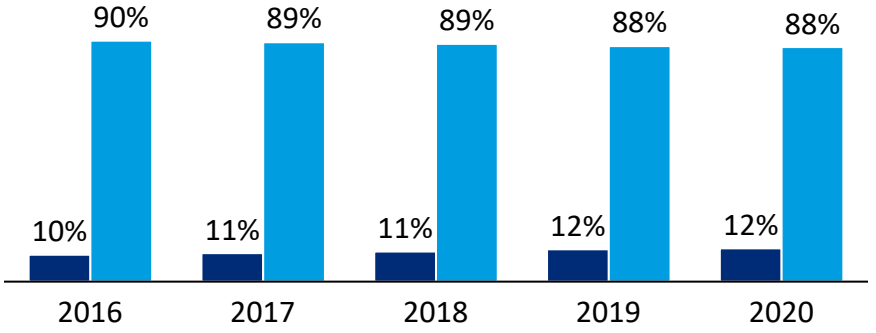
Share of diagnostic imaging by place of service, Vermont



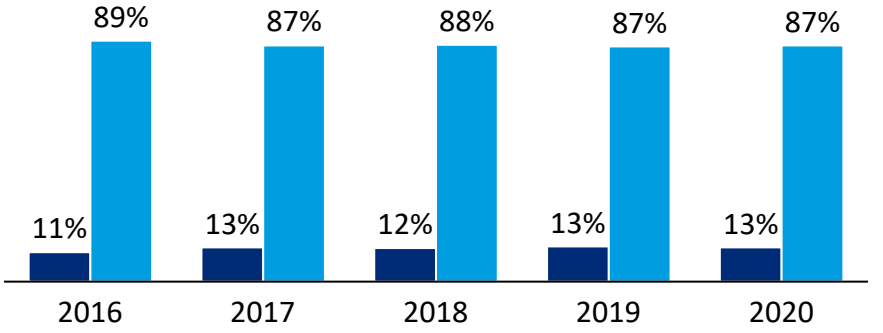
Key Takeaways

- The percentage of diagnostic imaging services in an ED was about 5 to 10% lower per year for the Commercial coverage type relative to total Vermont
- The percentage of diagnostic imaging services provided in an ED increased marginally from 2016 levels for both Regions

Share of diagnostic imaging by place of service, Vermont Western Region



Share of diagnostic imaging by place of service, Vermont Eastern Region

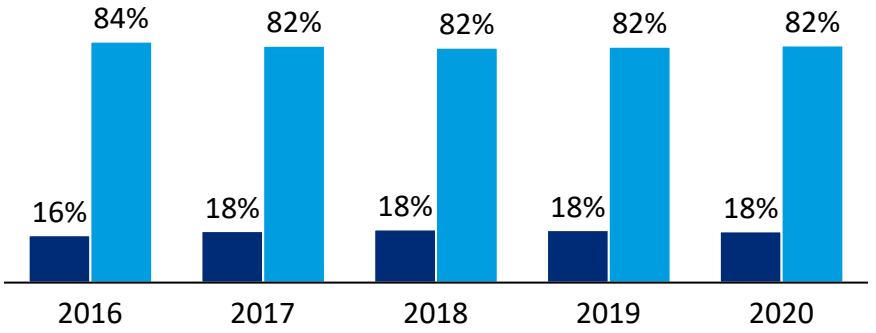


ED Non-ED

DIAGNOSTIC IMAGING BY PLACE OF SERVICE OVER TIME: MEDICARE

The percentage of diagnostic imaging occurring in an ED is slightly higher in the Eastern Region (~+2%)

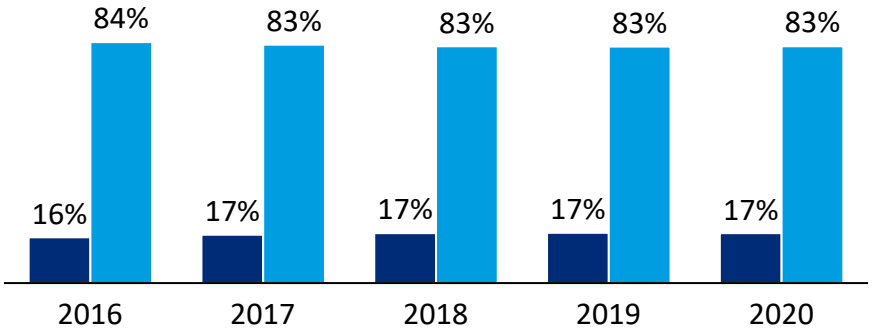
Share of diagnostic imaging by place of service, Vermont



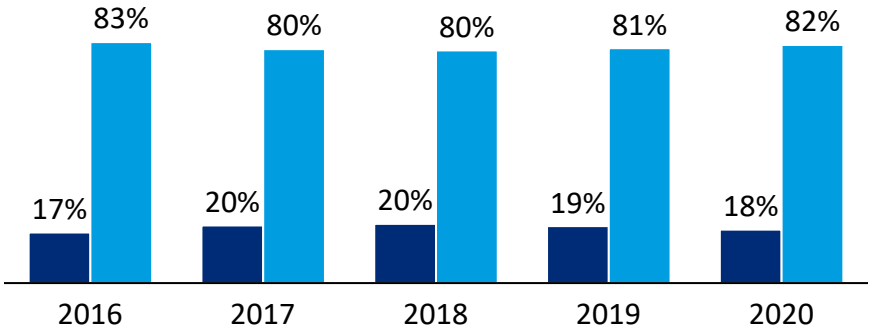
Key Takeaways

- The percentage of diagnostic imaging services provided in an ED was consistent between the Medicare coverage type and total Vermont
- The percentage of diagnostic imaging services provided in an ED remained stable from 2017 on for both Regions
- The percentage of diagnostic imaging services provided in an ED was slightly higher in the Eastern Region

Share of diagnostic imaging by place of service, Vermont Western Region



Share of diagnostic imaging by place of service, Vermont Eastern Region

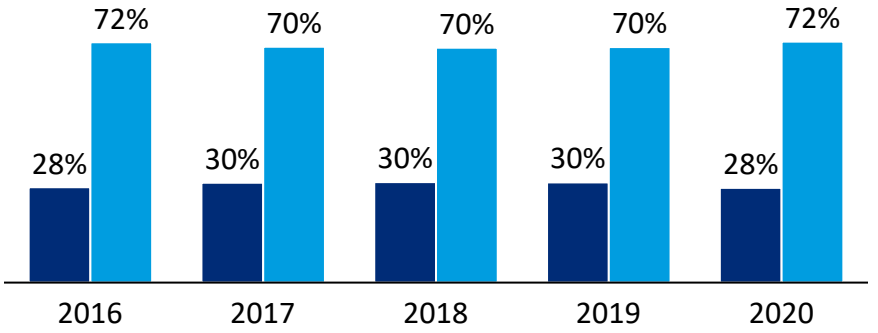


ED Non-ED

DIAGNOSTIC IMAGING BY PLACE OF SERVICE OVER TIME: MEDICAID

There has been no significant shift in the percentage of diagnostic imaging occurring in an ED over time

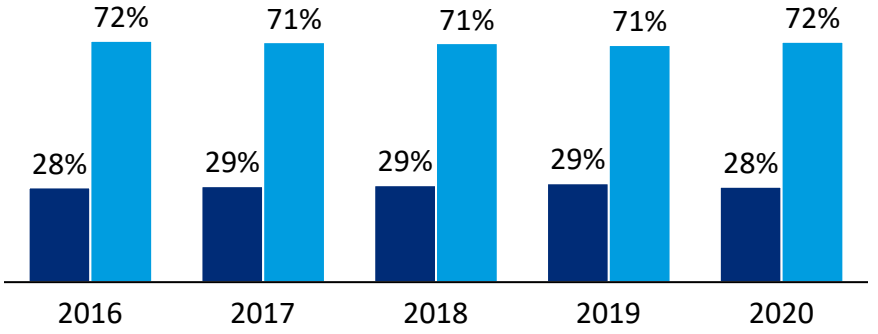
Share of diagnostic imaging by place of service, Vermont



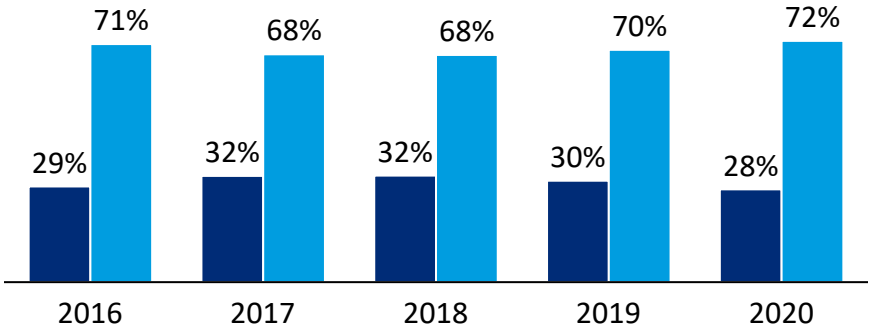
Key Takeaways

- The percentage of diagnostic imaging services provided in an ED was about 10% higher for the Medicaid coverage type when compared to total Vermont
- The percentage of diagnostic imaging services provided in an ED increased slightly in 2017 and remained at that level through 2019
- The percentage of diagnostic imaging services provided in an ED was slightly higher in the Eastern Region

Share of diagnostic imaging by place of service, Vermont Western Region



Share of diagnostic imaging by place of service, Vermont Eastern Region

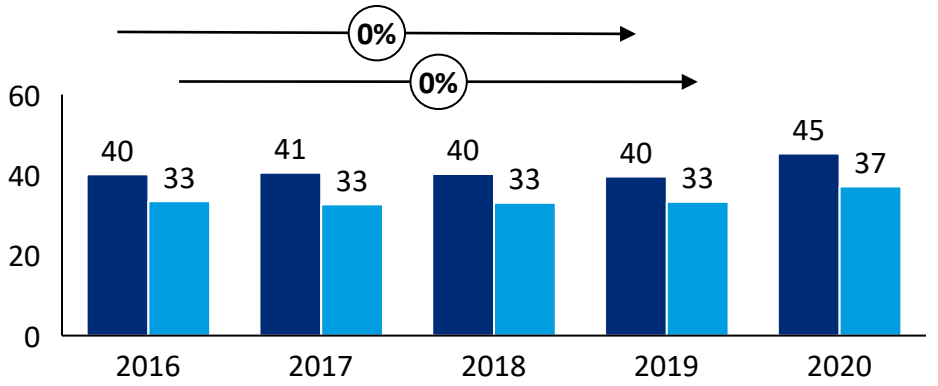


ED Non-ED

AVERAGE DAYS BETWEEN AN OFFICE VISIT AND IMAGING SERVICE: TOTAL

The average number of days between an office visit and imaging service was higher for ED imaging services in all years and regions

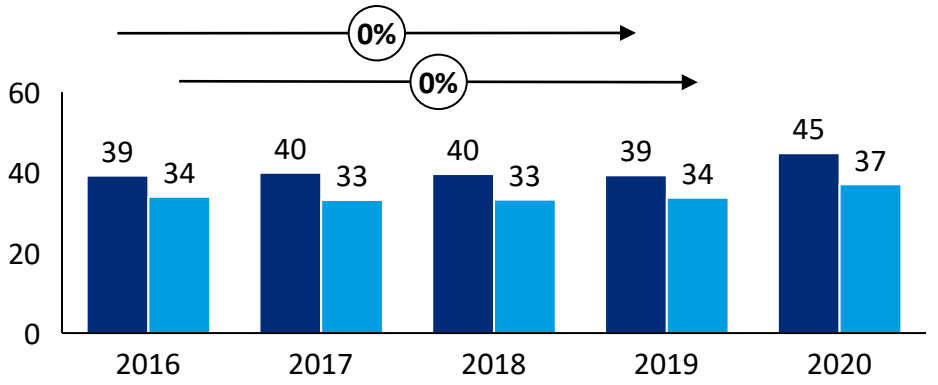
Average days between an office visit and imaging service, Vermont



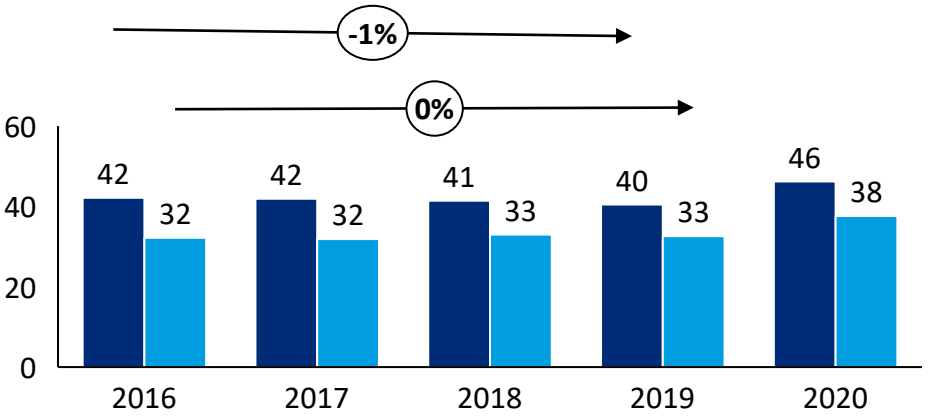
Key Takeaways

- There was negligible change in the average number of days between an office visit and imaging service in both Regions for both ED and non-ED
- The Eastern Region has more days between an office visit and imaging service for ED

Average days between an office visit and imaging service, Vermont Western Region



Average days between an office visit and imaging service, Vermont Eastern Region

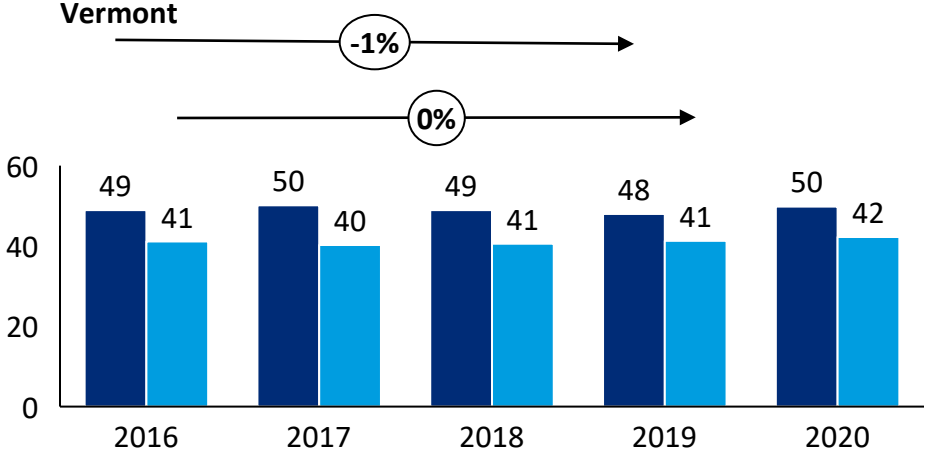


ED Non-ED

AVERAGE DAYS BETWEEN AN OFFICE VISIT AND IMAGING SERVICE: COMMERCIAL

The average number of days between an office visit and imaging service was higher for imaging services in an ED for all years and regions

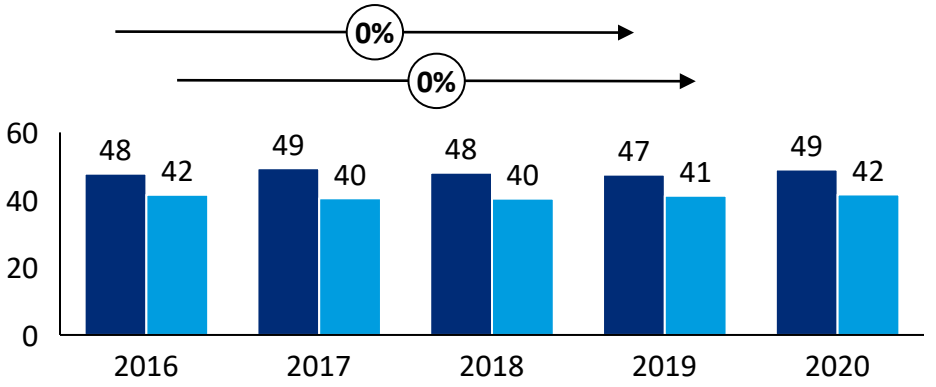
Average days between an office visit and imaging service, Vermont



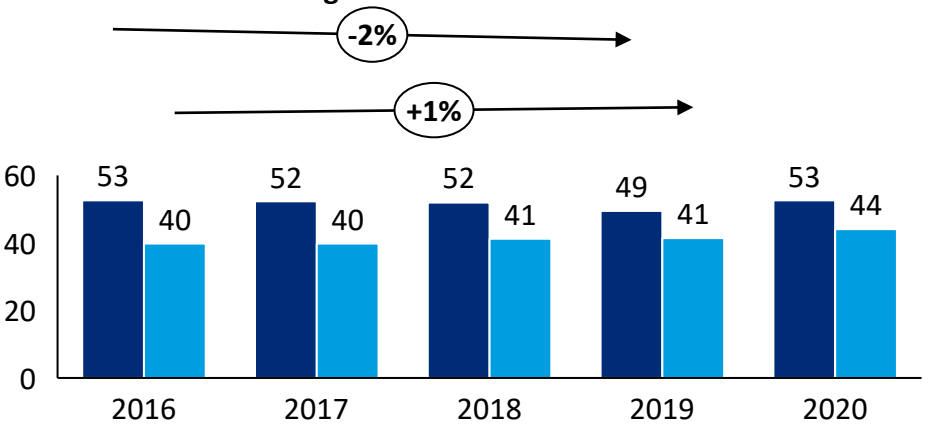
Key Takeaways

- The average number of days was largely consistent in the Western Region
- The Eastern Region experienced a slight increase in the average number of days between an office visit and a Non-ED imaging service

Average days between an office visit and imaging service, Vermont Western Region



Average days between an office visit and imaging service, Vermont Eastern Region

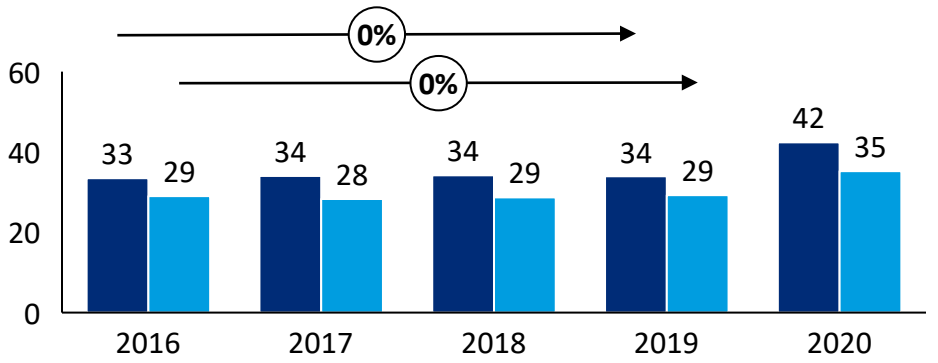


ED Non-ED

AVERAGE DAYS BETWEEN AN OFFICE VISIT AND IMAGING SERVICE: MEDICARE

The Medicare coverage type had a shorter time between an office visit and imaging service than total Vermont

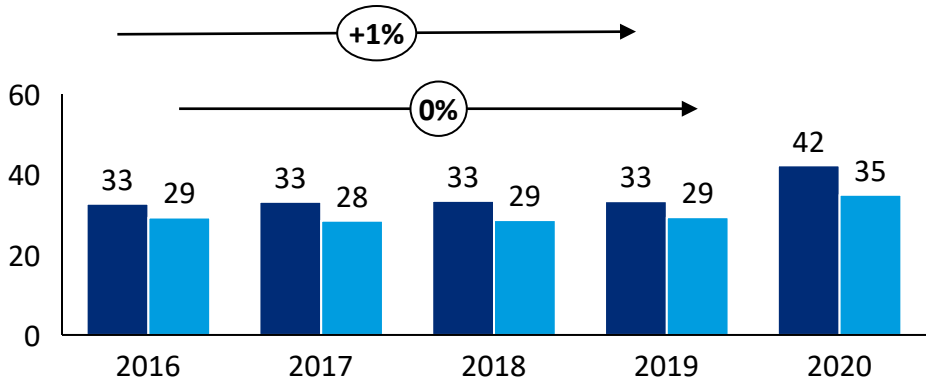
Average days between an office visit and imaging service, Vermont



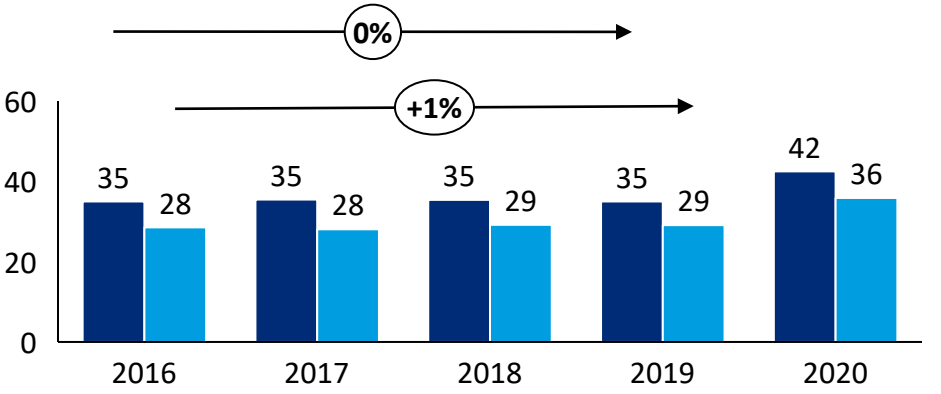
Key Takeaways

- The average number of days between an office visit and imaging service was higher for imaging services in an ED for all years and regions
- The average number of days was largely consistent across both Regions and service locations

Average days between an office visit and imaging service, Vermont Western Region



Average days between an office visit and imaging service, Vermont Eastern Region

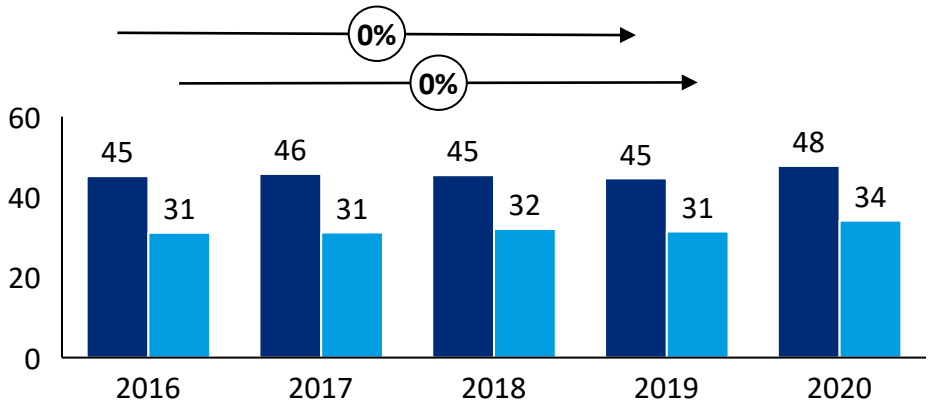


ED Non-ED

AVERAGE DAYS BETWEEN AN OFFICE VISIT AND IMAGING SERVICE: MEDICAID

There was a greater disparity in the average number of days between services received in an ED and non-ED than the Commercial or Medicare coverage types

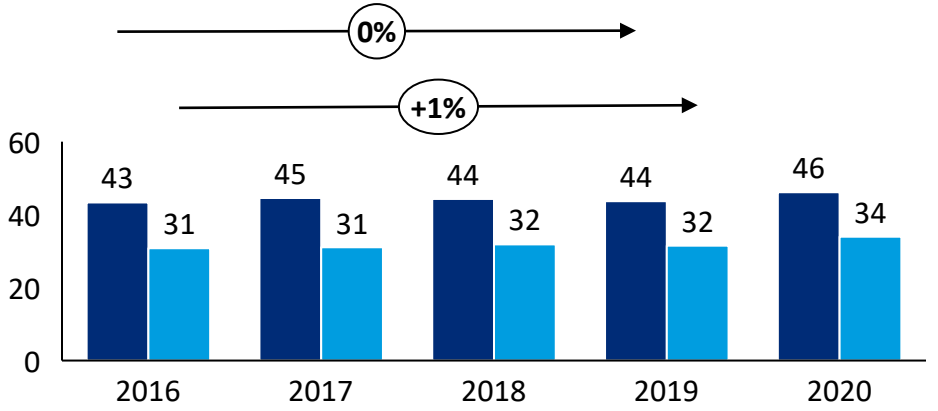
Average days between an office visit and imaging service, Vermont



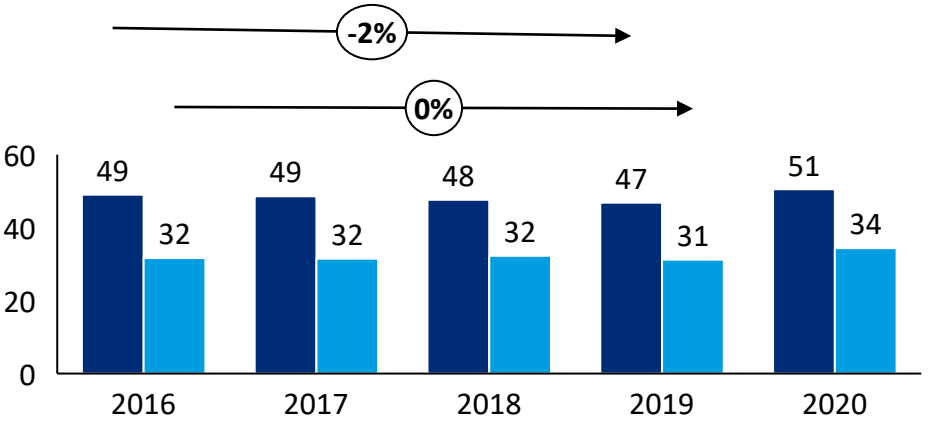
Key Takeaways

- The average number of days between an office visit and imaging service was higher for imaging services in an ED in all years and regions
- The average number of days was largely consistent across both Regions and service locations

Average days between an office visit and imaging service, Vermont Western Region



Average days between an office visit and imaging service, Vermont Eastern Region

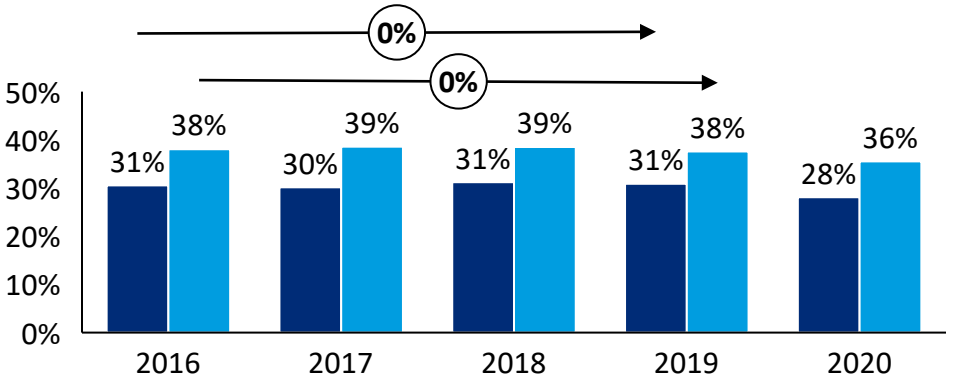


ED Non-ED

PERCENTAGE OF IMAGING SERVICE WITHIN 14 DAYS OF OFFICE VISIT: TOTAL

The percentage of imaging services within 14 days of an office visit was higher for non-ED imaging services in all years and regions

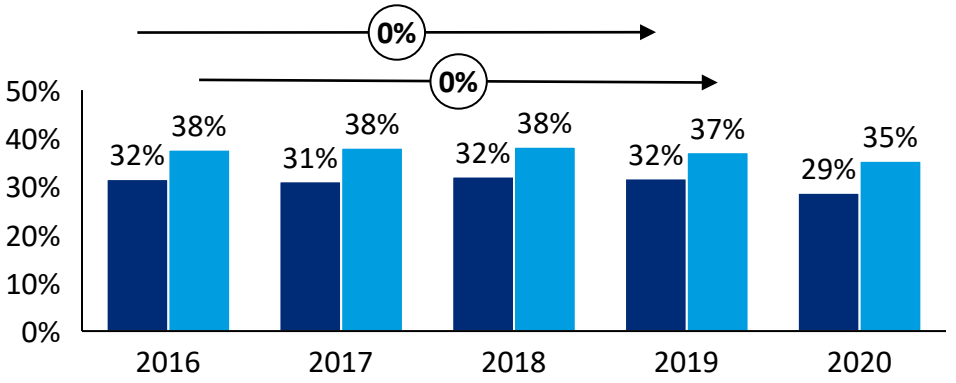
Percentage of imaging service within 14 days of office visit, Vermont



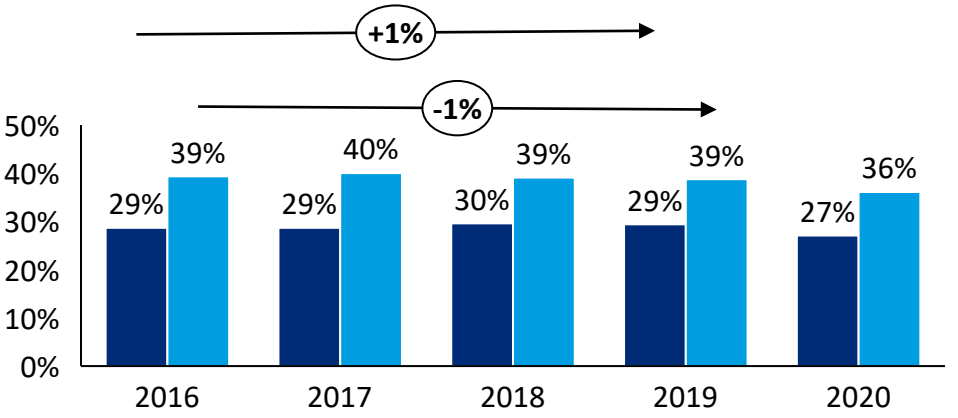
Key Takeaways

- There was a negligible change in the percentage of imaging services within 14 days of an office visit in both Regions for both ED and non-ED
- The percentage of ED imaging services within 14 days of an office visit was slightly higher in the Western Region than the Eastern Region

Percentage of imaging service within 14 days of office visit, Vermont Western Region



Percentage of imaging service within 14 days of office visit, Vermont Eastern Region

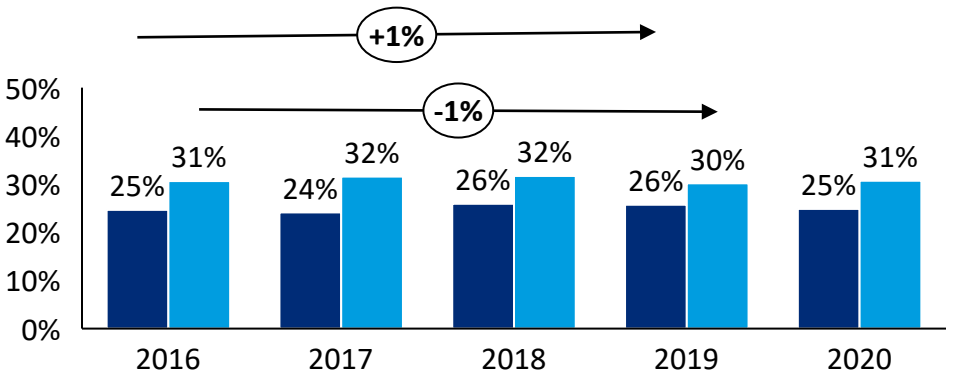


ED Non-ED

PERCENTAGE OF IMAGING SERVICE WITHIN 14 DAYS OF OFFICE VISIT: COMMERCIAL

The percentage of imaging services within 14 days of an office visit was higher for non-ED imaging services in all years and regions

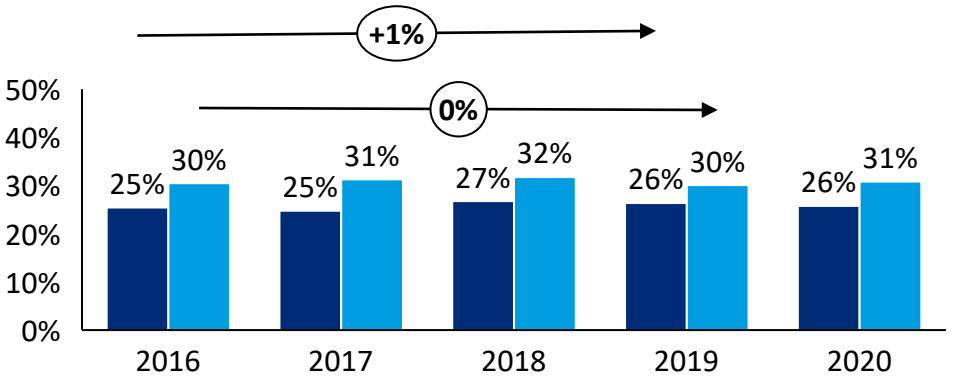
Percentage of imaging service within 14 days of office visit, Vermont



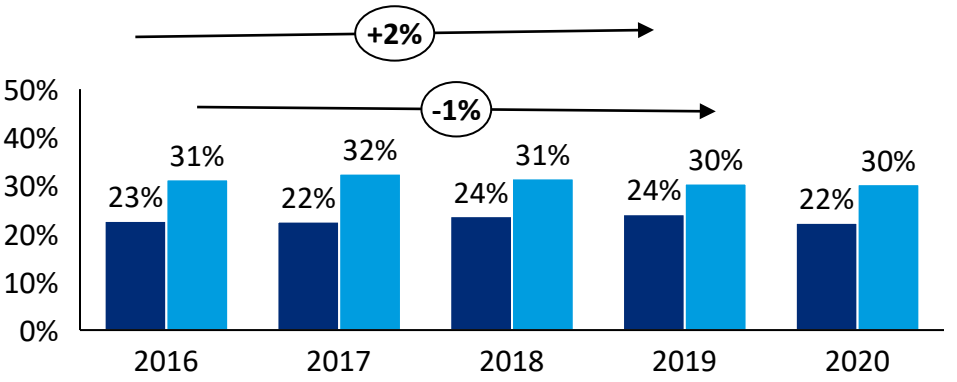
Key Takeaways

- There was a slight increase in the percentage of imaging services within 14 days of an office visit in the Eastern Region for ED imaging services
- The percentage of ED and non-ED imaging services within 14 days of an office visit was lower for the Commercial coverage type than total Vermont

Percentage of imaging service within 14 days of office visit, Vermont Western Region



Percentage of imaging service within 14 days of office visit, Vermont Eastern Region

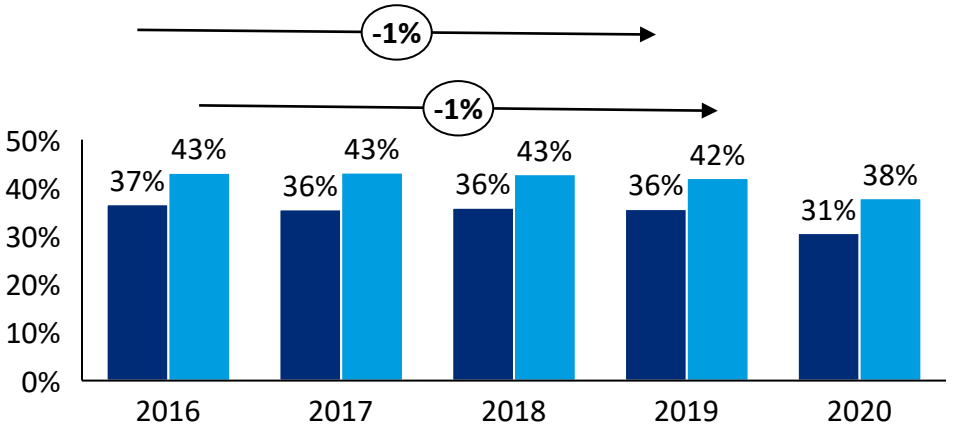


ED Non-ED

PERCENTAGE OF IMAGING SERVICE WITHIN 14 DAYS OF OFFICE VISIT: MEDICARE

The percentage of ED and non-ED imaging services within 14 days of an office visit was higher for the Medicare coverage type` than total Vermont

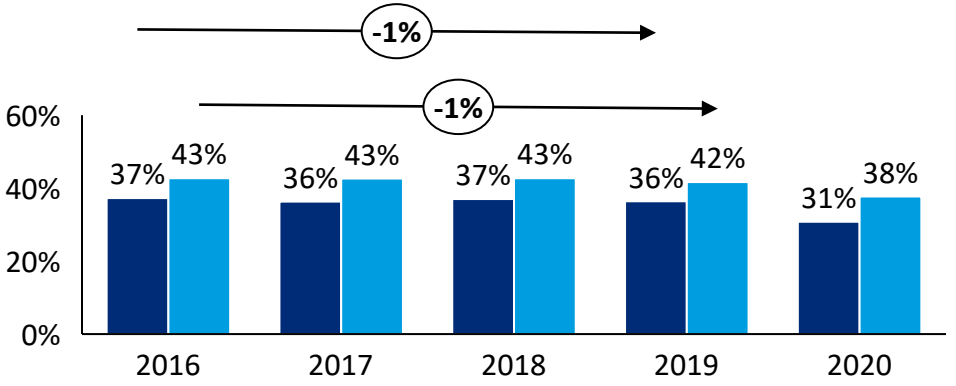
Percentage of imaging service within 14 days of office visit, Vermont



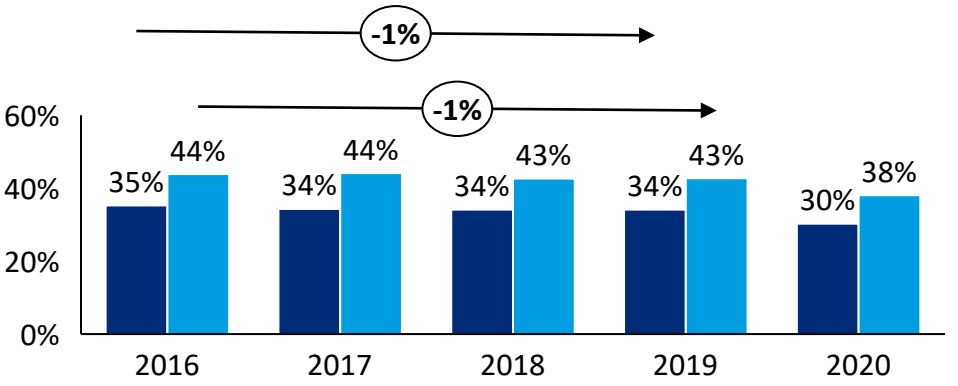
Key Takeaways

- The percentage of imaging services within 14 days of an office visit was higher for non-ED imaging services in all years and regions
- There was a slight decrease in the percentage of imaging services within 14 days of an office visit in both Regions for both ED and non-ED between 2016 and 2019

Percentage of imaging service within 14 days of office visit, Vermont Western Region



Percentage of imaging service within 14 days of office visit, Vermont Eastern Region

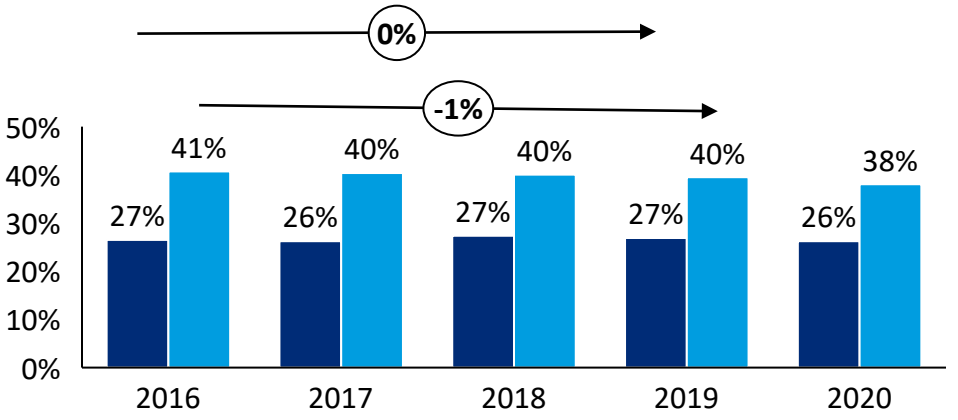


ED Non-ED

PERCENTAGE OF IMAGING SERVICE WITHIN 14 DAYS OF OFFICE VISIT: MEDICAID

There was a greater disparity in the percentage of imaging services within 14 days of an office visit in an ED and non-ED than the Commercial or Medicare coverage types

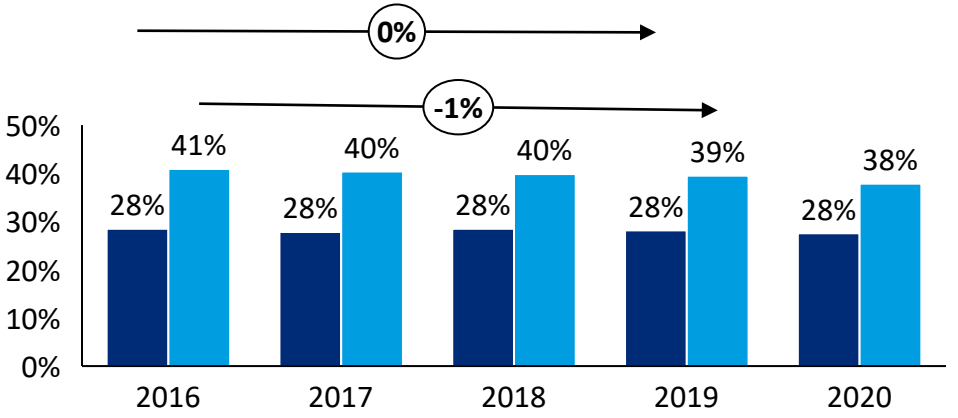
Percentage of imaging service within 14 days of office visit, Vermont



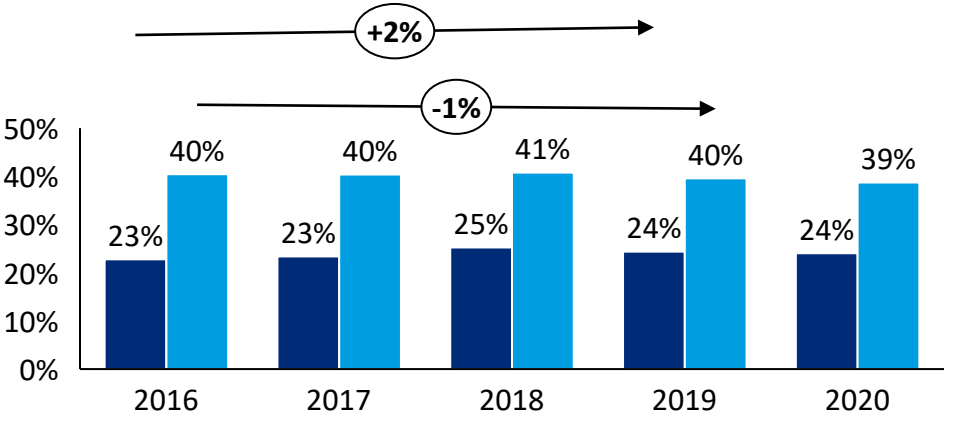
Key Takeaways

- The percentage of imaging services within 14 days of an office visit was higher for non-ED imaging services in all years and regions
- There were small changes in the percentage of imaging services within 14 days of an office visit in both Regions for both ED and non-ED
- The percentage of ED imaging services within 14 days of an office visit was slightly higher in the Western Region than the Eastern Region

Percentage of imaging service within 14 days of office visit, Vermont Western Region



Percentage of imaging service within 14 days of office visit, Vermont Eastern Region

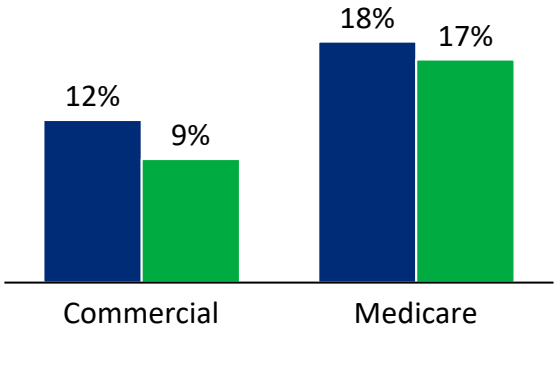


ED Non-ED

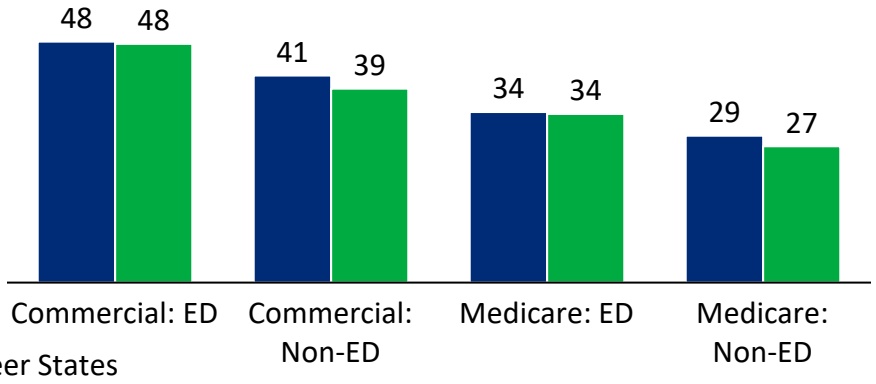
DIAGNOSTIC IMAGING COMPARISON TO PEER STATES: TOTAL

in 2019, utilization of diagnostic imaging in the ED was 32% and 8% higher in Vermont for Commercial and Medicare coverage types, respectively, relative to the peer states

Percentage of diagnostic imaging in an ED, Vermont vs. Peer States (2019)



Average days between an office visit and imaging service, Vermont vs Peer States (2019)



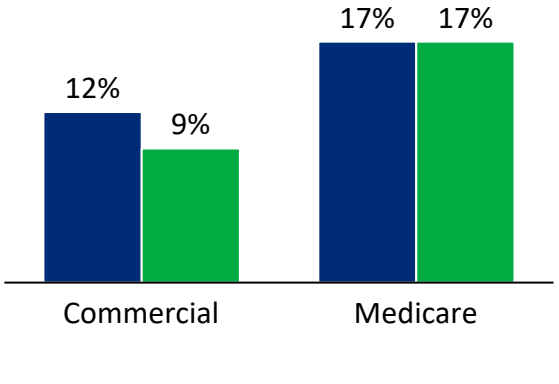
- Across both coverage types, Vermont's percentage of diagnostic imaging that occurred in an ED setting was ~3% higher than for the peer states
- Vermont members experienced a longer average number of days (~+2 days) between an office visit and a diagnostic imaging service than their peer state counterparts for non-ED imaging services, while the number of days were equivalent for diagnostic imaging performed in the ED
- There is relatively little variation in these results by region, as can be seen in the next two slides

[1] Members included in the peer group were drawn from MSAs identified as managed or well managed, and utilized propensity matching to ensure a mix by demographics and chronic conditions similar to that of the Vermont Commercial and Medicare populations represented in VHCURES

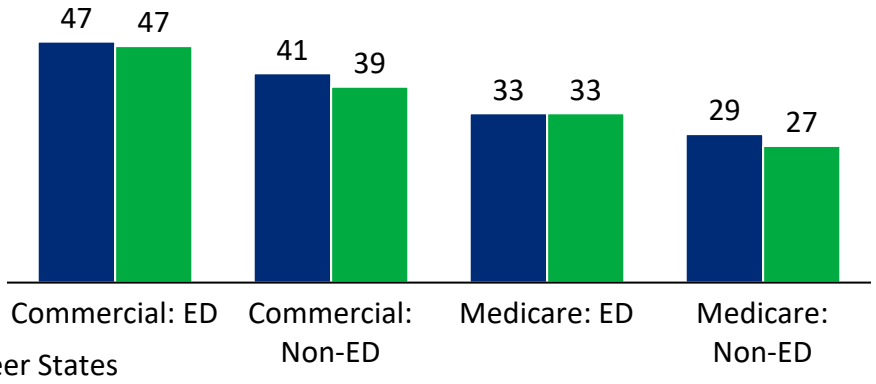
DIAGNOSTIC IMAGING COMPARISON TO PEER STATES: WESTERN REGION

in 2019, utilization of diagnostic imaging in the ED for Commercial members was 27% higher in Vermont relative to the peer states

Percentage of diagnostic imaging in an ED, Vermont vs. Peer States (2019)



Average days between an office visit and imaging service, Vermont vs Peer States (2019)



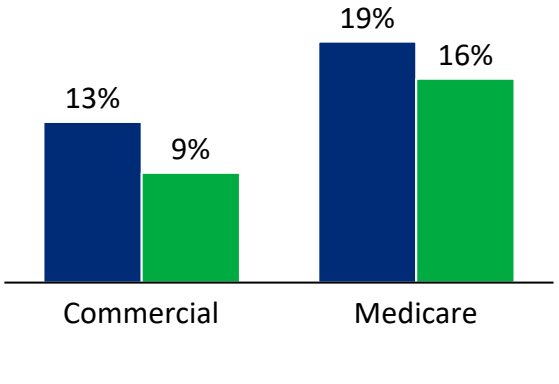
- For the Commercial coverage type Vermont's percentage of diagnostic imaging that occurred in an ED setting was ~3% higher than for the peer states, while there was almost no difference observed for the Medicare coverage type
- Vermont members experienced a longer average number of days (~+2 days) between an office visit and a diagnostic imaging service than their peer state counterparts for non-ED imaging services, while the number of days were equivalent for diagnostic imaging performed in the ED

[1] Members included in the peer group were drawn from MSAs identified as managed or well managed, and utilized propensity matching to ensure a mix by demographics and chronic conditions similar to that of the Vermont Commercial and Medicare populations represented in VHCURES

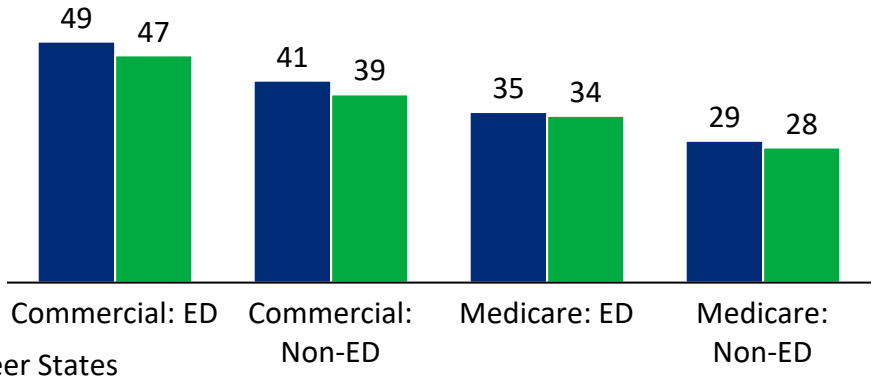
DIAGNOSTIC IMAGING COMPARISON TO PEER STATES: EASTERN REGION

in 2019, utilization of diagnostic imaging in the ED was 46% and 18% higher in Vermont for Commercial and Medicare coverage types, respectively, relative to the peer states

Percentage of diagnostic imaging in an ED, Vermont vs. Peer States (2019)



Average days between an office visit and imaging service, Vermont vs Peer States (2019)



VT Peer States

- Across both coverage types, Vermont's percentage of diagnostic imaging that occurred in an ED setting was ~3% higher than for the peer states
- Vermont members experienced a longer average number of days between an office visit and a diagnostic imaging service than their peer state counterparts for both ED and non-ED based diagnostic imaging services

[1] Members included in the peer group were drawn from MSAs identified as managed or well managed, and utilized propensity matching to ensure a mix by demographics and chronic conditions similar to that of the Vermont Commercial and Medicare populations represented in VHCURES

8

OUT-OF-STATE CARE

OUT OF STATE CARE ANALYSIS

Question

- Are Vermont residents going out of state to receive care? Is this indicative of capacity issues at VT facilities that lead to VT residents needing to g out of state for care?

Data Sources

- 2016 to 2020 VHCURES
  - Members were assigned a single coverage type each month based on the primary insurance indicator field
  - Members with Medicare and Medicaid primary flags (i.e., dual eligible) were assigned to Medicare
  - While 2020 results are included, they are likely impacted by the COVID-19 pandemic which may lead to differing results when compared to prior years
- CMS Shoppable Services
  - List of the 70 services identified by CMS for the hospital price transparency requirements

Assumptions

- Location was based off the internal rendering provider ID provided in the VHCURES data; the provider master list includes physical state and zip code for each provider ID, which was used to determine the location
- Services performed by a provider identified as part of the Dartmouth system were considered in-state for these analyses; Dartmouth providers were identified three ways:
  1. Any provider in the master list with “Dartmouth” included in their legal organization name
  2. Any providers with a NPI that has primary hospital affiliation, physician group affiliation, or practice location of Dartmouth in the Definitive Healthcare Data
  3. Providers in the Definitive Healthcare data with a zip code of 03756

OUT OF STATE CARE ANALYSIS

Methodology

1. Segment members into cohorts based on age, gender, urban/rural county, and VT HSA
2. Pull all desired services, identified by the CMS shoppable services list (CPTs and DRGs)
   - Service counts for procedures identified via CPT code are based on distinct cases of member id, service date, CPT code, primary modifier code, and provider ID
   - Service counts for procedures identified via DRG code are based on distinct cases of member id, service date, DRG code, and provider ID
3. Identify location of service based on the provider location (from the provider master list)
   - *Services performed by providers identified as part of the Dartmouth system in NH are considered to be "in state" in some versions of the analyses*
4. Review trends over multiple years by service category

CMS SHOPPABLE SERVICES ANALYZED

Surgery

- Cardiac valve and other major cardiothoracic procedures with cardiac catheterization with major complications or comorbidities
- Spinal fusion except cervical without major comorbid conditions or complications (MCC)
- Major joint replacement or reattachment of lower extremity without major comorbid conditions or complications (MCC)
- Cervical spinal fusion without comorbid conditions (CC) or major comorbid conditions or complications (MCC)
- Uterine and adnexa procedures for non-malignancy without comorbid conditions (CC) or major comorbid conditions or complications (MCC)
- Removal of 1 or more breast growth open procedure
- Shaving of shoulder bone using an endoscope
- Removal of one knee cartilage using an endoscope
- Removal of tonsils and adenoid glands patient younger than age 12
- Diagnostic examination of esophagus stomach and/or upper small bowel using an endoscope
- Biopsy of the esophagus stomach and/or upper small bowel using an endoscope
- Diagnostic examination of large bowel using an endoscope
- Biopsy of large bowel using an endoscope
- Biopsy of large bowel using an endoscope
- Removal of polyps or growths of large bowel using an endoscope
- Ultrasound examination of lower large bowel using an endoscope
- Removal of gallbladder using an endoscope
- Repair of groin hernia patient age 5 years or older
- Biopsy of prostate gland
- Surgical removal of prostate and surrounding lymph nodes using an endoscope
- Routine obstetric care for vaginal delivery including pre-and postdelivery care
- Routine obstetric care for cesarean delivery including pre-and postdelivery care
- Routine obstetric care for vaginal delivery after prior cesarean delivery including pre-and post-delivery care
- Injection of substance into spinal canal of lower back or sacrum using imaging guidance
- Injection of substance into spinal canal of lower back or sacrum using imaging guidance
- Injections of anesthetic and/or steroid drug into lower or sacral spine nerve root using imaging guidance
- Removal of recurring cataract in lens capsule using laser
- Removal of cataract with insertion of lens

Radiology

- CT scan head or brain without contrast
- MRI scan of brain before and after contrast
- X-Ray lower back minimum four views
- MRI scan of lower spinal canal
- CT scan pelvis with contrast
- MRI scan of leg joint
- CT scan of abdomen and pelvis with contrast
- Ultrasound of abdomen
- Abdominal ultrasound of pregnant uterus (greater or equal to 14 weeks 0 days) single or first fetus
- Ultrasound pelvis through vagina
- Mammography of one breast
- Mammography of both breasts
- Mammography screening bilateral

CMS SHOPPABLE SERVICES ANALYZED

Continued

Lab & Pathology

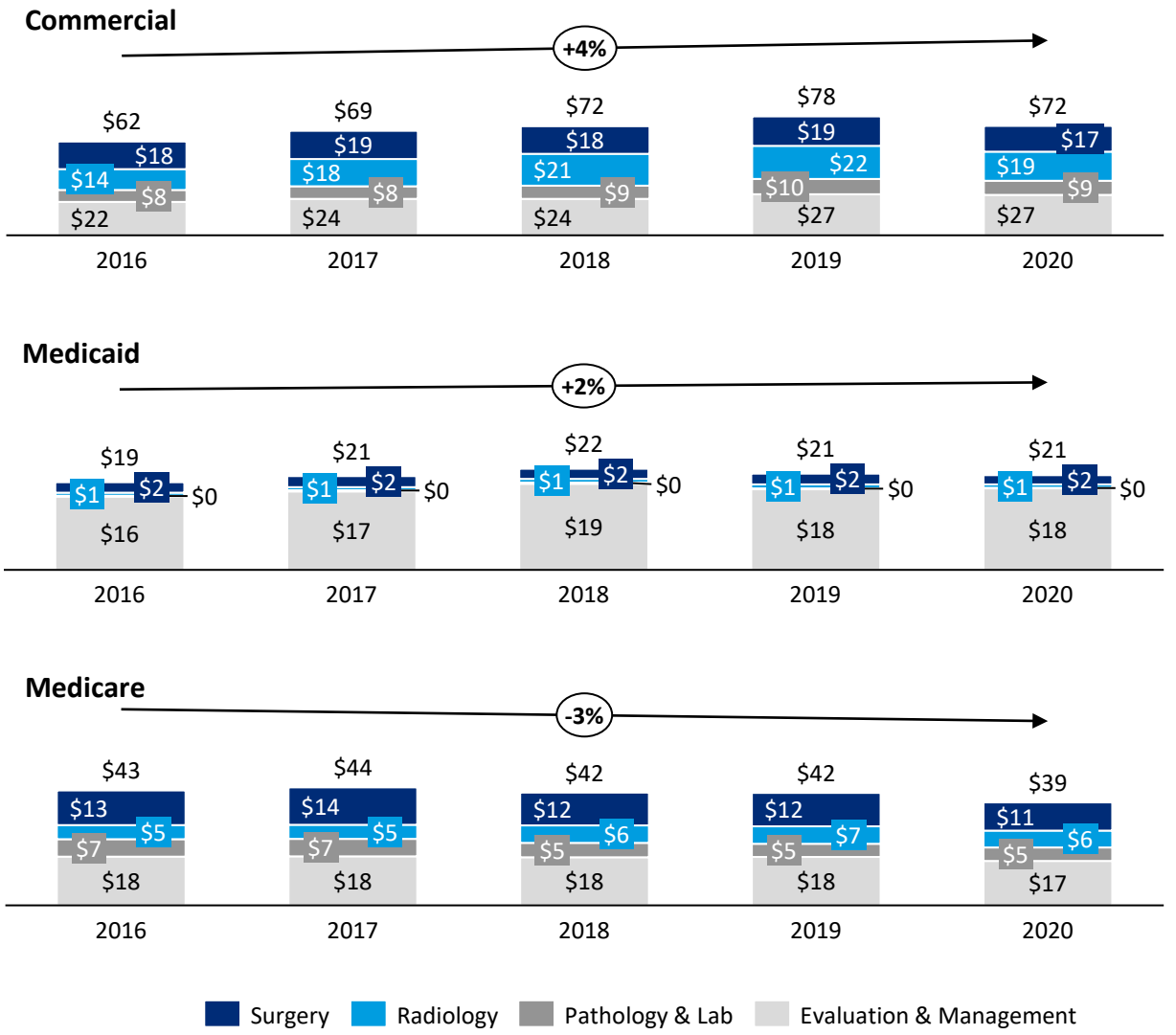
- Basic metabolic panel
- Blood test comprehensive group of blood chemicals
- Obstetric blood test panel
- Blood test lipids (cholesterol and triglycerides)
- Kidney function panel test
- Liver function blood test panel
- Manual urinalysis test with examination using microscope
- Automated urinalysis test
- PSA (prostate specific antigen)
- Blood test thyroid stimulating hormone (TSH)
- Complete blood cell count with differential white blood cells automated
- Complete blood count automated
- Blood test clotting time
- Coagulation assessment blood test

Evaluation & Management

- Psychotherapy 30 min
- Psychotherapy 45 min
- Psychotherapy 60 min
- Family psychotherapy not including patient 50 min
- Family psychotherapy including patient 50 min
- Group psychotherapy
- New patient office or other outpatient visit typically 30 min
- New patient office of other outpatient visit typically 45 min
- New patient office of other outpatient visit typically 60 min
- Patient office consultation typically 40 min
- Patient office consultation typically 60 min
- Initial new patient preventive medicine evaluation (18-39 years)
- Initial new patient preventive medicine evaluation (40-64 years)
- Electrocardiogram routine with interpretation and report
- Insertion of catheter into left heart for diagnosis
- Sleep study
- Physical therapy therapeutic exercise

ANNUAL PMPM COST OF SHOPPABLE SERVICES FOR VERMONT RESIDENTS

Shoppable services represent a material share of spend,[1] between ~5% and ~15% of total spend on Commercial and Medicare respectively and are generally stable in terms of annual spend



- Evaluation & management shoppable services are associated with approximately $15 to $30 PMPM for the different populations
- Shoppable surgery, radiology, and pathology & lab claims contribute very little to the total cost of care for the Medicaid population
- Although many of the services are categorized as Lab & Pathology, in terms of total cost this category is relatively small compared to other categories

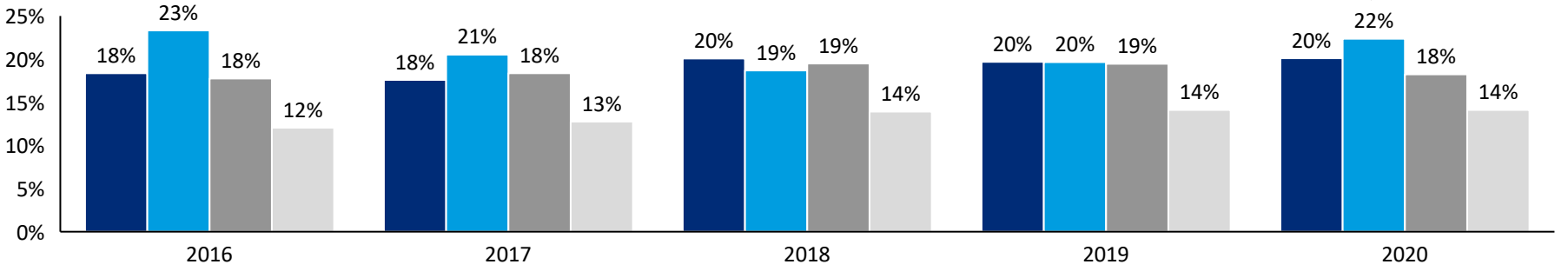
[1] Spend shown represents only those costs associated with claim lines containing the CPT or DRG used to identify a shoppable service

PERCENT OF SHOPPABLE SERVICES OCCURRING OUT OF STATE FOR VERMONT RESIDENTS

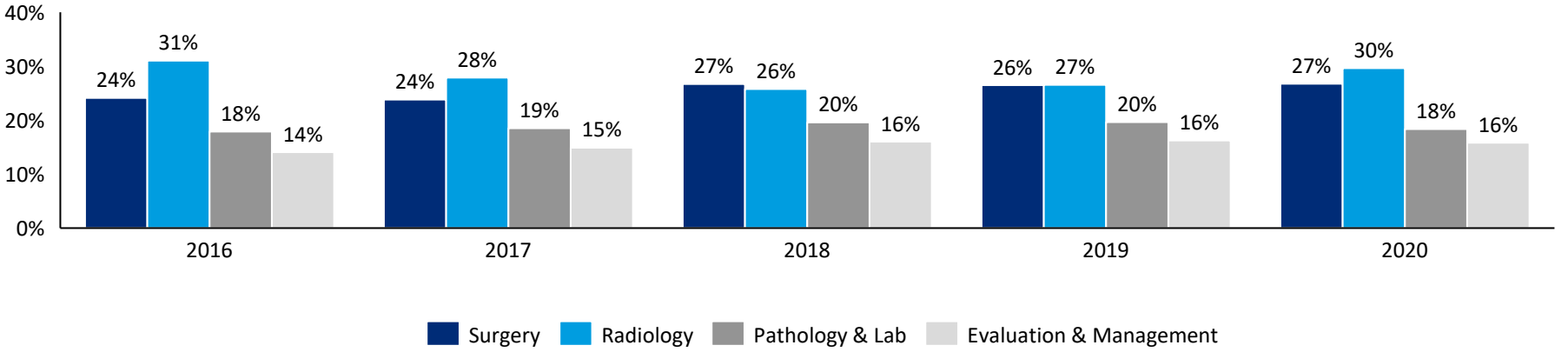
No appreciable trend exists indicating a recent shift of shoppable services out-of-state

The impact of Dartmouth providers is most apparent on surgery and radiology claims

With Dartmouth Providers Considered *In State



With Dartmouth Providers Considered *Out of State

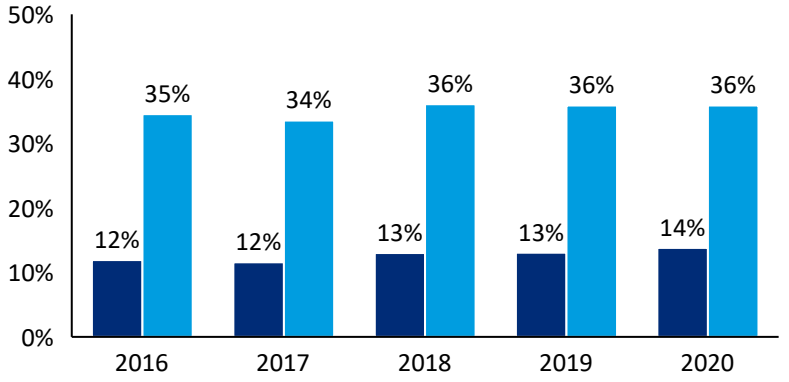


* All coverage types

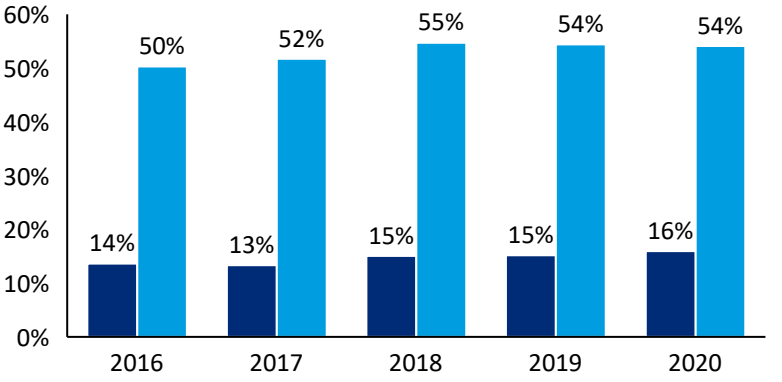
PERCENT OF SHOPPABLE SERVICES OCCURRING OUT OF STATE FOR VERMONT RESIDENTS BY REGION

Residents of the eastern part of the state are much more likely to go out of state, particularly to NH, for care

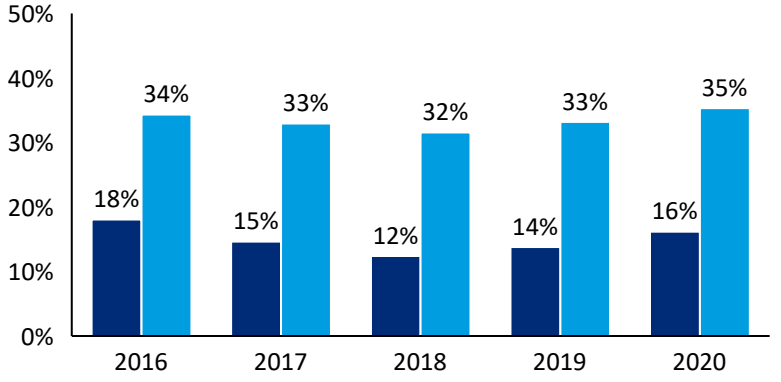
Surgery - With Dartmouth Providers Considered *In State**



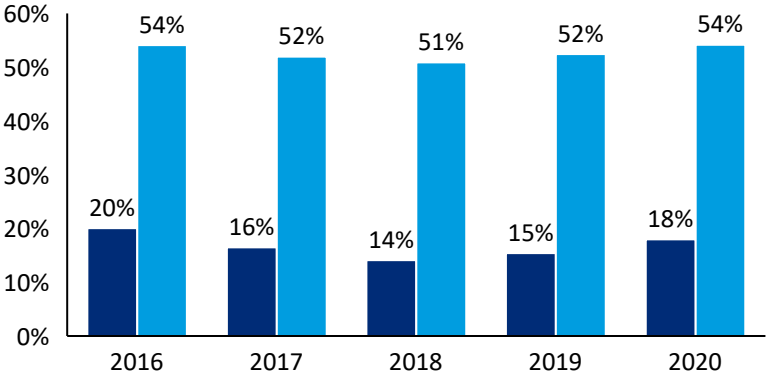
Surgery - With Dartmouth Providers Considered *Out of State**



Radiology - With Dartmouth Providers Considered *In State**



Radiology - With Dartmouth Providers Considered *Out of State**



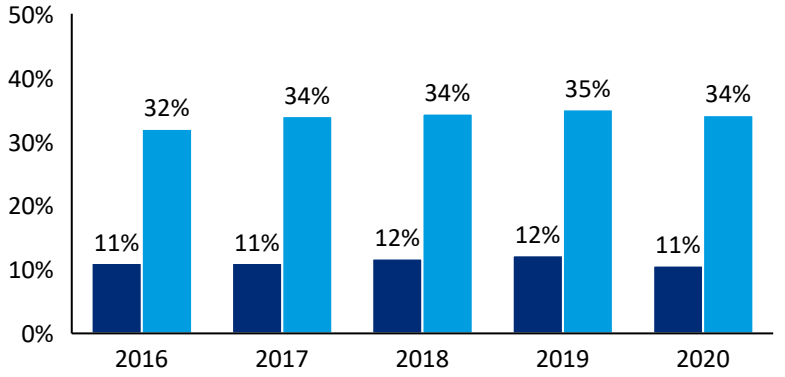
* All coverage types

Western Eastern

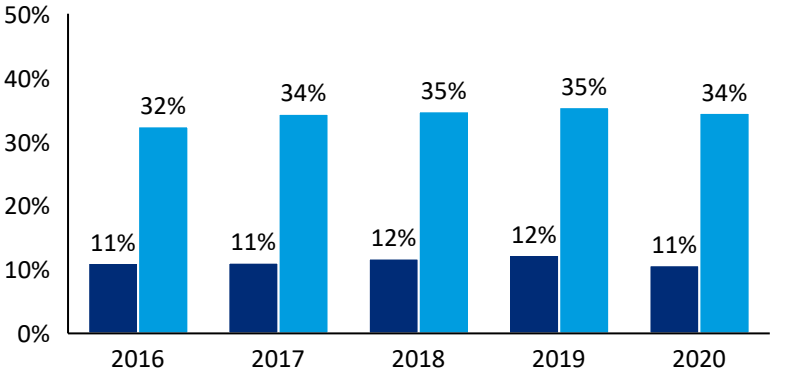
PERCENT OF SHOPPABLE SERVICES OCCURRING OUT OF STATE FOR VERMONT RESIDENTS BY REGION

Residents of the eastern part of the state are much more likely to go out of state, particularly to NH, for care

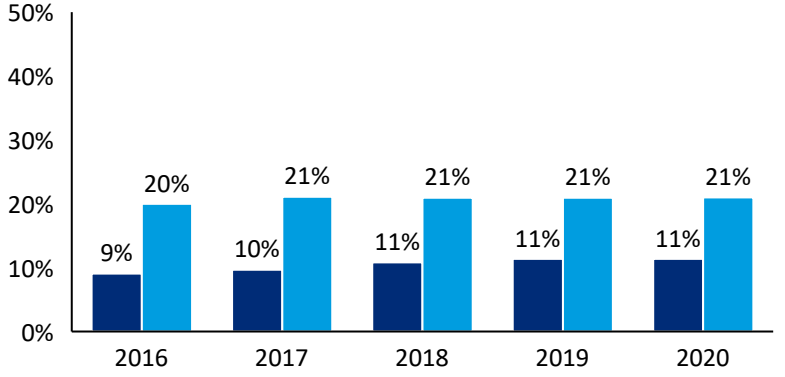
Pathology & Lab - With Dartmouth Providers Considered *In State**



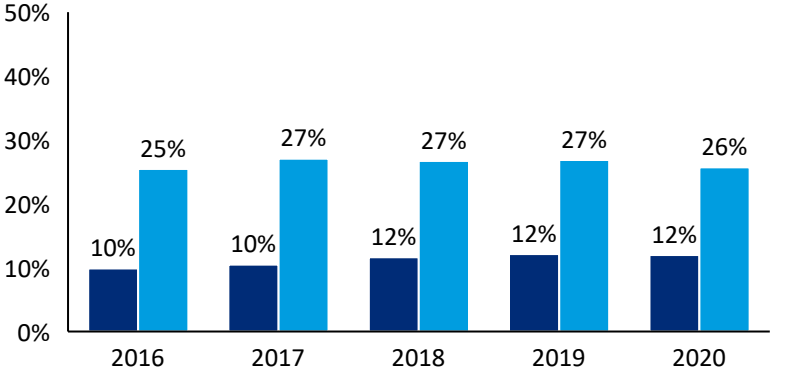
Pathology & Lab - With Dartmouth Providers Considered *Out of State**



Evaluation & Management - With Dartmouth Providers Considered *In State**



Evaluation & Management - With Dartmouth Providers Considered *Out of State**



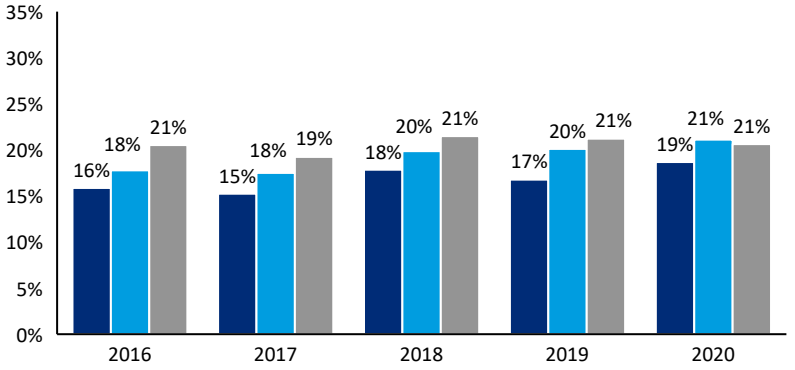
* All coverage types

Western Eastern

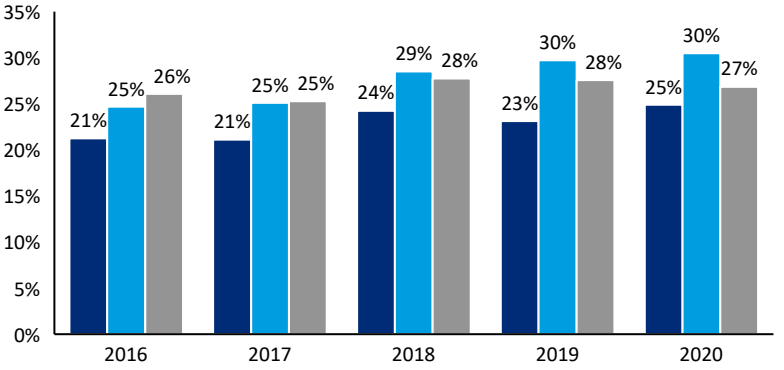
PERCENT OF SHOPPABLE SERVICES OCCURRING OUT OF STATE FOR VERMONT RESIDENTS BY COVERAGE TYPE

Between ~5% and ~10% of out-of-state surgeries & radiology are occurring at Dartmouth with a ~2% LOB increase in out-of-state surgeries occurring in 2018

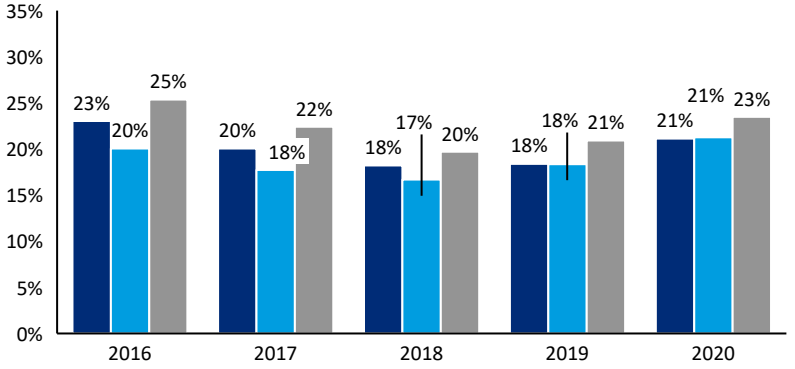
Surgery - With Dartmouth Providers Considered *In State*



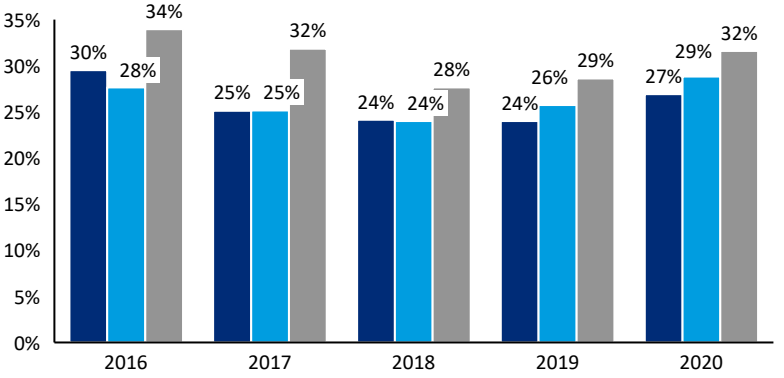
Surgery - With Dartmouth Providers Considered *Out of State*



Radiology - With Dartmouth Providers Considered *In State*



Radiology - With Dartmouth Providers Considered *Out of State*

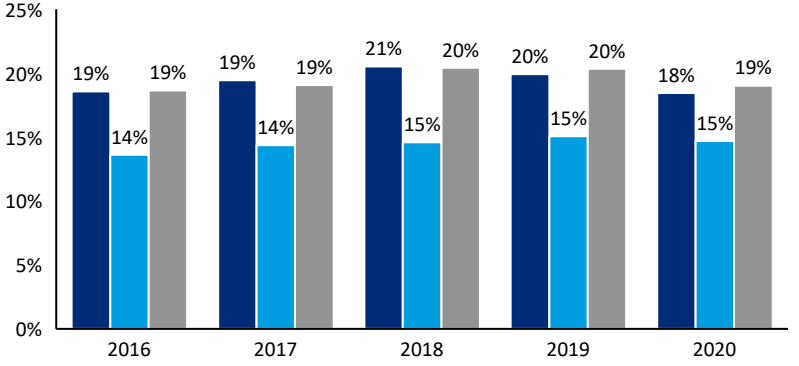


Commercial Medicaid Medicare

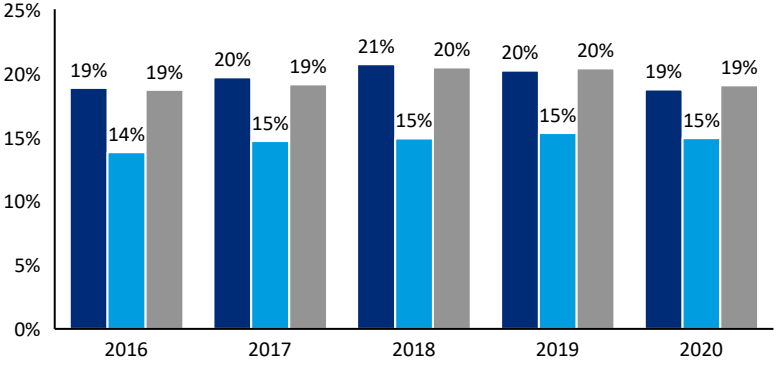
PERCENT OF SHOPPABLE SERVICES OCCURRING OUT OF STATE FOR VERMONT RESIDENTS

Dartmouth does not appear to drive a material increase in out-of-state care for E&M or lab services; overall the trend is generally consistent year over year with a one-time step increase in E&M of ~1% to 2% for each LOB in 2018

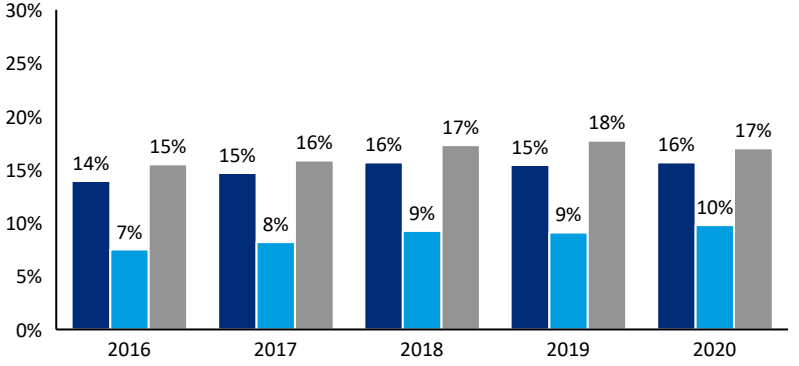
Pathology & Lab - With Dartmouth Providers Considered *In State*



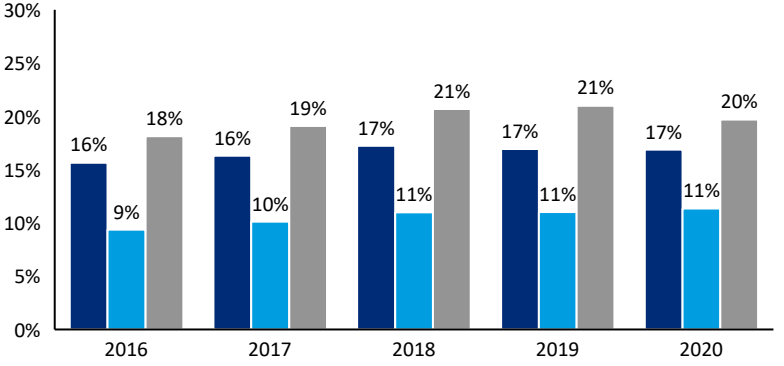
Pathology & Lab - With Dartmouth Providers Considered *Out of State*



Evaluation & Management - With Dartmouth Providers Considered *In State*



Evaluation & Management - With Dartmouth Providers Considered *Out of State*



Commercial Medicaid Medicare

FINAL INSIGHTS

- Most services going out of state are going to New Hampshire, even when Dartmouth providers are considered “in state”

- When looking at all shoppable services, Dartmouth providers account for approximately 20% of services performed in New Hampshire by Vermont residents
  - Almost half of the radiology visits, one third of the surgeries and E&M visits, but very few lab and pathology visits

- The Medicaid population is less likely to go out of state for care relative to the Commercial and Medicare populations
  - This could be due to transportation limitations

- Reviewing the shoppable services, it does not appear there have been any significant changes in the distribution of services occurring out of state since 2016

9

LOW VALUE CARE

LOW VALUE SERVICES

Questions

- How much care is considered low value in Vermont and has this changed over time?
- How does low value care break down into the various types of service in Vermont?

Data Sources

- 2016 to 2020 VHCURES
  - Members were assigned to a single coverage type each month based on the primary insurance indicator field
  - Members with both Medicare and Medicaid primary flags (i.e., dual eligible) were assigned to Medicare
  - While 2020 results are included, they are likely impacted by the COVID-19 pandemic which may lead to differing results when compared to prior years

LOW VALUE SERVICES

Assumptions

- Eastern/Western Region was based on a geographic mapping of Vermont HSAs to closely mirror hospital referral regions.
- Claims-based limitations
  - Diagnosis code: Only the primary diagnosis code was utilized for identification purposes. It is possible that additional diagnosis codes, risk factors, or patient history indicators from a visit would justify some of the services flagged as low value. This limitation would, all else equal, slightly **overstate** the number of low value services.
  - Colon Cancer Screening: Given the extended lookback period for colon cancer screenings (i.e., 5 years or 10 years) and the limited window of VHCURES data available, later years will capture more low value care than earlier years, even when utilization patterns are not changing. For example, if one member received a sigmoidoscopy in 2014 and 2018, the 2018 claim would not be considered low value care because the VHCURES data utilized would not contain the 2014 claim. However, if a member received a sigmoidoscopy in 2016 and 2020, the 2020 claim would be considered low value care because the 2016 claim was in the VHCURES data utilized. Although true utilization patterns did not change in this example, 2020 would be reported as having more low value care than 2018.
- Member-based limitations
  - Continuous enrollment: All eligible populations were defined primarily by patient histories. Members who were not continuously enrolled in the VHCURES data may have additional diagnoses excluding them from consideration that the analysis was unable to capture, which would tend to **overstate** the number of low value services. At the same time, if a member received a specific service before being captured in the VHCURES data set, their first service in VHCURES would not be considered low value, which would tend to **understate** the number of low value services for those services that are based on the number of occurrences (e.g., cancer screenings).

LOW VALUE SERVICES

Methodology (Step 1)

Determine eligible claims to be studied for possible identification as a low value service

1. **Low Back Pain Imaging**: All low back imaging for patients with a diagnosis of low-back pain within six weeks prior to the imaging service
2. **Head/Neck Imaging**: All head/neck imaging for patients aged 18 and older with a history of headaches except for those within thirty days of an inpatient admission for cancer, head trauma, sinusitis, or middle ear disease
3. **Cardiac Screening**: All cardiac screenings for patients aged 18 and older except for patients with a history of high-risk markers, risk factors suggestive of intermediate coronary heart disease risk, or one or more cardiovascular signs and symptoms
   - *Please note that the guidance for this service only excludes those with two or more signs and symptoms, but because we are only utilizing the first diagnosis code on each claim, only one was required for a patient to be excluded*
4. **Colon Cancer Screenings**: All colon cancer screenings for patients aged 50 and older except for patients with a history of curative resection for colon or rectal cancer, diagnosis of colorectal cancer, colorectal cancer, colon adenoma, ulcerative colitis, Crohn disease, or Lynch syndrome
5. **Cervical Cancer Screenings**: All cervical cancer screening services for female patients aged 21 to 65 except for patients with a history of high-grade precancerous lesion, cervical cancer, immunocompromisation, or an abnormal Pap smear
6. **PSA Testing**: All services for PSA testing

LOW VALUE SERVICES

Methodology (Step 2)

Determine low value claims among the eligible claims utilizing guidance from the U.S. Preventive Services Task Force

1. **Low Back Pain Imaging**: Low back imaging claims for patients with chronic back pain (i.e., diagnosis between 26 and 6 weeks prior to the imaging service) and patients with previous lumbar spine surgery are not considered low value; the following low back imaging claims are also not considered low value
   - Claims that occurred within 30 days after an inpatient admission
   - Claims associated with cancer, infection (including HIV infection), and immunosuppression
2. **Head/Neck Imaging**: Only the following head/neck imaging claims are considered low value
   a. CT/CTA in elderly 55+ with raised ESR or temporal arteritis
   b. CT/MRA/CTA in patients with chronic conditions (e.g., trigeminal headache, immunocompromised)
   c. MRA/CTA in patients with underlying conditions (e.g., post traumatic headache, neurologic deficit, epilepsy, ataxia)
   d. CT in patients with meningitis or encephalitis
   e. MRI in patients with chronic headache
3. **Cardiac Screening**: Cardiac screening claims related to inflammatory conditions such as arthritis, joint pains, or myositis and cardiac screening claims that occurred ten days before or thirty days after an inpatient admission are not considered low value

LOW VALUE SERVICES

Methodology (Step 2)

Determine low value claims among the eligible claims utilizing guidance from the U.S. Preventive Services Task Force (continued)

4. **Colon Cancer Screening**: The first colon cancer screening claim for a patient that occurs within the recommended interval (i.e., 5 years for sigmoidoscopies and colonographies and 10 years for screening colonoscopies) is not considered low value
5. **Cervical Cancer Screening**: The first cervical cancer screening claim for a patient that occurs within the recommended 3-year interval is not considered low value
6. **PSA Testing**: PSA testing claims for patients aged 55 to 69 with a history of prostate cancer are not considered low value

LOW VALUE SERVICES

Methodology (Step 3)

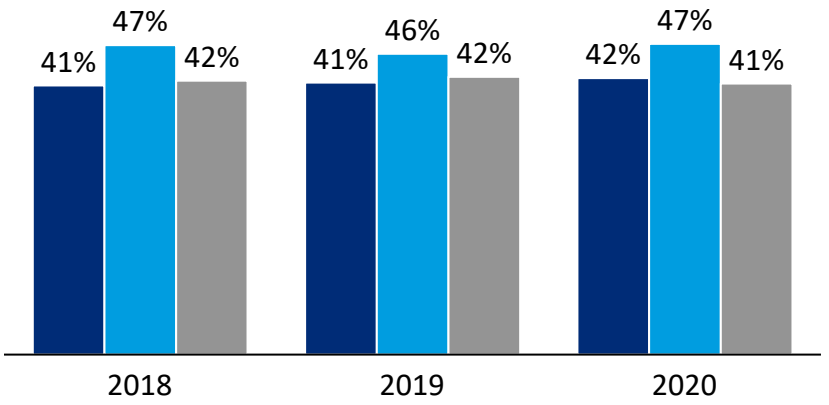
Determine claim dollars for each category for calculation of low value care percentages

1. For the eligible claims, utilize all screening or imaging claims associated with the service, both low value and not low value
2. For the low value claims, only utilize the screenings or imaging claims associated with low value claims based on guidance from the U.S. Preventive Services Task Force
3. Compare the allowed dollar amounts from items 1 and 2 above to calculate the low value care percentages for each service and in total

PERCENTAGE OF ALLOWED DOLLARS FOR LOW VALUE CARE – LOW BACK PAIN IMAGING

Targeted reduction in low value imaging for back pain alone could reduce overall imaging demand by ~0.5%[1]

Low value allowed percentage across all low back pain imaging, Vermont



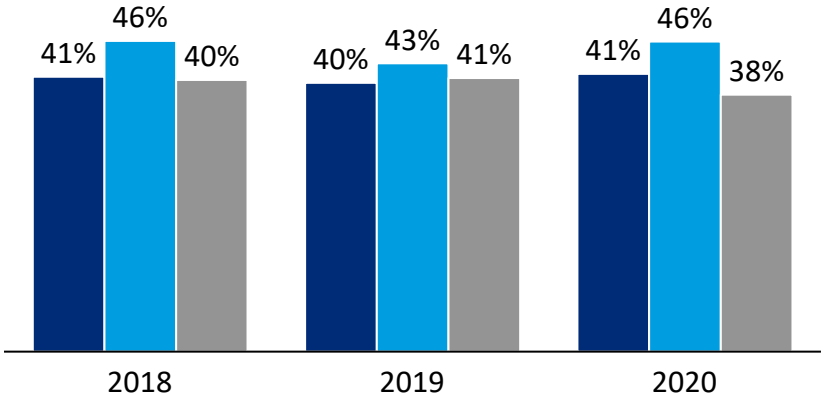
Key Takeaways

On average, low value low back pain imaging represents:

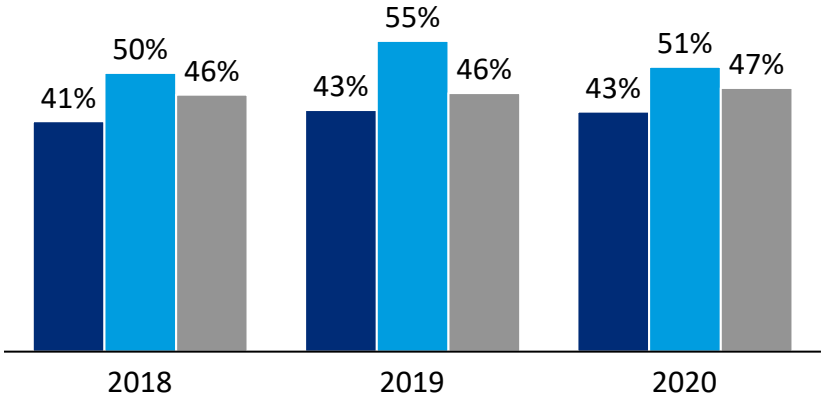
- $0.38 PMPM for Medicare populations
  - 1.31% of the total imaging spend
- $1.16 PMPM for Commercial populations
  - 1.70% of total imaging spend
- $0.05 PMPM for Medicaid populations
  - 1.65% of total imaging spend

Commercial population had the highest rates of low value imaging for low back pain across all regions and years

Low value allowed percentage across all low back pain imaging, Vermont Western Region



Low value allowed percentage across all low back pain imaging, Vermont Eastern Region



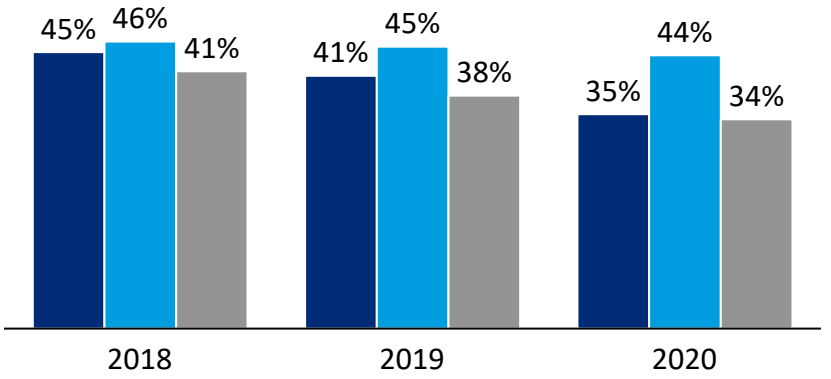
Medicare Commercial Medicaid

1. Assumes ~33% reduction measured in allowed dollars vs. absolute services

PERCENTAGE OF ALLOWED DOLLARS FOR LOW VALUE CARE – CARDIAC SCREENING

About 35%-45% of all cardiac screenings among the eligible population are considered low value

Low value allowed percentage across all cardiac screenings, Vermont



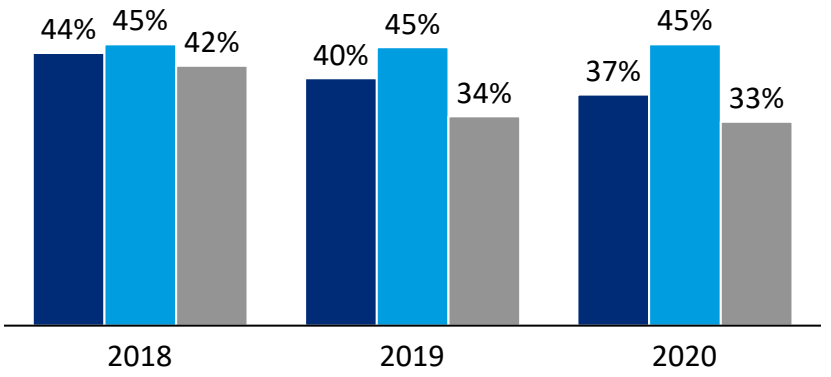
Key Takeaways

On average, low value cardiac screenings represent:

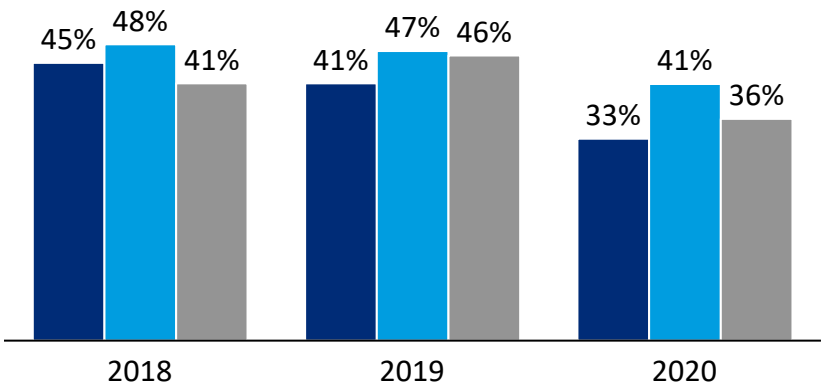
- $0.03 PMPM for Medicare populations
  - 0.01% of total professional costs
- $0.13 PMPM for Commercial populations
  - 0.08% of total professional costs
- $0.01 PMPM for Medicaid populations
  - 0.00% of total professional costs

The percentage of cardiac care screenings considered low value has decreased in recent years

Low value allowed percentage across all cardiac screenings, Vermont Western Region



Low value allowed percentage across all cardiac screenings, Vermont Eastern Region

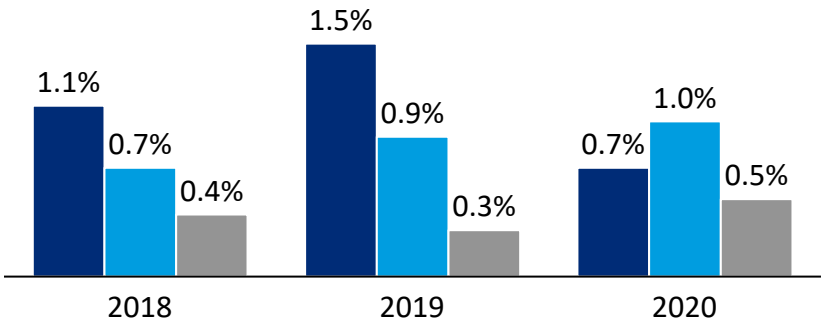


Medicare Commercial Medicaid

PERCENTAGE OF ALLOWED DOLLARS FOR LOW VALUE CARE – HEAD/NECK IMAGING

No significant opportunity exists to free imaging capacity from reduction in low value imaging for headaches

Low value allowed percentage across all head/neck imaging, Vermont



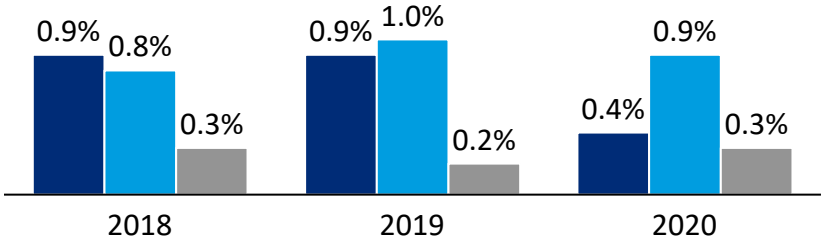
Key Takeaways

On average, low value headache imaging represents:

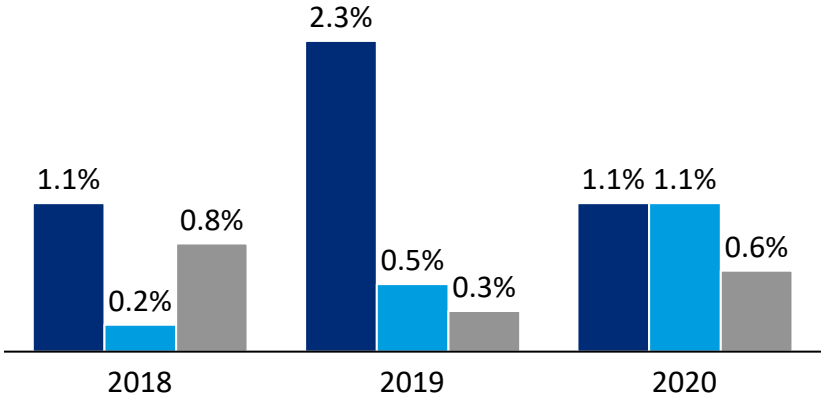
- $0.00 PMPM for Medicare populations
  - 0.01% of the total cost for imaging procedure codes
- $0.01 PMPM for Commercial populations
  - 0.01% of the total cost for imaging procedure codes
- $0.00 PMPM for Medicaid populations
  - 0.01% of the total cost for imaging procedure codes

While a small percentage of total imaging spend, low value headache imaging has increased in recent years for the commercial population

Low value allowed percentage across all head/neck imaging, Vermont Western Region



Low value allowed percentage across all head/neck imaging, Vermont Eastern Region

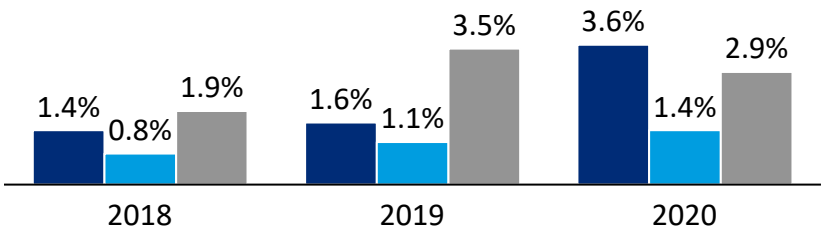


Medicare Commercial Medicaid

PERCENTAGE OF ALLOWED DOLLARS FOR LOW VALUE CARE – COLON CANCER SCREENING

Only a small portion of colon cancer screenings are considered low value, however the percentage has increased

Low value allowed percentage across all colon cancer screenings, Vermont



Key Takeaways

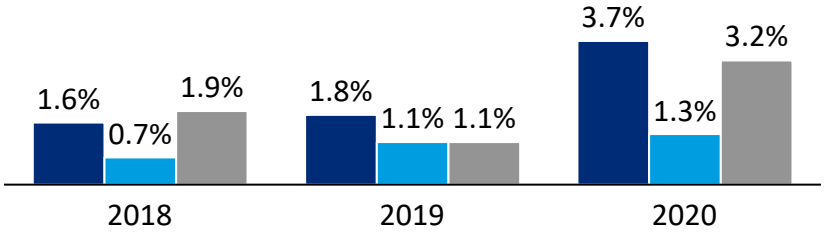
On average, low value colon cancer screenings* represent:

- $0.01 PMPM for Medicare populations
- $0.03 PMPM for Commercial populations
- $0.00 PMPM for Medicaid populations

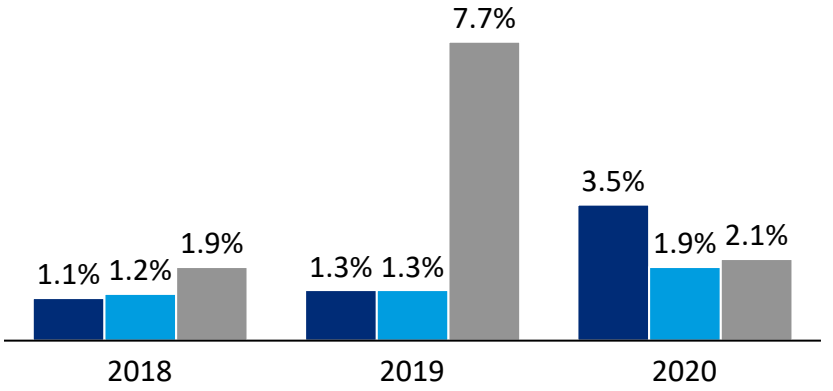
The Medicaid population has the highest percentage of low value colon cancer screenings

*This measure included sigmoidoscopies, colonographies, and screening colonoscopies

Low value allowed percentage across all colon cancer screenings, Vermont Western Region



Low value allowed percentage across all colon cancer screenings, Vermont Eastern Region

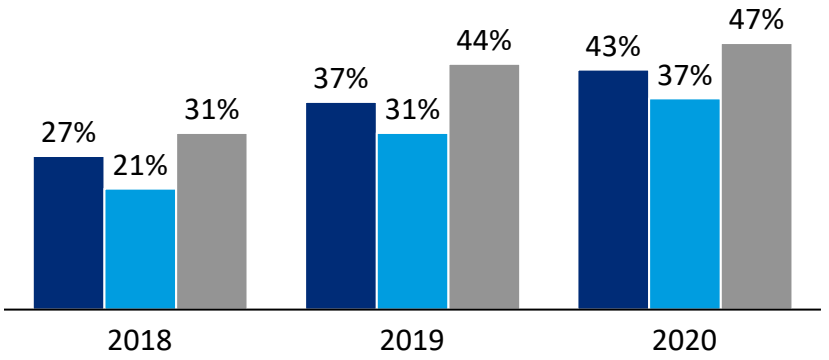


Medicare Commercial Medicaid

PERCENTAGE OF ALLOWED DOLLARS FOR LOW VALUE CARE – CERVICAL CANCER SCREENING

The percentage of low value services has increased across all populations

Low value allowed percentage across all cervical cancer screenings, Vermont



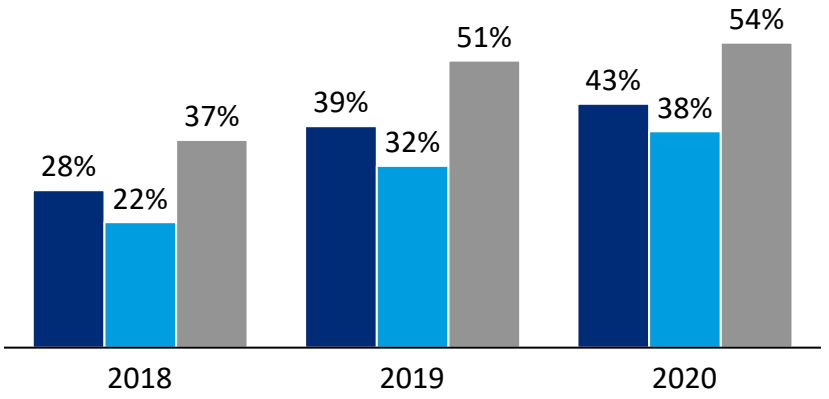
Key Takeaways

On average, low value cervical cancer screening represents:

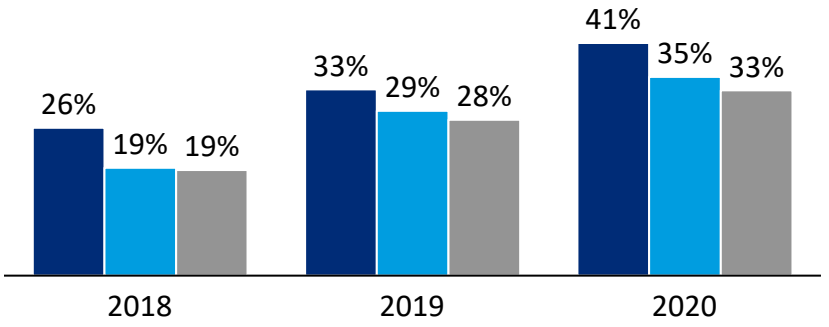
- $0.01 PMPM for Medicare populations
- $0.14 PMPM for Commercial populations
- $0.01 PMPM for Medicaid populations

The commercial population has by far the largest PMPM for low value cervical cancer screenings

Low value allowed percentage across all cervical cancer screenings, Vermont Western Region



Low value allowed percentage across all cervical cancer screenings, Vermont Eastern Region

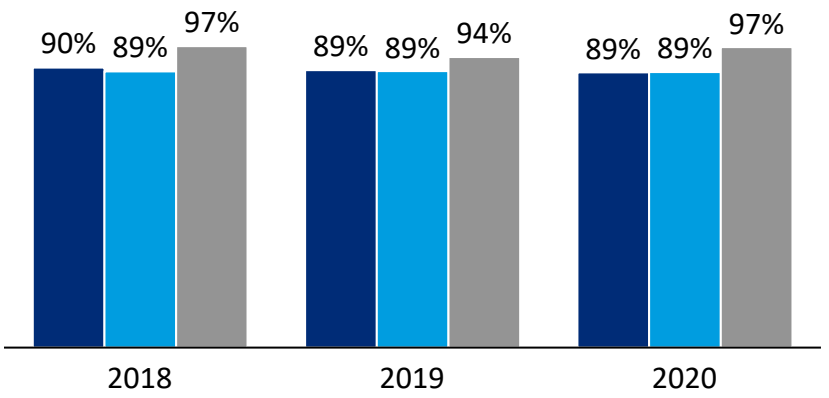


Medicare Commercial Medicaid

PERCENTAGE OF ALLOWED DOLLARS FOR LOW VALUE CARE – PSA TESTING

Most PSA testing is considered low value across all populations though the PMPM for the Medicaid population is significantly smaller than Medicare and Commercial

Low value allowed percentage across all PSA tests, Vermont



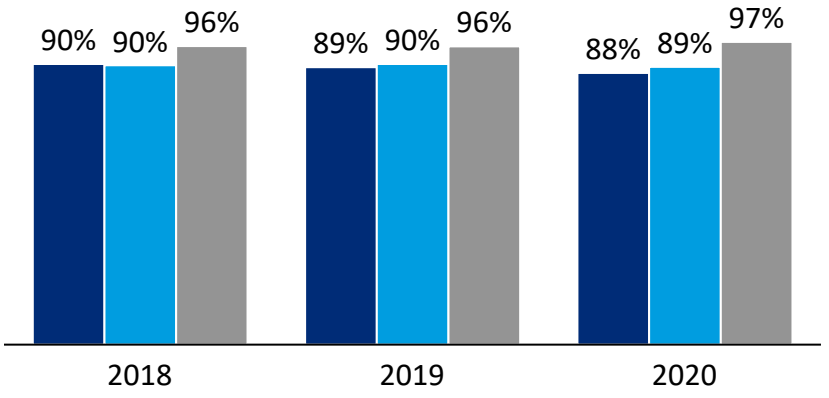
Key Takeaways

On average, low value PSA testing represents:

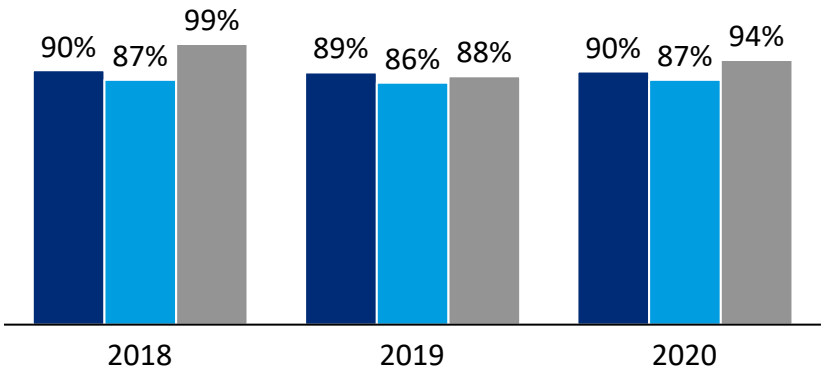
- $0.22 PMPM for Medicare populations
- $0.43 PMPM for Commercial populations
- $0.00 PMPM for Medicaid populations

The main beneficiaries of PSA testing are patients 55-69 with a prior history of prostate cancer and a risk of recurrence

Low value allowed percentage across all PSA tests, Vermont Western Region



Low value allowed percentage across all PSA tests, Vermont Eastern Region

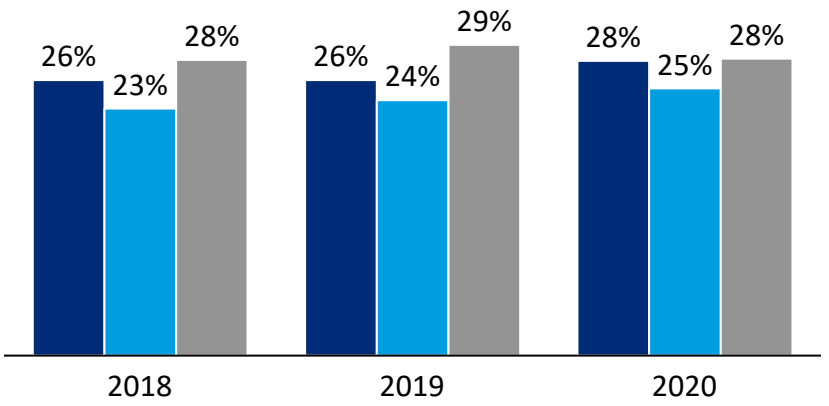


Medicare Commercial Medicaid

PERCENTAGE OF ALLOWED DOLLARS FOR LOW VALUE CARE – TOTAL

Commercial populations have the highest per capita spend and highest percent of total medical costs associated with low value services analyzed

Low value allowed percentage across six service types, Vermont

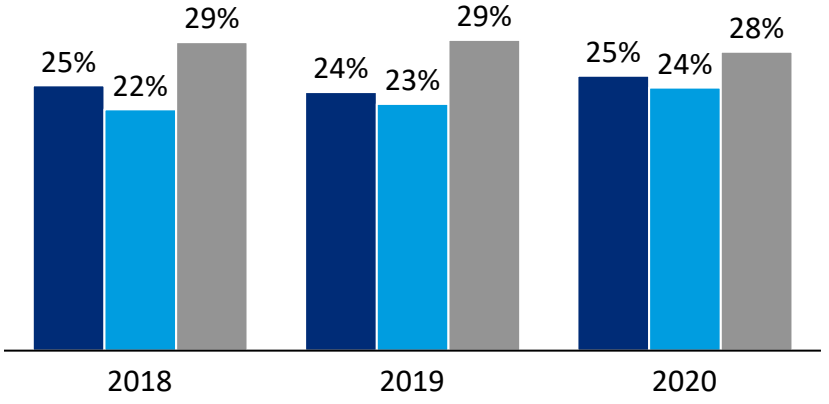


Key Takeaways

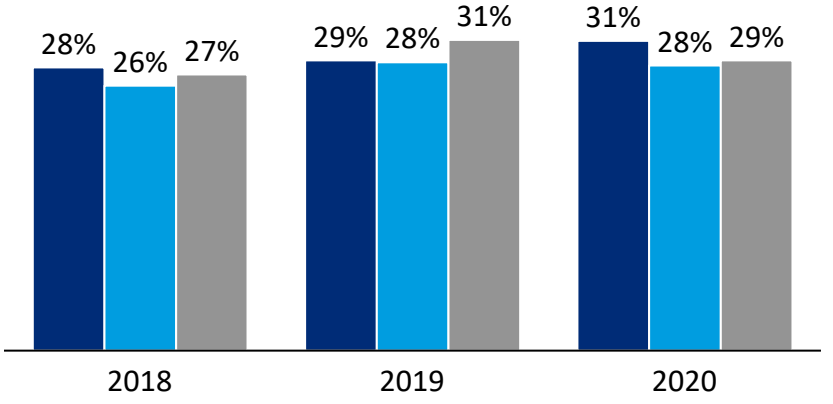
On average, claims associated with low value services captured on the previous six slides represent:

- $0.66 PMPM for Medicare populations
  - 0.07% of total medical costs
- $1.90 PMPM for Commercial populations
  - 0.40% of total medical costs
- $0.07 PMPM for Medicaid populations
  - 0.01% of total medical costs

Low value allowed percentage across six service types, Vermont Western Region



Low value allowed percentage across six service types, Vermont Eastern Region



Medicare Commercial Medicaid

10

APPENDIX

PROVIDER SPECIALTY MAPPINGS

CARRIER SPECIALTY DESCRIPTIONS INCLUDED IN ACCESSIBILITY ANALYSIS

Tested Specialty	BCBSVT Descriptions	MVP Descriptions	Medicaid Descriptions
Allergy and Immunology	ALLERGY PEDIATRIC ALLERGY ALLERGY IMMUNOLOGY	Allergy and Immunology Pediatrics, Allergy & Immunology	ALLERGY/IMMUNOLOGY
Cardiovascular Disease	ADV TRANS CARDIOLOGY CARDIOVASCULAR CARDIOVASCULAR SURG ELECTROPHYSIOLOGY ADV TRANS CARDIOLOGY CARDIOVASCULAR INT MED INTERV CARDI	Cardiology Interventional Cardiology Cardiac Electrophysiology Advanced Heart Failure and Transplant Cardiology	CARDIOLOGY
Chiropractor	CHIROPRACTOR	Chiropractic	CHIROPRACTIC
Dermatology	DERMATOLOGY PEDI DERMATOLOGY	Dermatology Pediatrics, Dermatology	DERMATOLOGY
ENT/Otolaryngology	OTOL LARYNGOL RHINOL OTOLARYNGOLOGY ENT	Otolaryngology Pediatrics, Otolaryngology	OTALARYNGOLOGY
Endocrinology	ENDOCRINOLOGY	Endocrinology	ENDOCRINOLOGY
Gastroenterology	GASTROENTEROLOGY	Gastroenterology	GASTROENTEROLOGY
General Surgery	GENERAL SURGERY VASCULAR SURGERY COLON RECTAL SURG	Surgery, General Surgery, Vascular Surgery, Colon and Rectal	GENERAL SURGERY COLORECTAL SURGERY VASCULAR SURGERY

CARRIER SPECIALTY DESCRIPTIONS INCLUDED IN ACCESSIBILITY ANALYSIS

Tested Specialty	BCBSVT Descriptions	MVP Descriptions	Medicaid Descriptions
Gynecology (OB/GYN)	CERTIFIED MIDWIFE GYNECOLOGY MATERNAL FETAL MED NURSE MIDWIFE OB GYNECOLOGY OBSTETRICS WOMENS HEALTH NP	Obstetrics & Gynecology Obstetrics & Gynecology/Certified Nurse Midwives Maternal and Fetal Medicine OB/GYN Certified Professional Midwifery Gynecology Gynecology/Oncology Certified Professional Midwife - OB/GYN Midwifery NP Obstetrics/Gynecology NP Womens Health	MIDWIFE CERTIFIED NURSE MIDWIFE OBSTETRICS/GYNECOLOGY
General Acute Care Hospital	GEN CRITICAL HOSP GENERAL HOSPITAL	Contracted Hospital	NON TEACHING HOSPITAL WITHOUT SWING BEDS ACUTE CARE GENERAL HOSPITAL TEACHING HOSPITAL HOSPITAL WITH SWING BED
Hematology	HEMATOLOGY	Hematology	HEMATOLOGY/ONCOLOGY
Infectious Diseases	INFECTIOUS DISEASES PEDI INF DISEASES	Pediatrics, Infectious Disease Infectious Disease	INFECTIOUS DISEASE
Neonatology	NEONAT CRIT CARE NP NEONAT PERINAT MED NEONATAL NP NEONATAL NURSE NEONATOLOGY	Neonatal - Perinatal Medicine NP Neonatology	

CARRIER SPECIALTY DESCRIPTIONS INCLUDED IN ACCESSIBILITY ANALYSIS

Tested Specialty	BCBSVT Descriptions	MVP Descriptions	Medicaid Descriptions
Nephrology	NEPHROLOGY PEDIATRIC NEPHROLOGY	Nephrology Pediatrics, Nephrology	NEPHROLOGY
Neurological Surgery	CRIT CARE NEURO SURG NEUROLOGICAL SURG	Surgery, Neurological	NEUROSURGERY
Neurology	NEUROLOGY NEUROMUSCULAR MED NEUROMUSCULO OMM NEUROPHYSIOLOGY	Neurology Clinical Neurophysiology Neuromusculoskeletal Medicine Neuromuscular Medicine Neurology, Vascular	NEUROLOGY
Oncology	GYNECOLOGIC ONCOLOGY INT MED HEMAT ONC MEDICAL ONCOLOGY ONCOLOGY RADIATION ONCOLOGY	Oncology Radiation Oncology Gynecology/Oncology Surgical Oncology	MEDICAL ONCOLOGY
Ophthalmology	OPTOMETRIST OPHTHALMOLOGY VISION THERAPY OPT	Optometry Ophthalmology	OPTOMETRIST OPHTHALMOLOGY
Orthopedic Surgery	HAND SURGERY FOOT ANKLE ORTH SURG ORTHOPEDIC SURGERY	Surgery, Orthopaedic Surgery, Hand	HAND SURGERY ORTHOPEDIC SURGERY
Pain Management	PAIN MEDICINE PAIN MGMT ANESTHESIA	Pain Medicine	CARDIOLOGY

CARRIER SPECIALTY DESCRIPTIONS INCLUDED IN ACCESSIBILITY ANALYSIS

Tested Specialty	BCBSVT Descriptions	MVP Descriptions	Medicaid Descriptions
PCP	ADULT HEALTH NP ADV REGISTERED NP FAMILY NP FAMILY PRACTICE GENERAL PRACTICE LIC NURSE PRAC NURSE PRACTITIONER PHYSICIAN ASSISTANT INTERNAL MEDICINE	Family Practice General Practice NP Adult Health NP Family Health Preventive Medicine Primary Care Provider Internal Medicine Naturopathic Medicine	FAMILY PRACTICE GENERAL PRACTICE CERTIFIED FAMILY PRACTITIONER INTERNAL MEDICINE NATUROPATHIC PHYSICIAN W/O CHILDBIRTH ENDORSEMENT NATUROPATHIC PHYSICIAN WITH CHILDBIRTH ENDORSEMENT
Pediatrics	ADOLESCENT MEDICINE PEDI DEVELOP BEHAV PEDIATRIC NP PEDIATRICS FAMILY NP FAMILY PRACTICE NATUROPATH GENERAL PRACTICE PHYSICIAN ASSISTANT	Pediatrics Psychiatry, Child Pediatric Rehabilitation Medicine Neurodevelopmental Disabilities NP Pediatrics Family Practice NP Family Health Naturopathic Medicine General Practice Adolescent Medicine Pediatrics, Developmental Pediatrics, Allergy & Immunology Pediatrics, Child Abuse Pediatrics, Dermatology Pediatrics, Otolaryngology Pediatrics, Sports Medicine	PEDIATRIC MEDICINE CERTIFIED PEDIATRIC PRACTITIONER FAMILY PRACTICE NATUROPATHIC PHYSICIAN W/O CHILDBIRTH ENDORSEMENT NATUROPATHIC PHYSICIAN WITH CHILDBIRTH ENDORSEMENT GENERAL PRACTICE

CARRIER SPECIALTY DESCRIPTIONS INCLUDED IN ACCESSIBILITY ANALYSIS

Tested Specialty	BCBSVT Descriptions	MVP Descriptions	Medicaid Descriptions
Pediatric Cardiology	PEDIATRIC CARDIOLOGY	Pediatrics, Cardiology	PEDIATRIC MEDICINE, CARDIOLOGY
Pediatric Endocrinology	PEDI ENDOCRINOLOGY	Pediatric Endocrinology	PEDIATRIC MEDICINE, ENDOCRINOLOGY
Pediatric Gastroenterology	PED GASTROENTEROLOGY	Pediatrics, Gastroenterology	PEDIATRIC MEDICINE, GASTROENTEROLOGY
Pediatric Hematology/Oncology	PEDI HEMATOLOGY ONC	Pediatrics, Hematology-Oncology	PEDIATRIC MEDICINE, HEMATOLOGY/ONCOLOGY
Pediatric Neurology	PEDIATRIC NEUROLOGY SPC QUAL CHILD NEURO	Child Neurology Neurology with Special Qualification in Child Neurology Pediatric Neurodevelopmental Disabilities	PEDIATRIC MEDICINE, NEUROPSYCHIATRY, NEUROLOGY, PSYCIATRIC
Pediatric Surgery	PEDIATRIC SURGERY	Surgery, Pediatric	PEDIATRIC MEDICINE, GENERAL SURGERY
Physical Medicine and Rehabilitation	PEDI REHAB PHYS MED PHYSICAL MED REHAB PHYSICAL THERAPIST	Physical Therapy Physical Medicine and Rehabilitation	PHYSICAL THERAPY PHYSICAL MEDICINE AND REHABILITATION
Plastic Surgery	PLASTIC HAND SURG PLASTIC RECONST SURG PLASTIC SURGERY HAND SURGERY	Surgery, Plastic Plastic Surgery / Head and Neck	PLASTIC AND RECONSTRUCTIVE SURGERY HAND SURGERY
Podiatry	PODIATRY SURG	Podiatry	PODIATRY

CARRIER SPECIALTY DESCRIPTIONS INCLUDED IN ACCESSIBILITY ANALYSIS

Tested Specialty	BCBSVT Descriptions	MVP Descriptions	Medicaid Descriptions
Psychiatric Hospital	INPATIENT PSYCH PSYCHIATRIC HOSP	Inpatient Alcohol/Substance Abuse Inpatient Mental Health Private Psych & ASA Inpatient	PSYCHIATRIC HOSPITAL RESIDENTIAL TREATMENT SERVICES
Psychiatric and Mental Health	CHILD PSYCHIATRY CLIN SOCIAL WORKER GERIATRIC PSYCHIATRY MENT HLTH CLINICIAN MENTAL HEALTH COUNS NEUROPSYCHOLOGIST PSYCH MENT HLTH NP PSYCH SOCIAL WORKER PSYCHIATRIC NURSE PSYCHIATRY PSYCHOLOGIST OUTPATIENT PSYCH REHAB HOSPITAL VASCULAR NEURO PSY PEDI CHILD ABUSE PSYCH RES TREAT FAC LIC PROF COUNSELOR PROF COUNSELOR PSYCHOSOMATIC MED	Mental Health Counselor Psychiatry Psychology Psychiatry, Child & Adolescent NP Psychiatry Psychiatry, Addiction Applied Behavioral Analyst Psychiatry, Geriatric Outpatient Mental Health Outpatient Alcohol/Substance Abuse Psychoanalysis	PSYCHIATRIC LICENSED PSYCHOLOGIST/SOCIAL WORKER LICENSED CLINICAL MENTAL HEALTH COUNSELOR BOARD CERTIFIED BEHAVIORAL ANALYST STATE DEFINED COMMUNITY BEHAVIORAL HEALTH SERVICES CLINICAL PSYCHOLOGIST/PHD BOARD CERTIFIED ASSISTANT BEHAVIORAL ANALYST COMMUNITY BEHAVIORAL HEALTH DAY HOSPITAL SERVICES (Moved from Psychiatric Hospital NEUROPSYCHIATRY INDEPENDANTLY BILLING PSYCHOLOGIST
Pulmonology	PEDIATRIC PULMONARY PULMONARY DISEASES	Pulmonary Disease Pediatrics, Pulmonary	PULMONARY DISEASE

CARRIER SPECIALTY DESCRIPTIONS INCLUDED IN ACCESSIBILITY ANALYSIS

Tested Specialty	BCBSVT Descriptions	MVP Descriptions	Medicaid Descriptions
Radiology	DIAGNOSTIC RADIOLOG NUCLEAR MEDICINE PEDIATRIC RADIOLOGY RADIOLOGY VASCULAR INT RADIOL	Radiology, Diagnostic Radiology Nuclear Medicine Radiology, Pediatric Vascular & Interventional Radiology Interventional Radiology and Diagnostic Radiology Radiology, Nuclear	DIAGNOSTIC RADIOLOGY NUCLEAR MEDICINE INTERVENTIONAL RADIOLOGY
Rheumatology	PEDI RHEUMATOLOGY RHEUMATOLOGY	Pediatrics, Rheumatology Rheumatology	RHEUMATOLOGY
Substance Abuse	ADDICTION MEDICINE ADDICTION PSYCHIATRY LIC PROF COUNSELOR PROF COUNSELOR CLIN SOCIAL WORKER PSYCH SOCIAL WORKER PSYCHOLOGIST PSYCH MENT HLTH NP PSYCHIATRY	Alcohol/Substance Abuse Counselor Addiction Medicine Buprenorphine Prescriber Psychiatry, Addiction Personalized Recovery Oriented Services Psychiatry Psychology NP Psychiatry	ADDICTION MEDICINE SUBSTANCE ABUSE TREATMENT SERVICES PSYCHIATRIC LICENSED PSYCHOLOGIST/SOCIAL WORKER LICENSED CLINICAL MENTAL HEALTH COUNSELOR CLINICAL PSYCHOLOGIST/PHD
Sleep Medicine	SLEEP DISORDER CLIN SLEEP MEDICINE	Sleep Medicine Pediatrics, Sleep Medicine	CARDIOLOGY
Urology	PEDIATRIC UROLOGY UROLOGY	Urology Pediatric Urology	UROLOGY

VERMONT POPULATION PROJECTIONS

VERMONT POPULATION BY AGE, GENDER, AND COVERAGE TYPE - 2020

Statewide

Age	Gender	Commercial	Medicare	Medicaid	Uninsured	Other	Total
Under 9	**M**	13,000	115	16,913	639	360	31,028
10 – 19	**M**	20,045	136	16,108	1,285	424	37,999
20 – 29	**M**	29,250	1,594	8,044	3,413	345	42,647
30 – 34	**M**	11,518	831	3,927	2,067	149	18,493
36 – 39	**M**	12,244	1,115	3,536	1,397	231	18,521
40 – 49	**M**	24,897	2,117	5,563	2,575	445	35,597
50 – 59	**M**	31,274	2,454	5,663	2,401	532	42,323
60 – 64	**M**	17,337	1,365	3,232	1,055	295	23,286
65 – 69	**M**	742	19,849	0	42	6	20,639
70 – 74	**M**	589	15,636	0	32	5	16,261
75 – 84	**M**	109	16,895	0	25	6	17,034
85+	**M**	35	5,245	0	4	1	5,286
Under 9	**F**	12,175	123	15,911	552	325	29,086
10 – 19	**F**	18,446	141	15,956	937	405	35,886
20 – 29	**F**	26,359	1,271	10,077	2,075	318	40,100
30 – 34	**F**	10,380	647	5,869	1,094	147	18,138
36 – 39	**F**	12,598	884	4,357	695	241	18,775
40 – 49	**F**	25,713	1,615	6,919	1,564	461	36,273
50 – 59	**F**	33,433	2,437	6,147	1,958	566	44,541
60 – 64	**F**	18,441	1,516	3,090	988	315	24,350
65 – 69	**F**	946	20,794	0	298	6	22,044
70 – 74	**F**	757	16,606	0	248	5	17,616
75 – 84	**F**	95	20,033	0	2	6	20,137
85+	**F**	43	9,347	0	1	3	9,394
Total		320,426	142,766	131,311	25,349	5,599	625,452

Individuals dually eligible for both Medicare and Medicaid were assigned to the Medicare population

VERMONT POPULATION BY AGE, GENDER, AND COVERAGE TYPE - 2020

Eastern Region

Age	Gender	Commercial	Medicare	Medicaid	Uninsured	Other	Total
Under 9	**M**	3,293	45	6,363	121	55	9,878
10 – 19	**M**	4,540	48	5,814	362	61	10,825
20 – 29	**M**	5,827	587	2,562	1,234	78	10,288
30 – 34	**M**	2,947	299	1,450	761	39	5,497
36 – 39	**M**	3,612	374	1,343	572	72	5,972
40 – 49	**M**	6,697	665	1,959	957	131	10,409
50 – 59	**M**	9,131	856	2,109	870	168	13,134
60 – 64	**M**	5,667	542	1,331	380	105	8,025
65 – 69	**M**	257	6,953	0	14	4	7,228
70 – 74	**M**	209	5,881	0	12	3	6,105
75 – 84	**M**	39	6,368	0	0	3	6,410
85+	**M**	9	1,542	0	0	1	1,552
Under 9	**F**	3,217	24	6,191	144	52	9,627
10 – 19	**F**	3,969	26	5,684	239	56	9,973
20 – 29	**F**	5,279	507	3,399	614	78	9,877
30 – 34	**F**	2,603	275	2,221	354	40	5,492
36 – 39	**F**	3,522	336	1,606	397	74	5,936
40 – 49	**F**	6,953	630	2,535	669	140	10,927
50 – 59	**F**	9,925	830	2,314	700	180	13,950
60 – 64	**F**	6,155	507	1,281	394	112	8,448
65 – 69	**F**	271	7,899	0	15	4	8,189
70 – 74	**F**	194	5,734	0	11	3	5,942
75 – 84	**F**	33	7,218	0	0	4	7,255
85+	**F**	11	2,736	0	0	1	2,748
Total		84,360	50,880	48,161	8,821	1,463	193,686

Individuals dually eligible for both Medicare and Medicaid were assigned to the Medicare population

VERMONT POPULATION BY AGE, GENDER, AND COVERAGE TYPE - 2020

Western Region

Age	Gender	Commercial	Medicare	Medicaid	Uninsured	Other	Total
Under 9	**M**	9,707	70	10,551	518	305	21,150
10 – 19	**M**	15,505	88	10,294	923	363	27,174
20 – 29	**M**	23,423	1,007	5,482	2,179	267	32,358
30 – 34	**M**	8,571	532	2,478	1,305	110	12,996
36 – 39	**M**	8,632	741	2,193	825	158	12,549
40 – 49	**M**	18,199	1,453	3,604	1,618	314	25,188
50 – 59	**M**	22,143	1,598	3,554	1,530	364	29,189
60 – 64	**M**	11,671	823	1,902	675	191	15,261
65 – 69	**M**	484	12,896	0	29	3	13,411
70 – 74	**M**	379	9,754	0	20	2	10,155
75 – 84	**M**	70	10,527	0	25	2	10,624
85+	**M**	26	3,703	0	4	1	3,734
Under 9	**F**	8,958	99	9,720	408	274	19,459
10 – 19	**F**	14,478	115	10,272	699	349	25,913
20 – 29	**F**	21,079	764	6,678	1,461	240	30,223
30 – 34	**F**	7,778	373	3,648	740	107	12,645
36 – 39	**F**	9,076	548	2,751	297	167	12,839
40 – 49	**F**	18,759	986	4,383	896	322	25,346
50 – 59	**F**	23,507	1,607	3,832	1,258	386	30,590
60 – 64	**F**	12,286	1,010	1,810	594	203	15,902
65 – 69	**F**	676	12,895	0	283	2	13,856
70 – 74	**F**	564	10,872	0	237	2	11,674
75 – 84	**F**	62	12,815	0	2	2	12,882
85+	**F**	32	6,611	0	1	1	6,646
Total		236,066	91,886	83,150	16,527	4,135	431,766

Individuals dually eligible for both Medicare and Medicaid were assigned to the Medicare population

VERMONT POPULATION BY AGE, GENDER, AND COVERAGE TYPE - 2025

Statewide

Age	Gender	Commercial	Medicare	Medicaid	Uninsured	Other	Total
Under 9	**M**	12,208	144	18,082	731	252	31,417
10 – 19	**M**	18,524	191	16,747	1,312	285	37,059
20 – 29	**M**	27,304	1,441	7,903	3,721	285	40,655
30 – 34	**M**	11,504	774	4,139	2,453	138	19,008
36 – 39	**M**	12,419	954	3,769	1,964	227	19,333
40 – 49	**M**	24,867	1,810	5,737	3,418	418	36,251
50 – 59	**M**	28,451	2,198	5,275	2,386	460	38,769
60 – 64	**M**	16,968	1,342	3,205	945	276	22,736
65 – 69	**M**	962	21,401	0	47	6	22,417
70 – 74	**M**	727	17,065	0	38	4	17,834
75 – 84	**M**	90	21,118	0	41	7	21,255
85+	**M**	26	5,882	0	7	1	5,917
Under 9	**F**	11,404	274	17,236	404	236	29,554
10 – 19	**F**	16,613	449	16,846	992	270	35,170
20 – 29	**F**	24,193	1,302	10,323	2,616	286	38,720
30 – 34	**F**	10,117	639	6,312	1,344	142	18,555
36 – 39	**F**	12,550	949	4,562	971	232	19,264
40 – 49	**F**	25,389	1,686	7,214	2,016	441	36,747
50 – 59	**F**	30,009	2,413	5,707	2,036	480	40,644
60 – 64	**F**	17,641	1,642	2,996	1,067	287	23,633
65 – 69	**F**	723	22,865	0	64	5	23,656
70 – 74	**F**	598	18,742	0	55	5	19,400
75 – 84	**F**	87	24,691	0	5	6	24,790
85+	**F**	28	9,945	0	3	3	9,979
Total		303,403	159,917	136,051	28,639	4,754	632,764

Individuals dually eligible for both Medicare and Medicaid were assigned to the Medicare population

VERMONT POPULATION BY AGE, GENDER, AND COVERAGE TYPE - 2025

Eastern Region

Age	Gender	Commercial	Medicare	Medicaid	Uninsured	Other	Total
Under 9	**M**	3,190	60	6,189	151	56	9,645
10 – 19	**M**	4,326	63	5,538	430	62	10,419
20 – 29	**M**	5,119	531	2,259	1,313	78	9,299
30 – 34	**M**	3,055	319	1,501	941	47	5,862
36 – 39	**M**	3,810	422	1,439	773	79	6,522
40 – 49	**M**	6,373	654	1,844	1,091	127	10,090
50 – 59	**M**	7,796	759	1,791	866	146	11,358
60 – 64	**M**	5,688	567	1,329	435	108	8,127
65 – 69	**M**	257	7,375	0	16	1	7,649
70 – 74	**M**	210	6,546	0	14	1	6,771
75 – 84	**M**	44	7,753	0	2	1	7,801
85+	**M**	9	1,577	0	0	0	1,586
Under 9	**F**	3,075	29	5,961	193	52	9,310
10 – 19	**F**	3,638	31	5,408	292	56	9,425
20 – 29	**F**	5,084	508	3,208	685	88	9,573
30 – 34	**F**	2,529	276	2,139	382	46	5,373
36 – 39	**F**	3,562	352	1,578	469	74	6,036
40 – 49	**F**	6,714	639	2,476	761	138	10,727
50 – 59	**F**	8,621	747	1,979	740	157	12,244
60 – 64	**F**	5,871	505	1,213	438	108	8,135
65 – 69	**F**	282	9,249	0	13	2	9,546
70 – 74	**F**	168	5,550	0	6	1	5,725
75 – 84	**F**	41	8,998	0	0	1	9,040
85+	**F**	9	2,801	0	0	0	2,810
Total		79,468	56,310	45,853	10,013	1,430	193,074

Individuals dually eligible for both Medicare and Medicaid were assigned to the Medicare population

VERMONT POPULATION BY AGE, GENDER, AND COVERAGE TYPE - 2025

Western Region

Age	Gender	Commercial	Medicare	Medicaid	Uninsured	Other	Total
Under 9	**M**	9,018	84	11,893	580	196	21,772
10 – 19	**M**	14,198	128	11,209	882	223	26,640
20 – 29	**M**	22,185	911	5,643	2,409	208	31,356
30 – 34	**M**	8,449	456	2,638	1,512	91	13,145
36 – 39	**M**	8,609	532	2,330	1,191	149	12,811
40 – 49	**M**	18,494	1,157	3,893	2,327	291	26,162
50 – 59	**M**	20,656	1,438	3,483	1,520	314	27,411
60 – 64	**M**	11,281	774	1,875	510	167	14,608
65 – 69	**M**	706	14,027	0	31	5	14,768
70 – 74	**M**	516	10,520	0	24	3	11,063
75 – 84	**M**	45	13,365	0	38	5	13,454
85+	**M**	17	4,305	0	7	1	4,331
Under 9	**F**	8,329	245	11,275	211	184	20,244
10 – 19	**F**	12,975	418	11,438	699	214	25,745
20 – 29	**F**	19,109	794	7,115	1,931	198	29,147
30 – 34	**F**	7,588	363	4,174	962	96	13,182
36 – 39	**F**	8,988	596	2,984	502	158	13,228
40 – 49	**F**	18,675	1,047	4,737	1,256	304	26,019
50 – 59	**F**	21,388	1,665	3,727	1,296	323	28,400
60 – 64	**F**	11,770	1,137	1,783	629	178	15,498
65 – 69	**F**	441	13,616	0	51	3	14,111
70 – 74	**F**	430	13,191	0	49	5	13,675
75 – 84	**F**	46	15,693	0	5	5	15,749
85+	**F**	19	7,144	0	3	3	7,169
Total		223,935	103,607	90,198	18,626	3,324	439,690

Individuals dually eligible for both Medicare and Medicaid were assigned to the Medicare population

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