# Mad River Valley
# 2018 Annual Data Report

**Acknowledgments**

This report was authored by Mariah Noth, Community Planner at the Mad River Valley Planning District with assistance from Executive Director, Joshua Schwartz.

Our thanks to the Towns of Fayston, Waitsfield, and Warren, Mad River Valley Ambulance Service, the Mad River Valley Food Shelf, the Mad River Valley Interfaith Council, Sugarbush Resort, Mad River Glen, Friends of the Mad River, Vermont Energy Investment Corporation, and the Mad River Watershed Conservation Partnership for supplying local data. Additional thanks to the Vermont Housing Finance Agency, which produced the Vermont Housing Data website, the VT Department of Taxes, VT State Police, the VT Agency of Commerce & Community Development, and the VT Agency of Education, whose data was utilized in the production of this report.

Cover Photograph: Warren's Fourth of July Parade, July 4, 2017, captured by Joshua Schwartz.

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# INTRODUCTION

This report was prepared by the Mad River Valley Planning District to provide information for community planning purposes and address requirements of its 1998 Memorandum of Understanding (MOU). Information used in this report was publicly available, except where noted. Sugarbush Resort provided data in conjunction with the MOU. This report utilizes the most recent data available as of December 2018, which includes both the 2017 calendar year and 2018 data where available, as well as Sugarbush Resort data collected from the 2017-2018 ski season. For much of the U.S. Census Bureau data, the most recent and complete data available was from 2016. This report was finalized in February 2019.

## HISTORY

The Towns of Fayston, Waitsfield and Warren created the Mad River Valley Planning District in 1985. The Purpose of the Planning District is to *carry out a program of planning for the future of the Mad River Valley. The planning program shall be directed toward the physical, social, economic, fiscal, environmental, cultural and aesthetic well-being of the member Towns and its inhabitants* (MRVPD Articles of Agreement, March 1985).

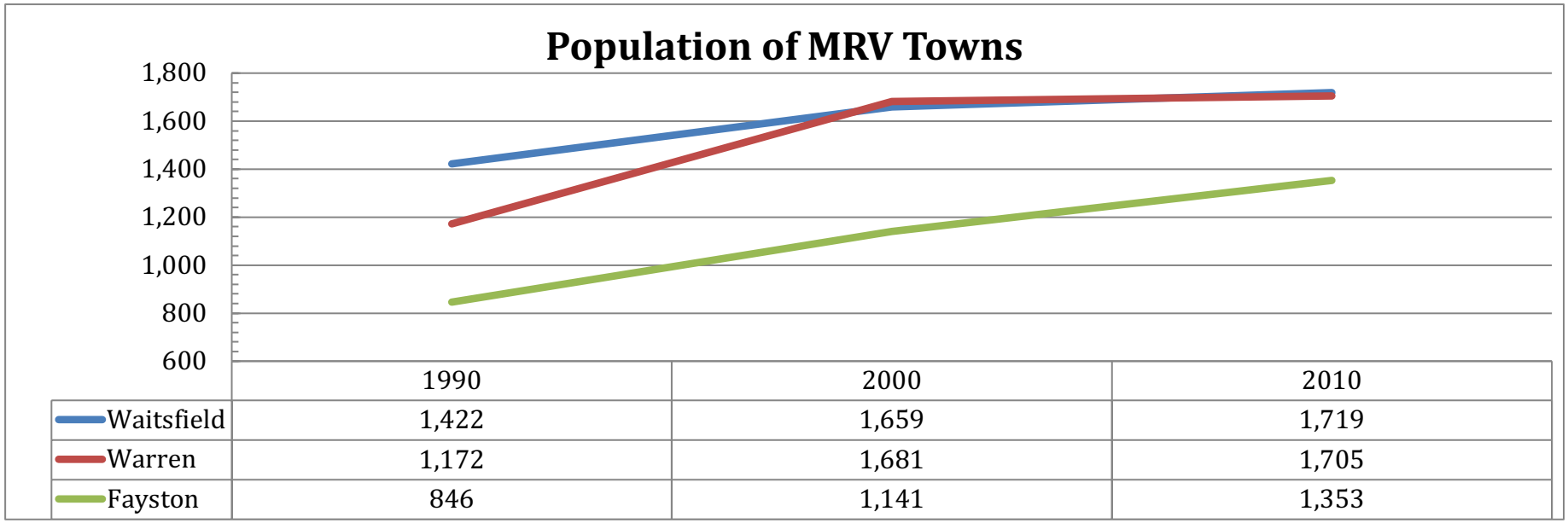
The Mad River Valley Planning District is staffed by an Executive Director and a Community Planner. The District is governed by a Steering Committee consisting of a Selectboard Member and a Planning Commission member from each of its three member Towns, a business representative from the Mad River Valley Chamber of Commerce, and a non-voting representative from Sugarbush Resort. The Central Vermont Regional Planning Commission (CVRPC) holds a non-voting ex-officio seat. The three towns and Sugarbush Resort fund the Mad River Valley Planning District equally.

# SECTION I: COMMUNITY PROFILE

*Includes Items #29, 30, 35 from the Memorandum of Understanding*

## POPULATION

This section of the report reviews several of the MRV's[1] key demographic indicators including population trends and projections, death and birth rates, school enrollment, and age of residents.




| | 1990 | 2000 | 2010 |
|---|---|---|---|
| Waitsfield | 1,422 | 1,659 | 1,719 |
| Warren | 1,172 | 1,681 | 1,705 |
| Fayston | 846 | 1,141 | 1,353 |

**FIGURE 1: SOURCE: U.S. CENSUS BUREAU**

**Figure 1** shows a 7% increase in the combined population of the three MRV towns between 2000 and 2010. This is more than twice the growth rate experienced at the state level in the same period (3%). Most of the population growth in the Mad River Valley has taken place in Fayston, at a rate of 19% between 2000 and 2010 and 35% between 1990 and 2000.

[1] MRV refers to the Mad River Valley throughout this report, specifically denoting the three member towns of the Mad River Valley Planning District (MRVPD): Fayston, Waitsfield, & Warren.

**Figure 2** provides a broader perspective on the population of towns that make up the MRV's school district, Harwood Unified Union School District (HUUSD) (formerly Washington West Supervisory Union). Population across the five towns has largely leveled off since 2010, with a 0.3% decrease in Waitsfield from 2010-2017, 0.6% increase in Fayston, a 4% decrease in Warren, 6% decrease in Duxbury, and a 5% increase in Moretown over that period. The most recent data provided by the U.S. Census Bureau is from 2017.

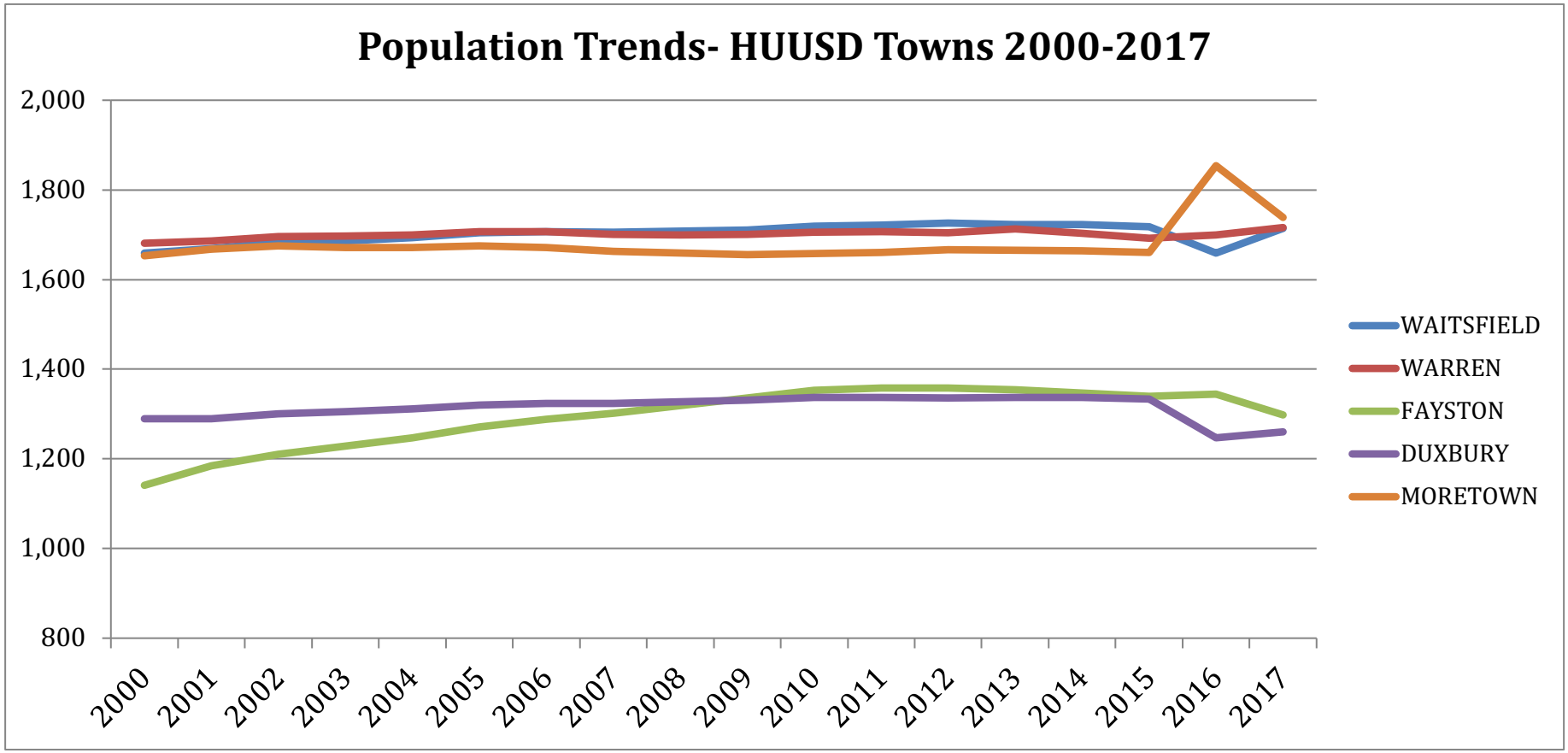



**FIGURE 2: SOURCE: VT. DEPT. OF HEALTH, U.S. CENSUS BUREAU AMERICAN COMMUNITY SURVEY**

**Figures 3 & 4** provide a perspective on population estimates for Washington County as a whole and its workforce population (those between age 16 and 66 able to work), based on high (Scenario A) and low (Scenario B) estimates that include birth rate and migration variables.[2]

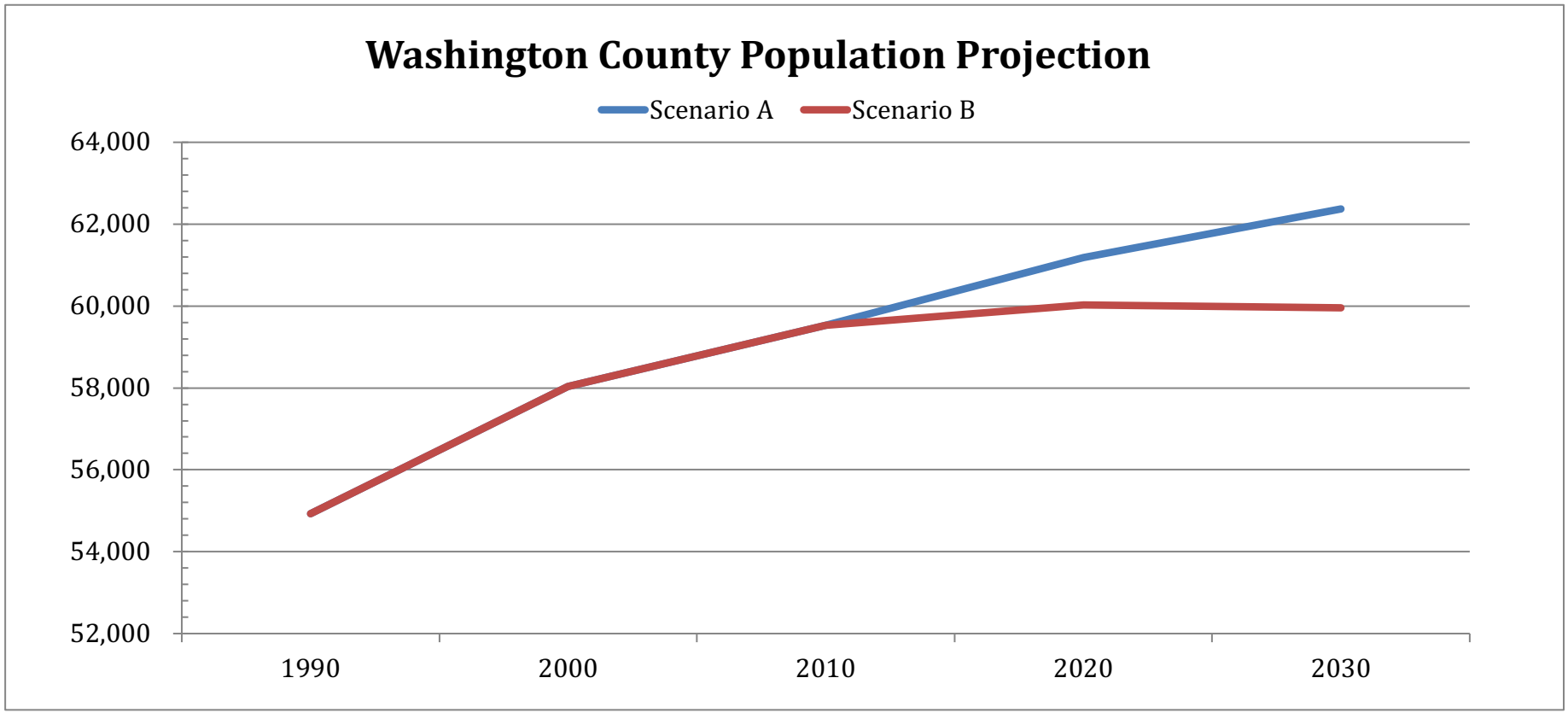



**FIGURE 3- SOURCE: VT AGENCY OF COMMERCE & COMMUNITY DEVELOPMENT**

[2] "Vermont Population Projections, 2010 – 2030, Vermont Agency of Commerce and Community Development, August 2013", http://dail.vermont.gov/dail-publications/publications-generalreports/vt-population-projections-2010-2030

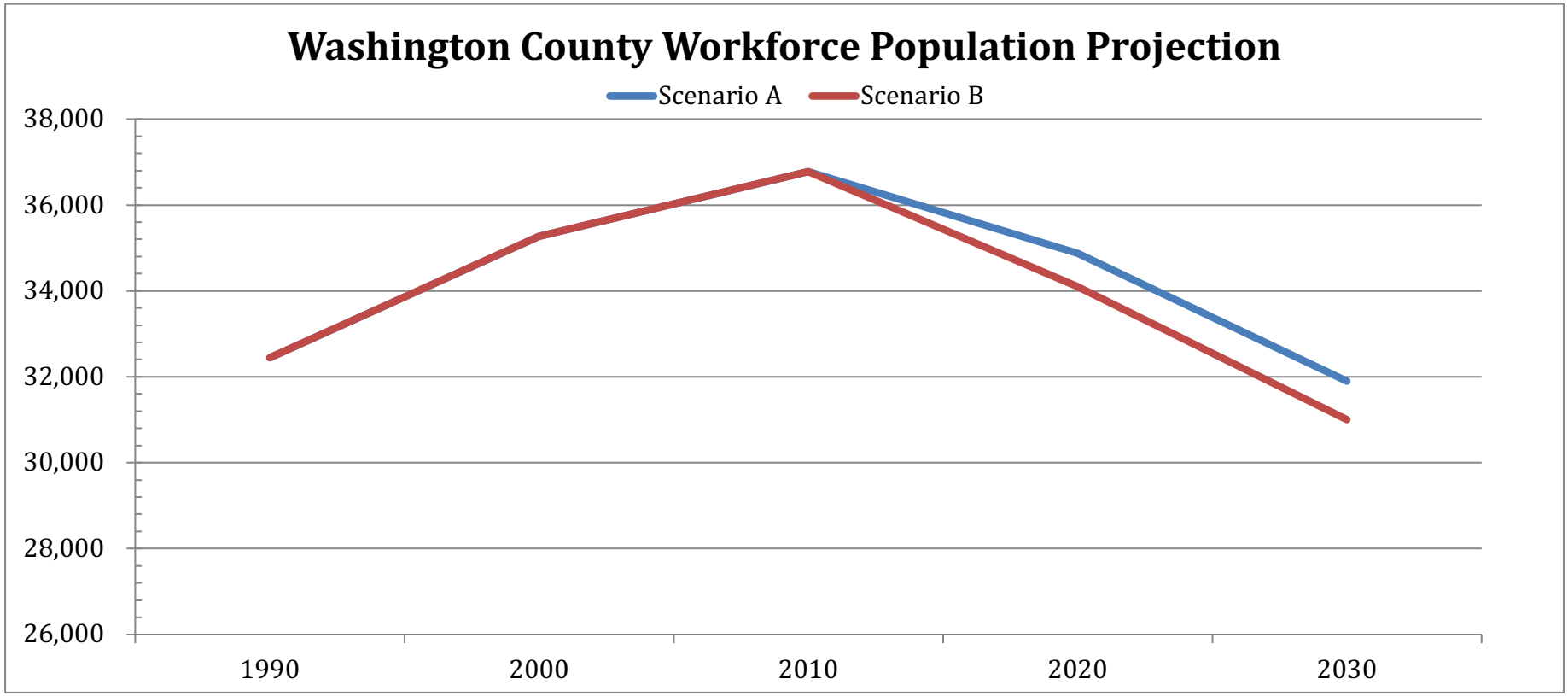
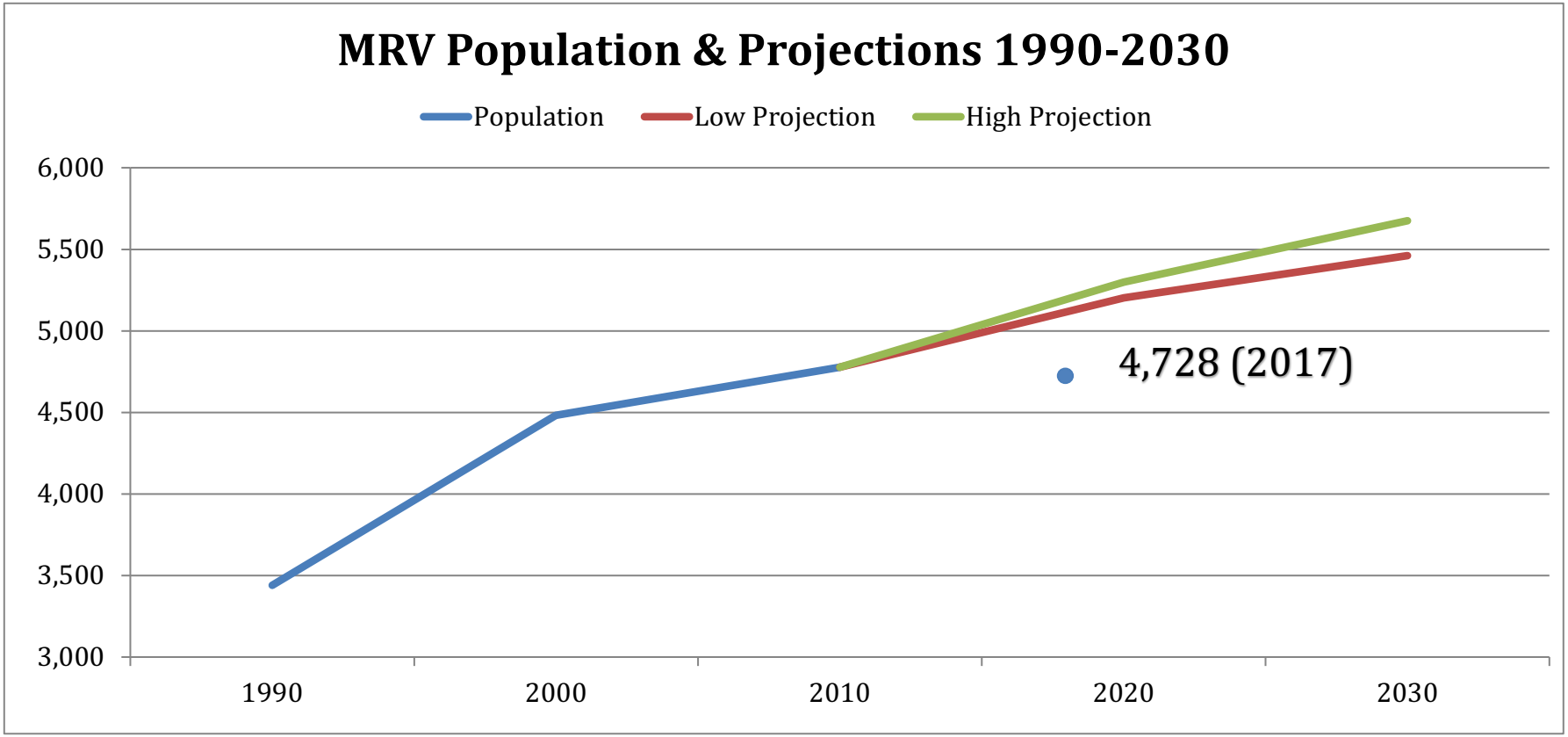



**FIGURE 4- SOURCE: VT AGENCY OF COMMERCE & COMMUNITY DEVELOPMENT**

**Figure 5** and the accompanying **Table 1** on the following page provide two-scenario population estimates for MRV towns, compared to neighboring towns and the county as a whole. With stable birth rates, we can assume that expected in-migration to the MRV drives the higher projections presented. The total MRV population in 2010 was 4,777; the low 2020 estimate was 5,202 and the high 2020 estimate was 5,300. The 2017 total MRV population was approximately 4,728, 1% less than in 2010.

**FIGURE 5- SOURCE: VT AGENCY OF COMMERCE & COMMUNITY DEVELOPMENT, U.S. CENSUS BUREAU**




| | | | Low Growth Estimate | | | | High Growth Estimate | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | 2010 Census | 2020 Estimate | 2030 Estimate | 2010-'20 Growth | 2010-'30 Growth | 2020 Estimate | 2030 Estimate | 2010-'20 Growth | 2010-'30 Growth |
| FAYSTON | | 1,353 | 1,561 | 1,706 | 15% | 26% | 1,590 | 1,772 | 18% | 31% |
| WAITSFIELD | | 1,719 | 1,781 | 1,808 | 4% | 5% | 1,815 | 1,880 | 6% | 9% |
| WARREN | | 1,705 | 1,860 | 1,947 | 9% | 14% | 1,895 | 2,023 | 11% | 19% |

**TABLE 1-SOURCE: VT AGENCY OF COMMERCE & COMMUNITY DEVELOPMENT**

**Figure 6** shows birth and death numbers as recorded by municipal town clerks.

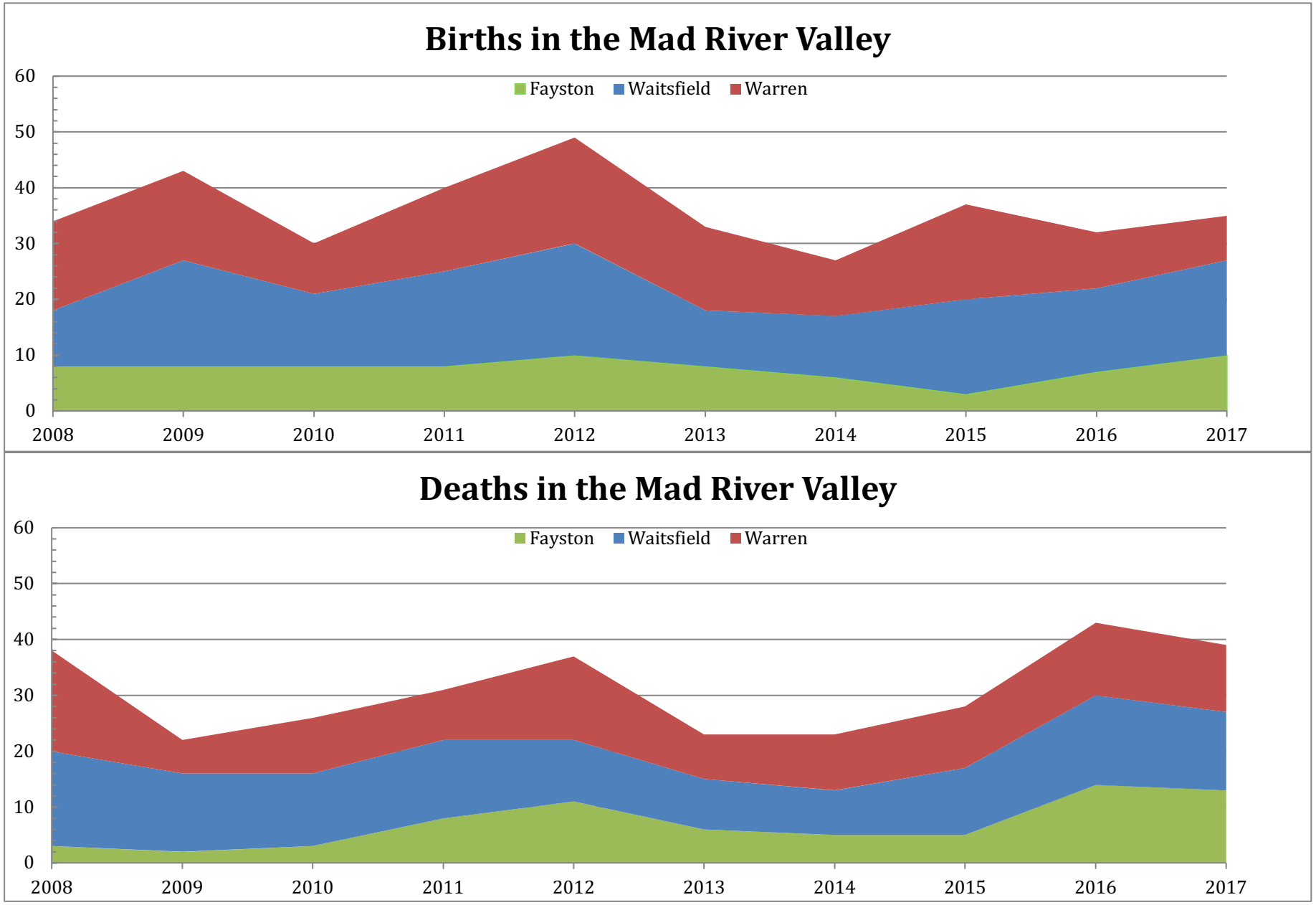



**FIGURE 6- SOURCE: FAYSTON, WAITSFIELD, WARREN TOWN CLERKS**

**Figure 7** indicates fairly stable school enrollment in the region's elementary and middle schools over the past decade, but a downward trend at the high school level.[3] The combined elementary school population increased by 3% in the 2017-18 school year. Middle and high school populations decreased by 4% and 3%, respectively. From the 2006-07 school year to 2017-18, the combined elementary population decreased by 2%, middle school enrollment decreased by 12%, and high school decreased by 25%. The state has experienced similar changes since 2006-07, with elementary enrollment increasing 5%, middle decreasing by 13% and high school declining by 24%.

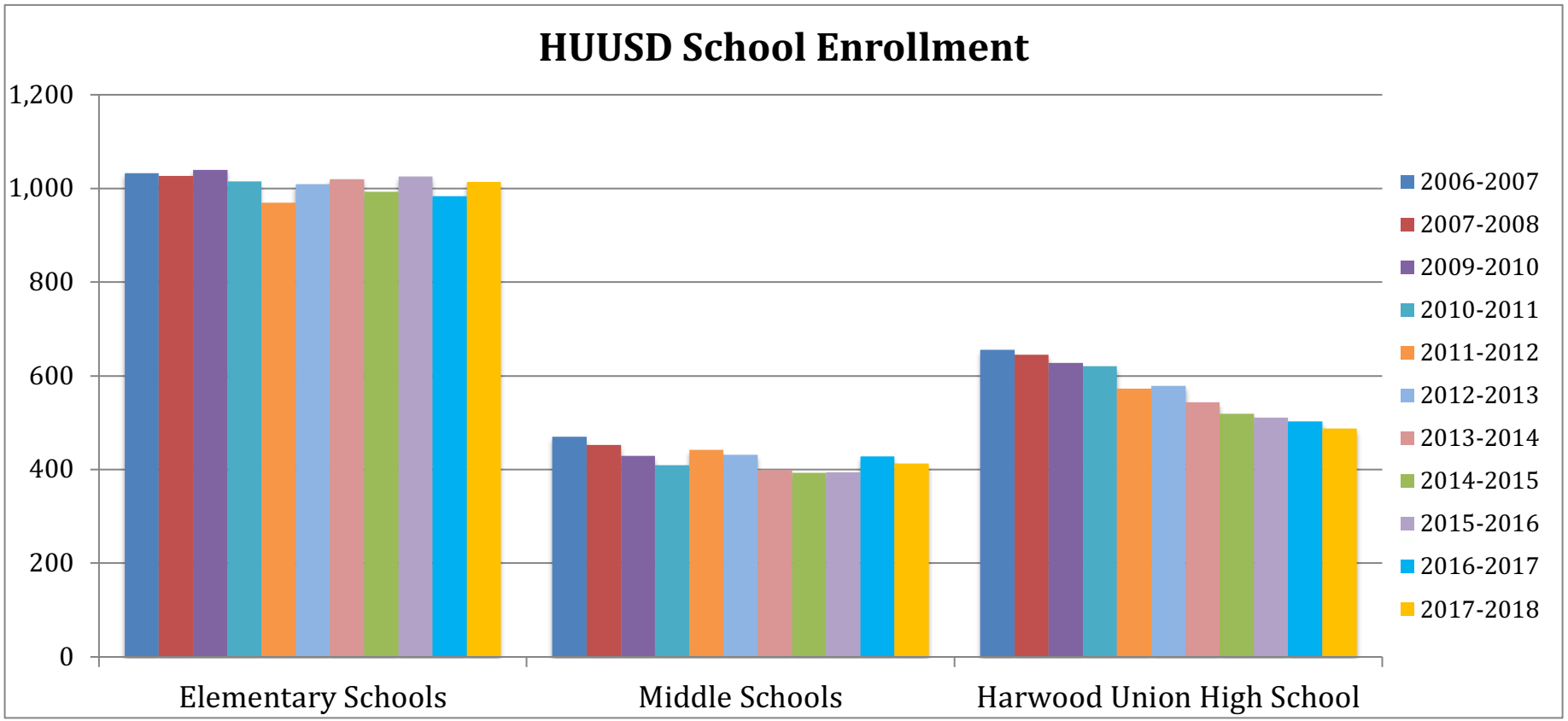



**FIGURE 7- SOURCE: VT AGENCY OF EDUCATION**

[3]Elementary Schools include Fayston, Waitsfield, Warren, Moretown, and Thatcher Brook Elementary Schools. Middle Schools include Harwood Union Middle School and Crossett Brook School.

**Figure 8** provides a comparison of enrollment changes in the state and county, showing a similar decreasing trend in comparison to the local school district. Overall, HUUSD enrollment has shrunk by 12.8% since 2003-04. Similarly, Washington County enrollment declined by 13.2% and the state enrollment declined by 11.6% during this period.

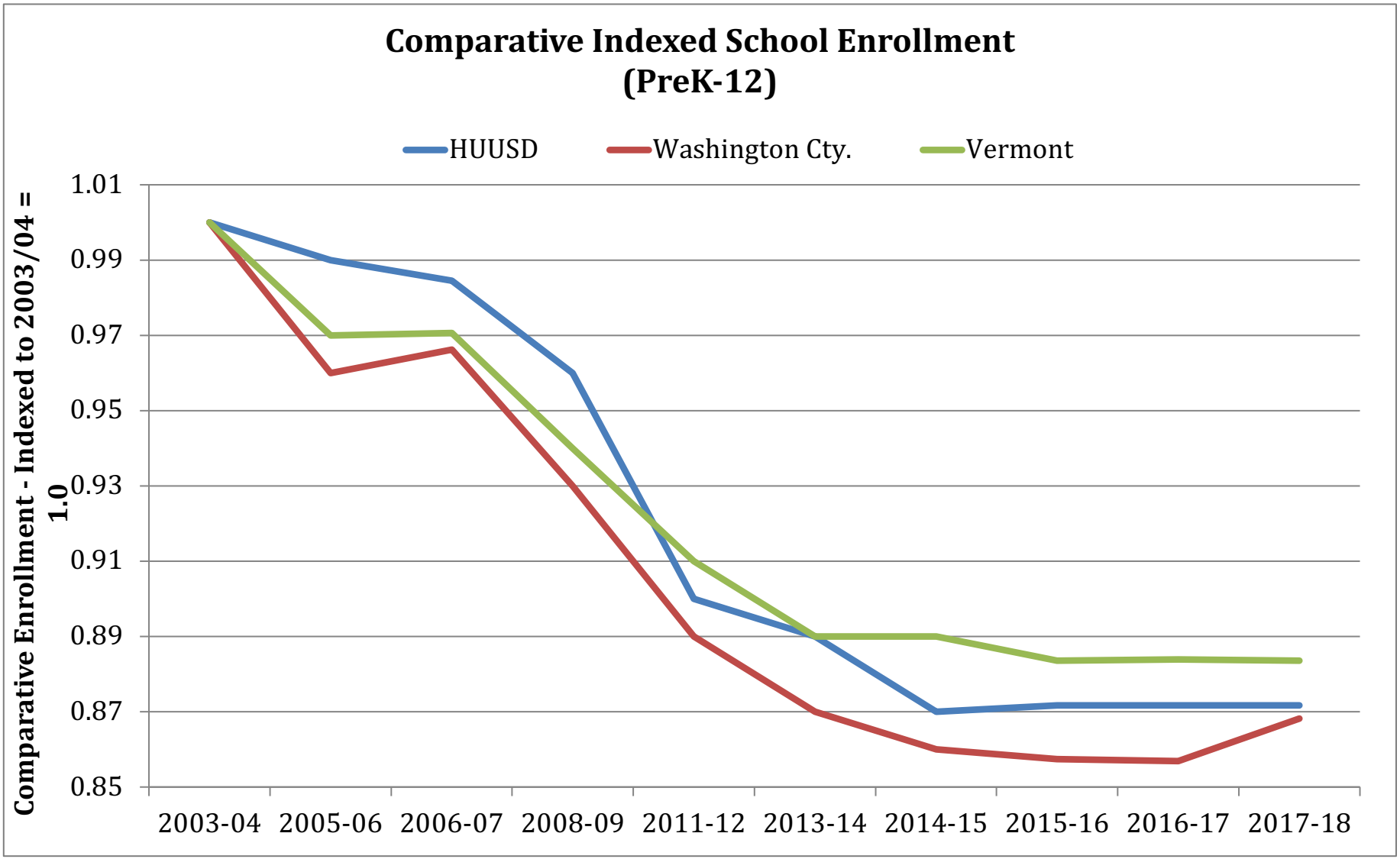



**FIGURE 8- SOURCE: VT AGENCY OF EDUCATION**

Another useful piece of information is the median age of the population by town, **Figure 9**. MRV towns continue to be older than Vermont overall, and much older than the nation. Waitsfield has an older population than the other two MRV towns. The median age in the Valley was 46.5 years in 2017, versus 40 years in 2000 (an increase of 16.3%).

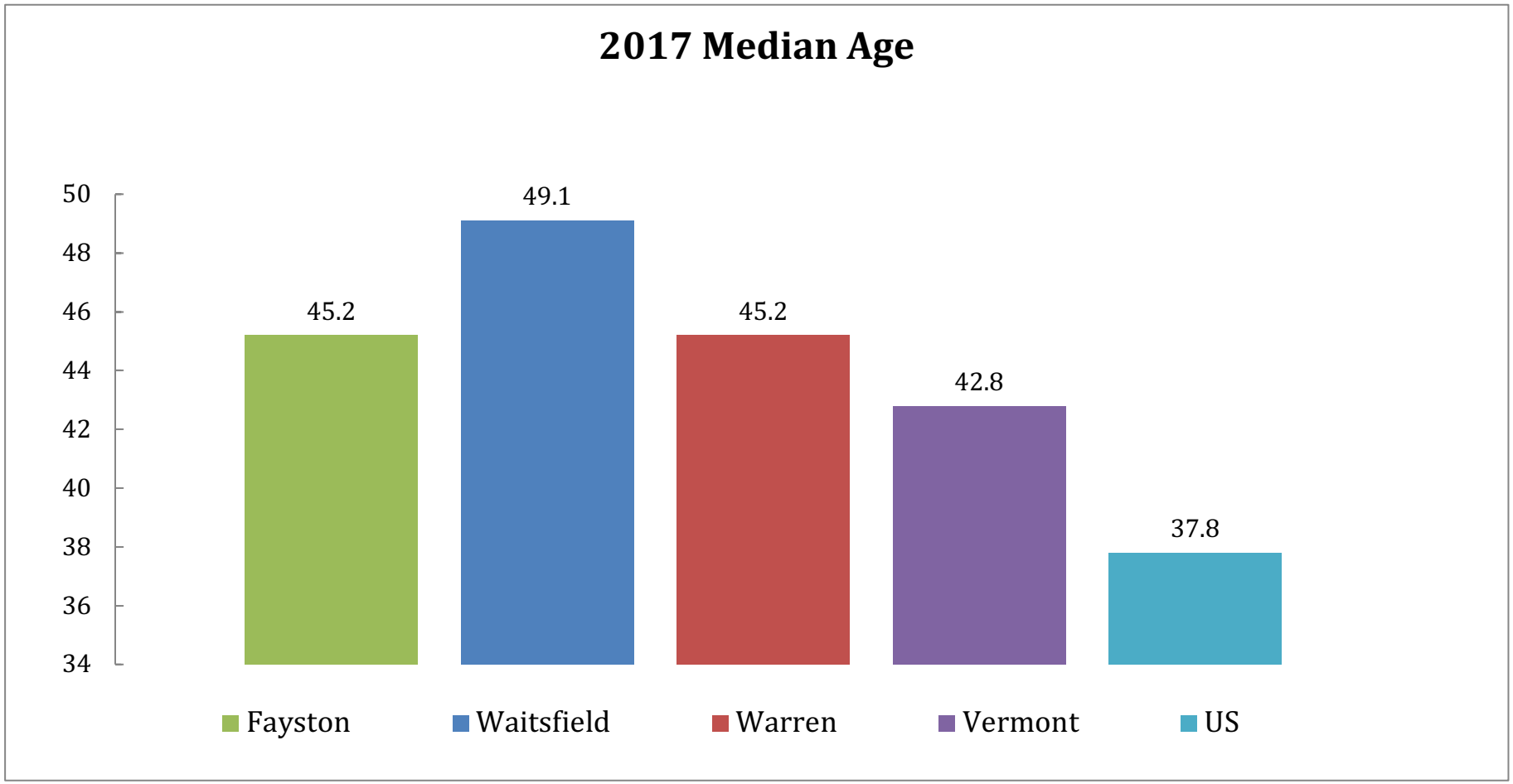



**FIGURE 9-SOURCE: U.S. CENSUS BUREAU, AMERICAN COMMUNITY SURVEY, 2017**

**Figure 10** shows the Mad River Valley population counts for the 2000 and 2010 U.S. Census and the 2017 American Community Survey Census update, segmented by age group.

From 2000 to 2017, the population over age 65 increased from 10.6% to 22.1% while the segment of the population age 25-34 decreased from 12.8% to 8.6%. From 2000 to 2017 the total MRV population increased by 5.5%. In Washington County and Vermont, the population age 65 and over increased from 12.9% and 12.7% in 2000, respectively, to 17.8% and 17.5% in 2017.

Additionally, average household size has decreased for the MRV towns—from 2.3 people per household in 2000 to 2.23 people per household in 2017. This is smaller than the Washington County and Vermont average household sizes, which in 2017 were 2.28 and 2.32, respectively.

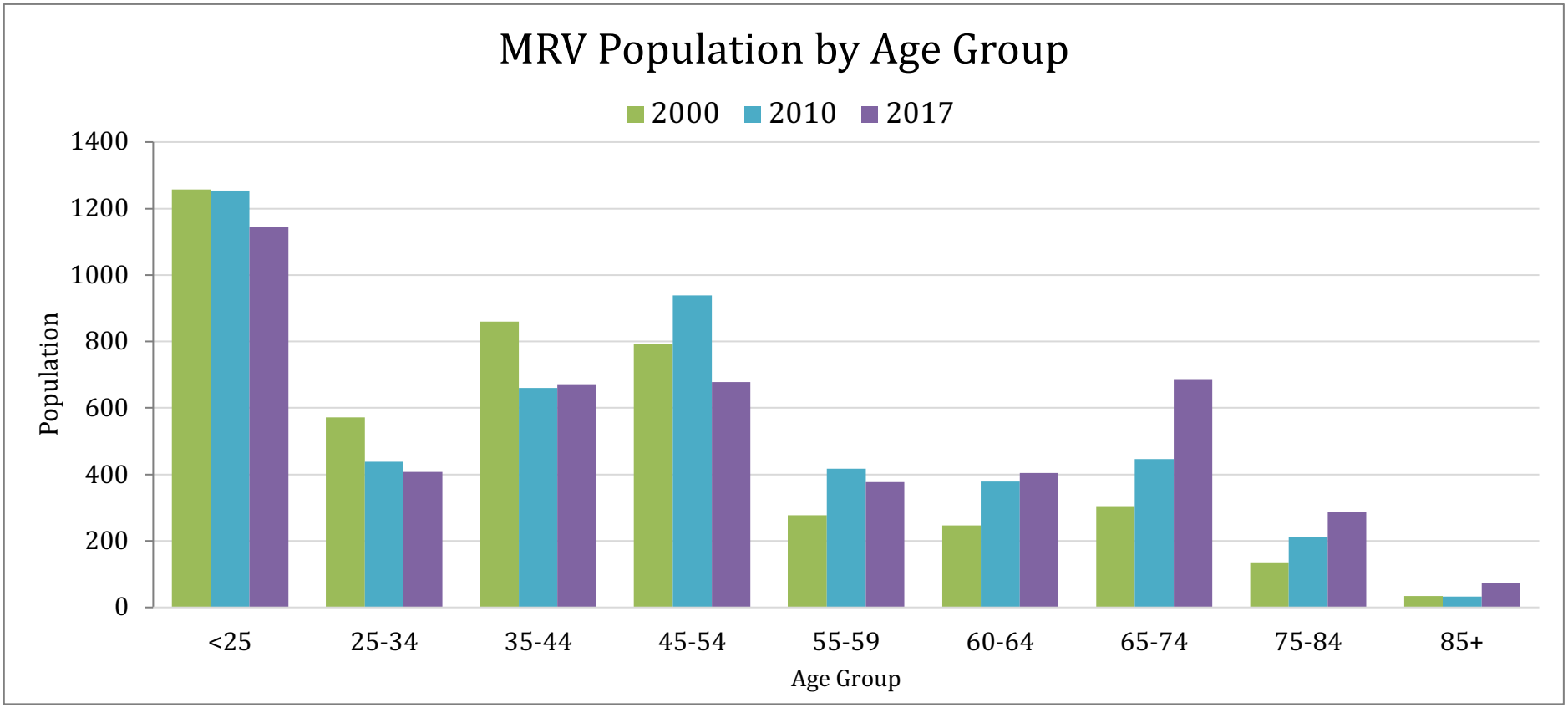



**FIGURE 10- SOURCE: U.S. CENSUS BUREAU, AMERICAN COMMUNITY SURVEY, 2017**

## Community & Social Services

The Mad River Valley hosts many community and social service organizations with missions directed toward improving the community's social and physical well-being. The following data was contributed by the Mad River Valley Food Shelf and Mad River Valley Interfaith Council, and provides insights regarding persistent local needs for services.

**Figure 11** shows trends in visitation to the Mad River Valley Food Shelf, located at Evergreen Place in Waitsfield, over the course of the year from 2016 to 2018. The MRV Food Shelf tracks visitation by number of households and total number of individuals in each household served at monthly and quarterly intervals. In 2016, the average number of individuals served per quarter was 415, while in 2017 it was 465, and 448 in 2018. This represents an 8% increase from 2016 to 2018. **Figure 12** on the following page shows visitation in 2018 tracking with 2017 and demonstrates the consistent demand for this service in the community.

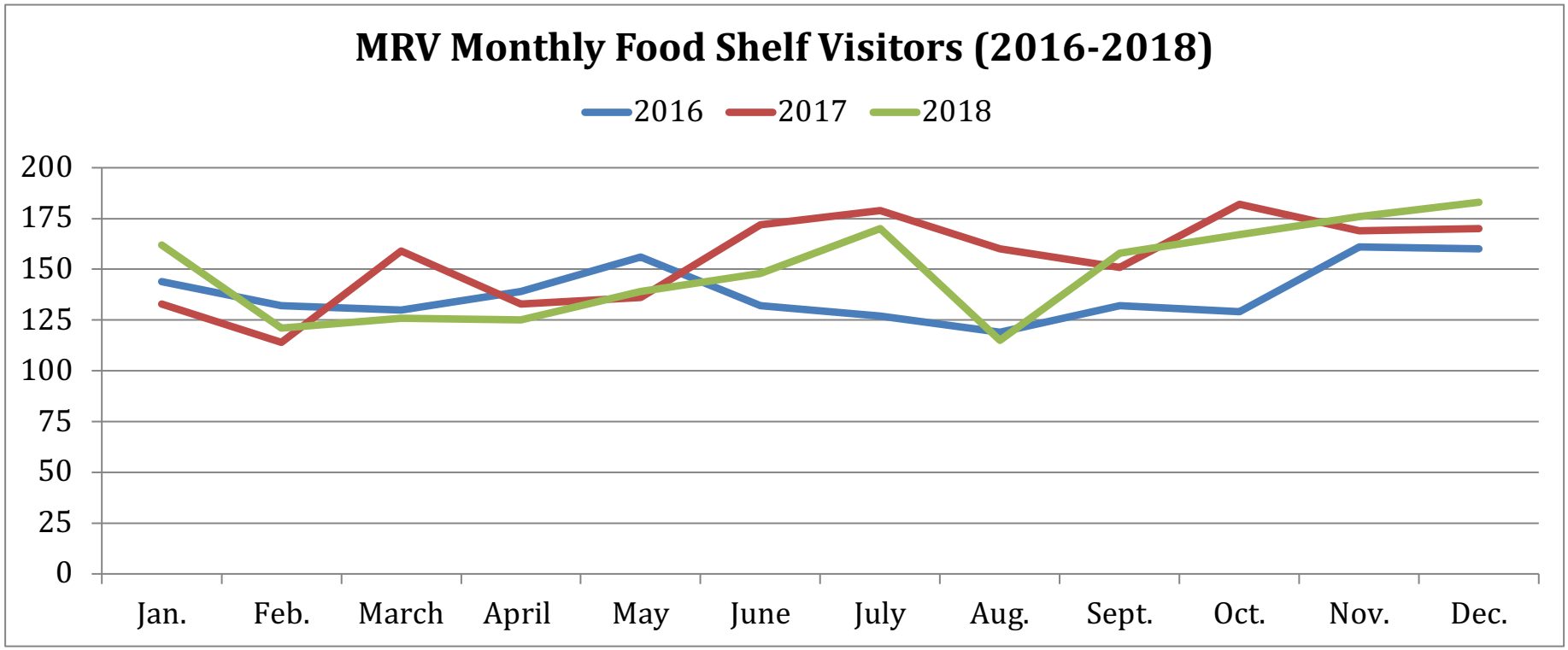



**FIGURE 11- SOURCE: MAD RIVER VALLEY FOOD SHELF**

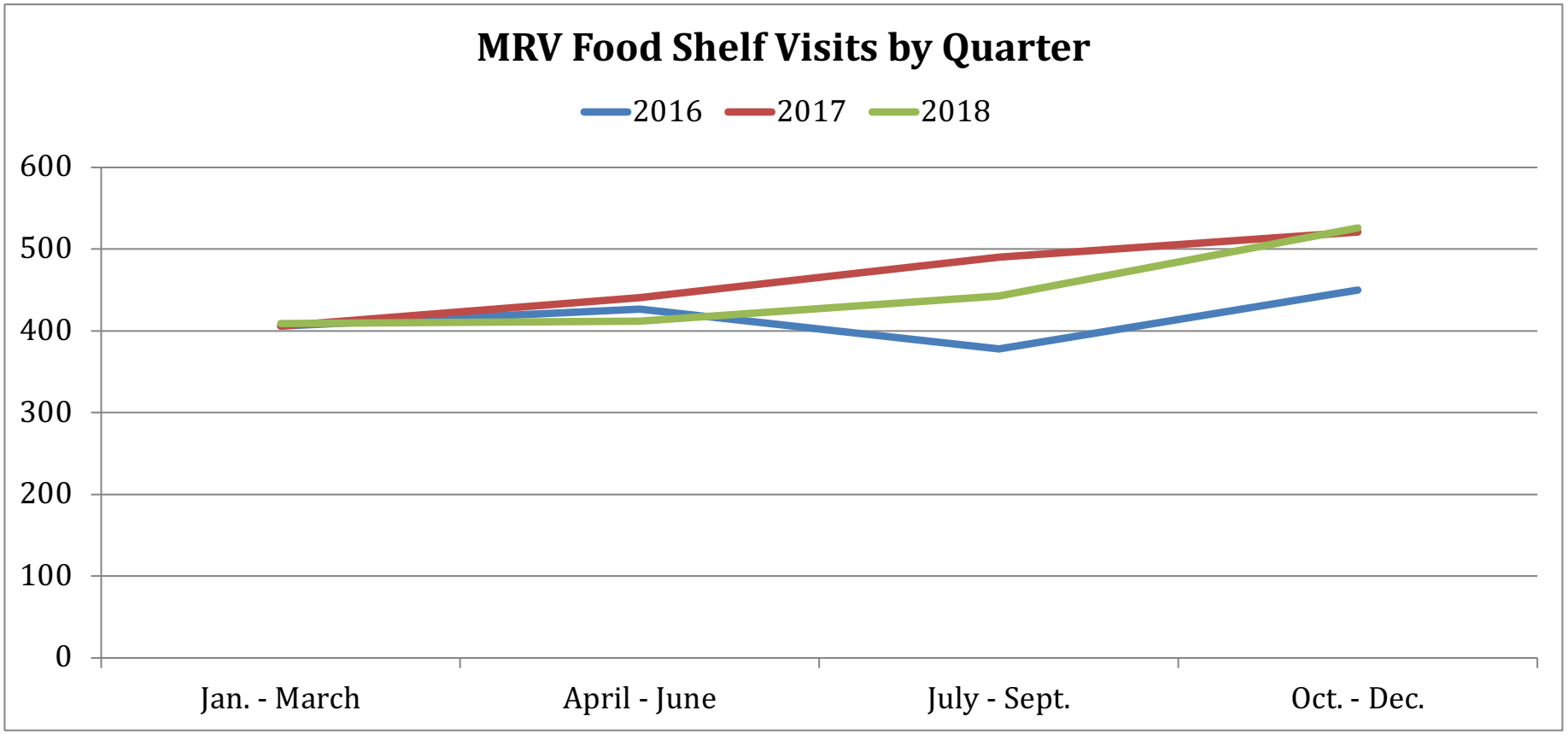



**FIGURE 12- SOURCE: MAD RIVER VALLEY FOOD SHELF**

The Mad River Valley Interfaith Council (MRV IC), a consortium of the Valley's faith institutions, is also a resource in the community that provides emergency assistance funding to families when other programs cannot serve them. This includes requests for assistance with housing, food, medical, transportation, utilities, and other needs. The MRV Interfaith Council also provides financial support to the MRV Food Shelf, the Thanksgiving Baskets program—which provides full holiday meals to over 60 households per year, and the Joys of the Season program, which provides gifts for over 100 local children each year through gift certificates to local shops. The MRV IC has provided between $20,679-$22,961 annually through its assistance programs from 2016-2018, demonstrating the persistent need for such service in the community.

## HOUSING

The number and type of homes sold in the MRV provides another view of community trends and growth patterns.

**Figure 13** shows the number of primary homes sold in the MRV has declined since its peak in the early 2000s. In 2017, however, Waitsfield, Warren, and Fayston saw small increases in sales of primary residences. There were 17 primary residences sold in Waitsfield (up 2), 12 in Fayston (up 1) and 28 in Warren (up 2). Statewide, primary home sales decreased to 6,286 in 2017 from 6,834 in 2016, down 8.5%, while Washington County sales decreased 3.6% during the same time period. The MRV, with 57 total primary home sales in 2017, was up 9.6%, though one should note the total number of sales is much smaller for this area.

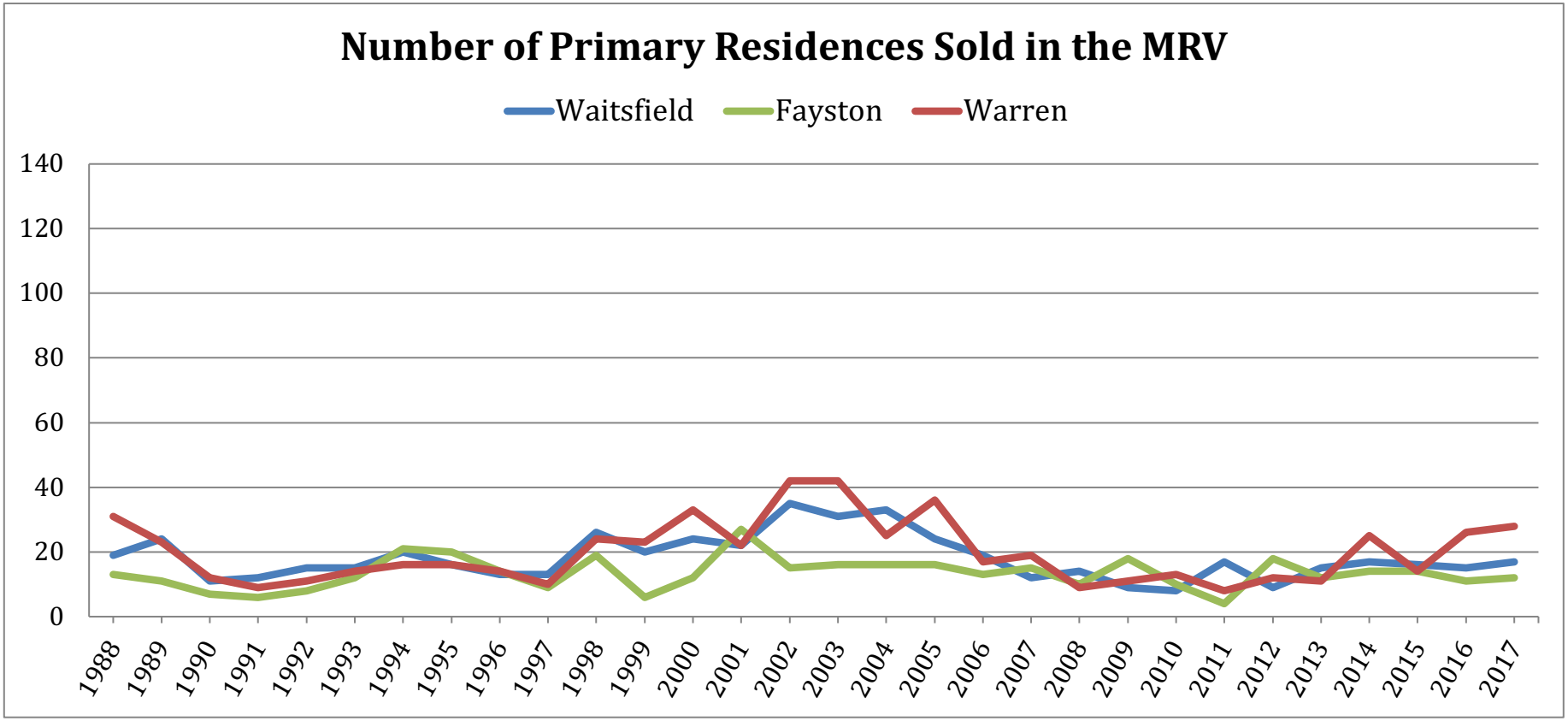



**FIGURE 13- SOURCE: VT HOUSING DATA**

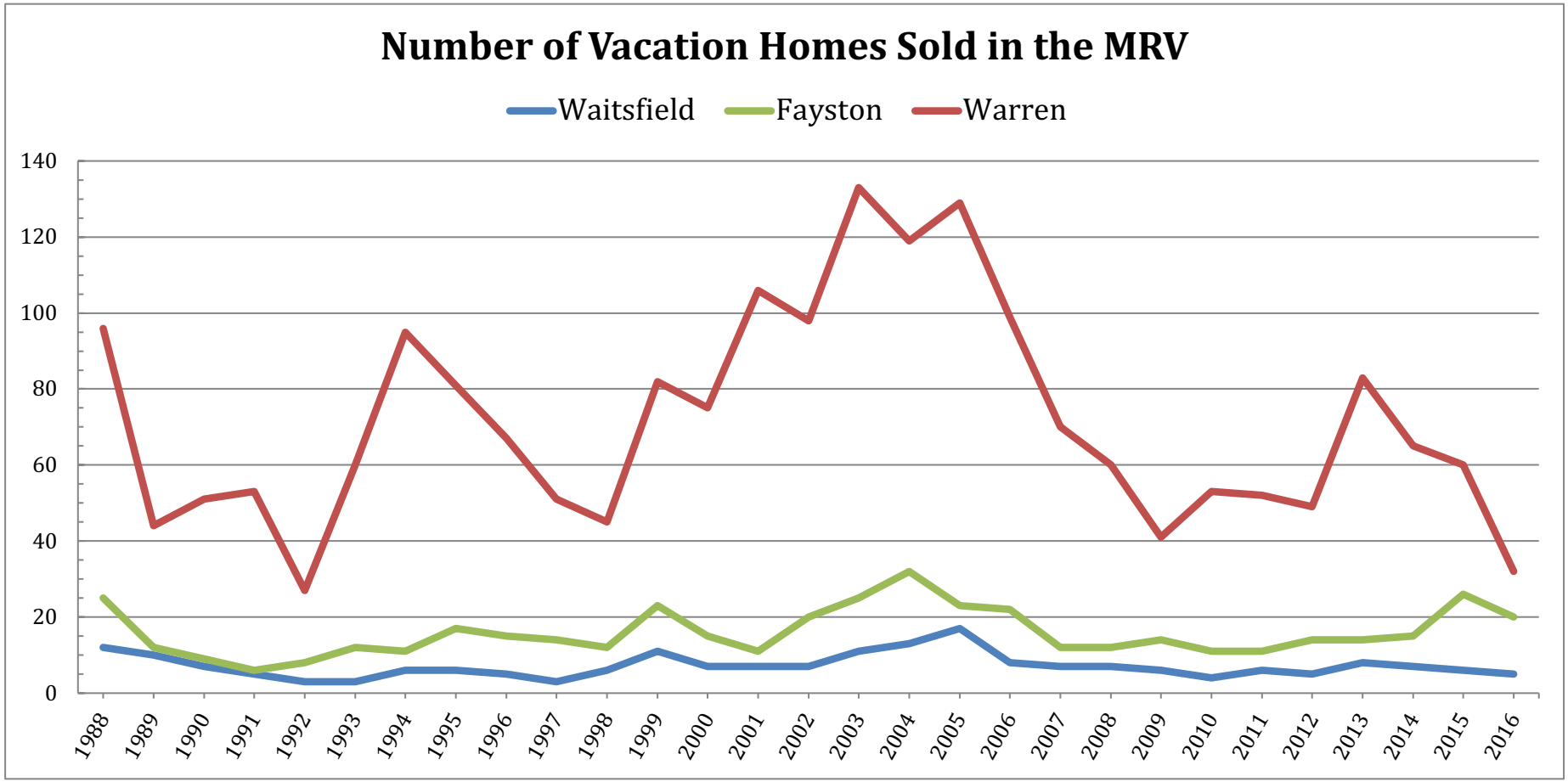



**FIGURE 14-SOURCE: VT HOUSING DATA**

**Figure 14** shows the MRV's most current vacation home sales data from 1988 through 2016. Warren had the greatest overall volume of vacation homes sold across the MRV during this time as well as more market volatility, while sales remained lower but relatively stable in Waitsfield and Fayston. However, 2016 saw declines across the MRV, the greatest taking place in Warren. Vacation homes include condominiums that are not primary residences as well as other non-primary residences. Most of these vacation homes are found closer to Sugarbush Resort. In Warren, 32 vacation homes were sold in 2016 (versus 60 the previous year); Fayston and Waitsfield had 20 and 5 sales, respectively, compared to 26 and 6 in 2015. 1,418 vacation homes were sold statewide in 2016, down from 1,877 the previous year, a decline of 24% which matched the trend in the Valley.

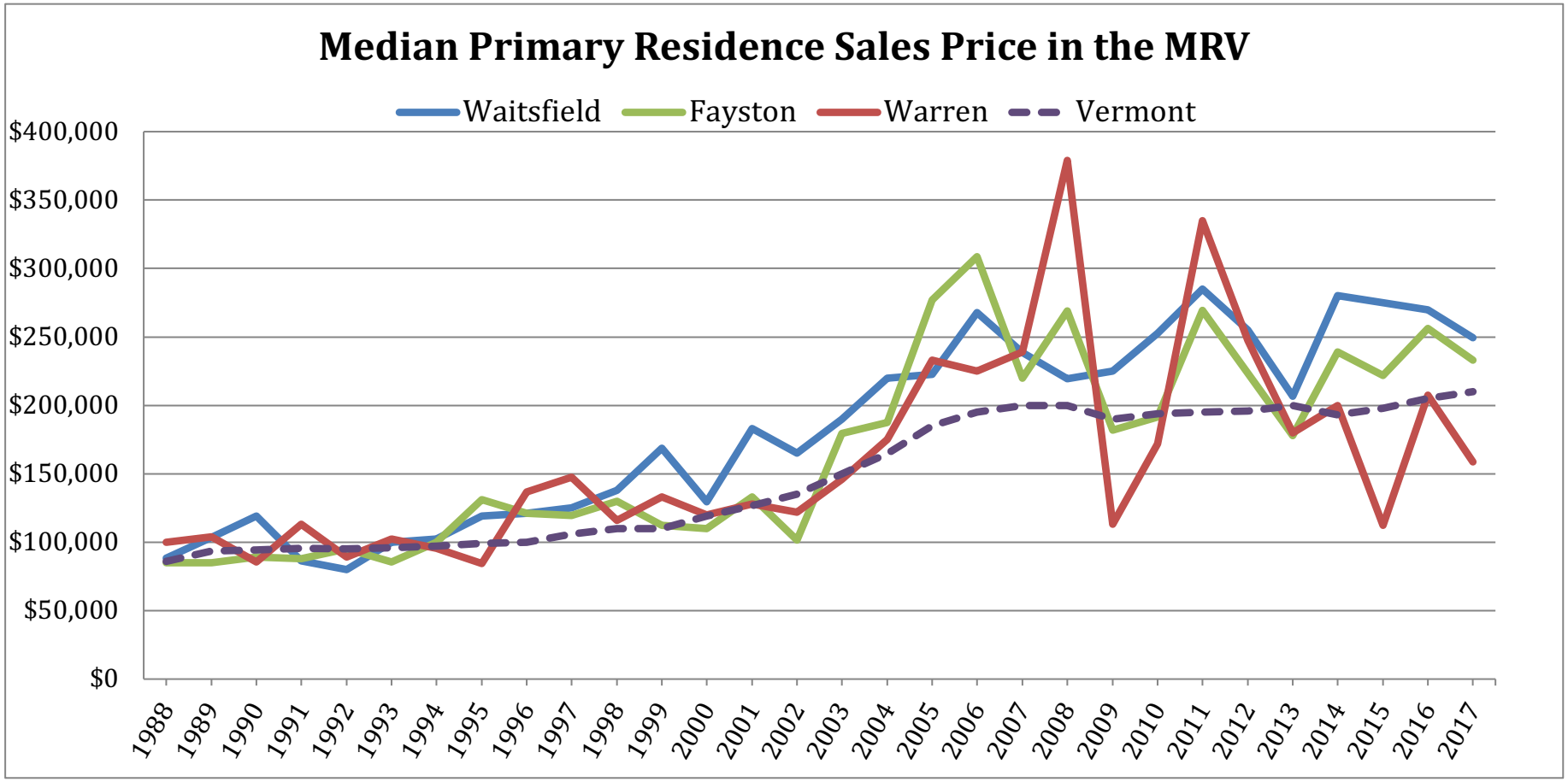



**FIGURE 15- SOURCE: VT HOUSING DATA**

Overall, **Figure 15** shows the sales price of primary residences in the MRV experiencing a recovery since 2009, though decreasing from 2016 to 2017. The median home price in Fayston was $233,000 in 2017 (down 9% from $256,250 in 2016), $158,750 in Warren (down 23% from $207,500 in 2016), and $249,500 in Waitsfield (down 8% from $270,000).

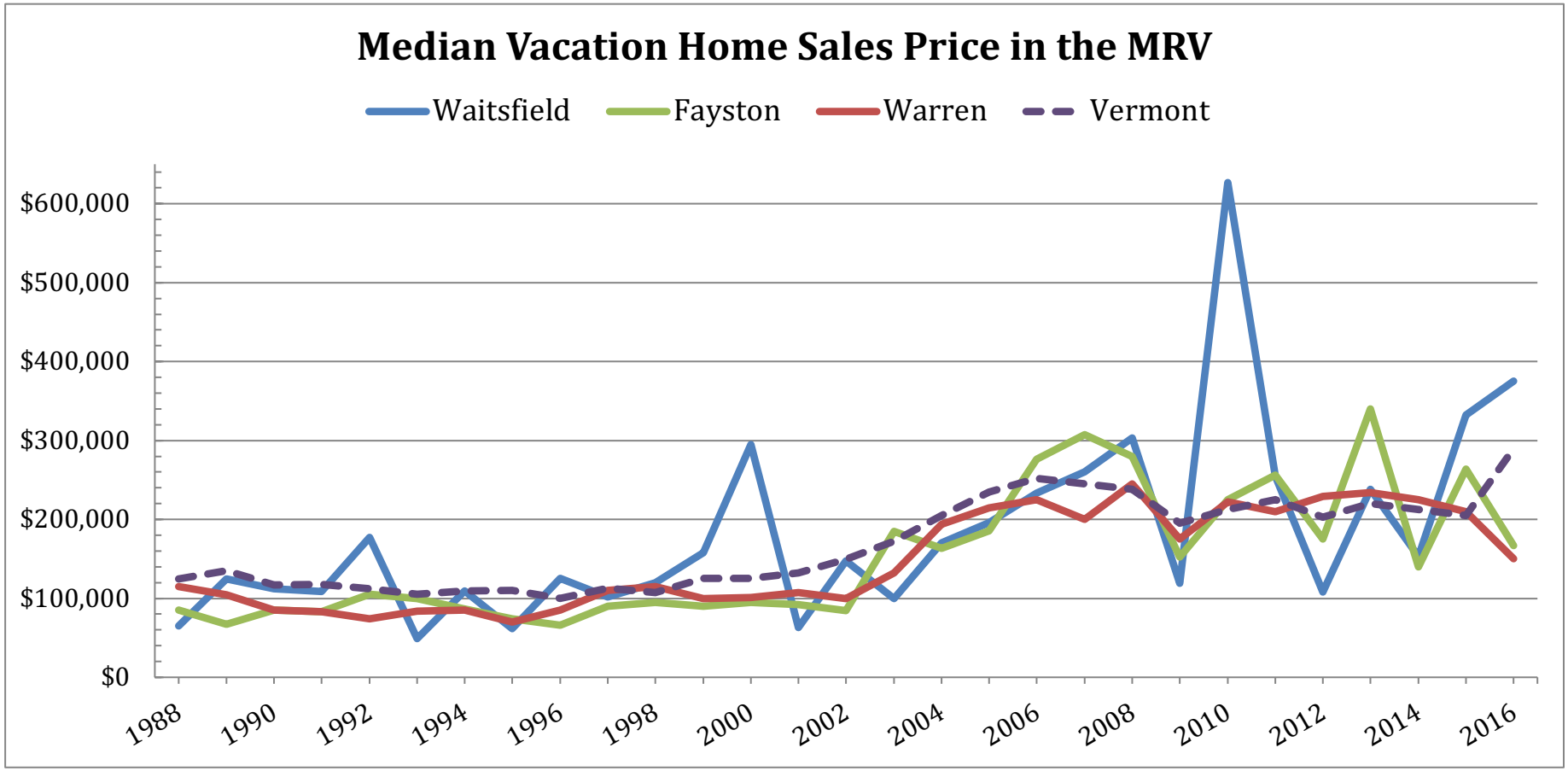
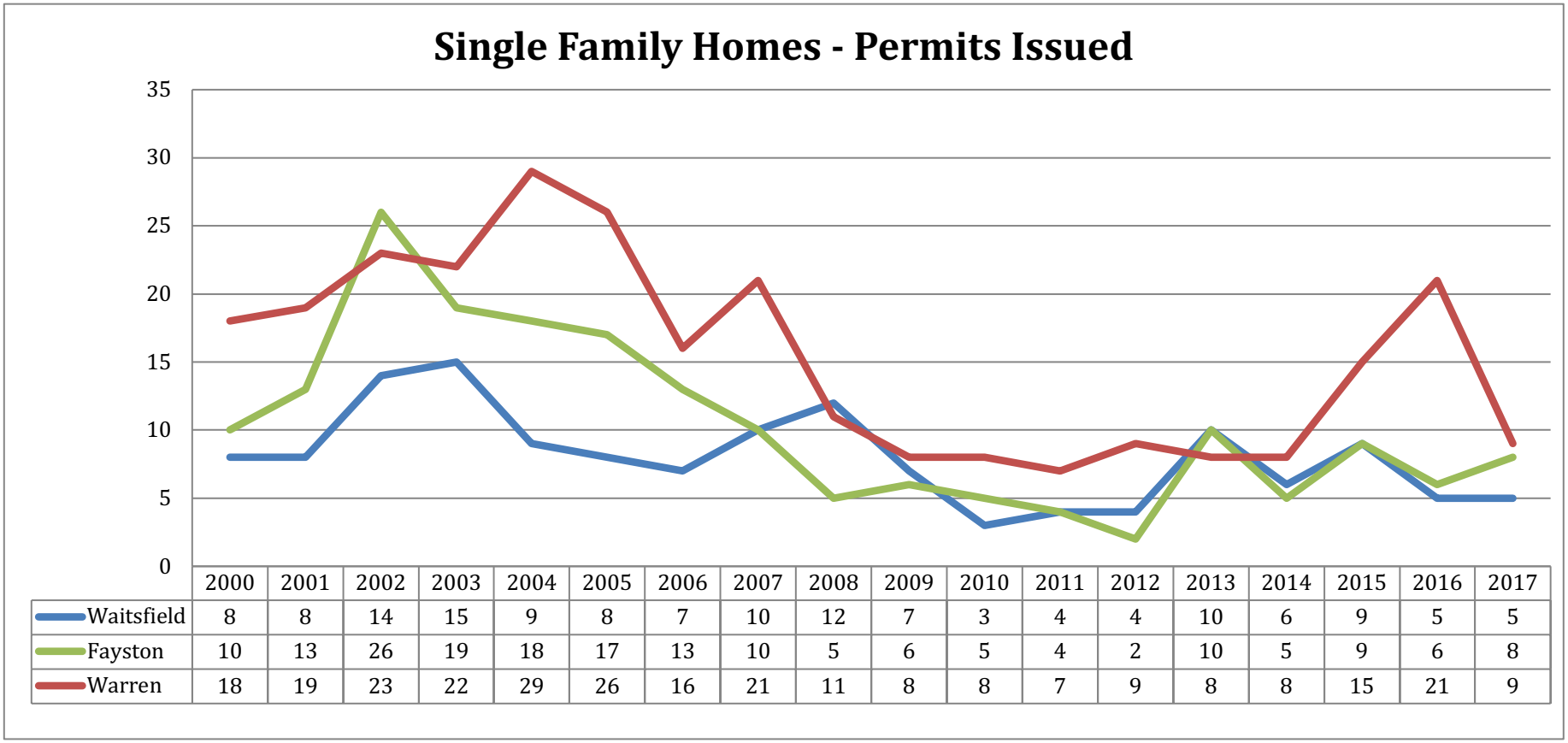



**FIGURE 16-SOURCE: VT HOUSING DATA**

**Figure 16** shows the most current sales price data for vacation homes across the MRV. Waitsfield's median vacation sales price increased to $375,000 in 2016, aligning with Vermont's upward trend, though Warren and Fayston saw lower sales prices in 2016 (at $150,000 and $167,000, respectively). Because of the relatively low number of vacation homes sold in Waitsfield and Fayston, outliers more easily influence median sales prices. Vermont's median vacation home sales price increased from $205,000 to $280,547 between 2015 and 2016.

Zoning permits serve as a leading indicator of new home construction in a community. **Figure 17** shows a large decrease in Warren for single-family home zoning permits in 2017 compared to 2016, and slight increases in permits for Waitsfield and Fayston.[4] Overall, these figures indicate a rebound in housing construction since the aftermath of the Great Recession.




| | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Waitsfield | 8 | 8 | 14 | 15 | 9 | 8 | 7 | 10 | 12 | 7 | 3 | 4 | 4 | 10 | 6 | 9 | 5 | 5 |
| Fayston | 10 | 13 | 26 | 19 | 18 | 17 | 13 | 10 | 5 | 6 | 5 | 4 | 2 | 10 | 5 | 9 | 6 | 8 |
| Warren | 18 | 19 | 23 | 22 | 29 | 26 | 16 | 21 | 11 | 8 | 8 | 7 | 9 | 8 | 8 | 15 | 21 | 9 |

**FIGURE 17- SOURCE: U.S. CENSUS BUREAU, U.S. DEPT. OF HOUSING & URBAN DEVELOPMENT, TOWN ADMINISTRATORS OF FAYSTON, WAITSFIELD, & WARREN**

[4] Permit numbers for this graph were found in the US Census Building Permits Survey. In 2018, all of the permit numbers in the graph were updated utilizing data from the Annual Reports and Town Administrators of all three MRV towns to increase accuracy of the data.

When the permit data is indexed to 2003 levels, **Figure 18** shows the local trend in construction activity generally following the state trend until 2009, when the MRV's decrease continued. However, construction activity in the MRV has bounced back more robustly than the state overall in recent years.

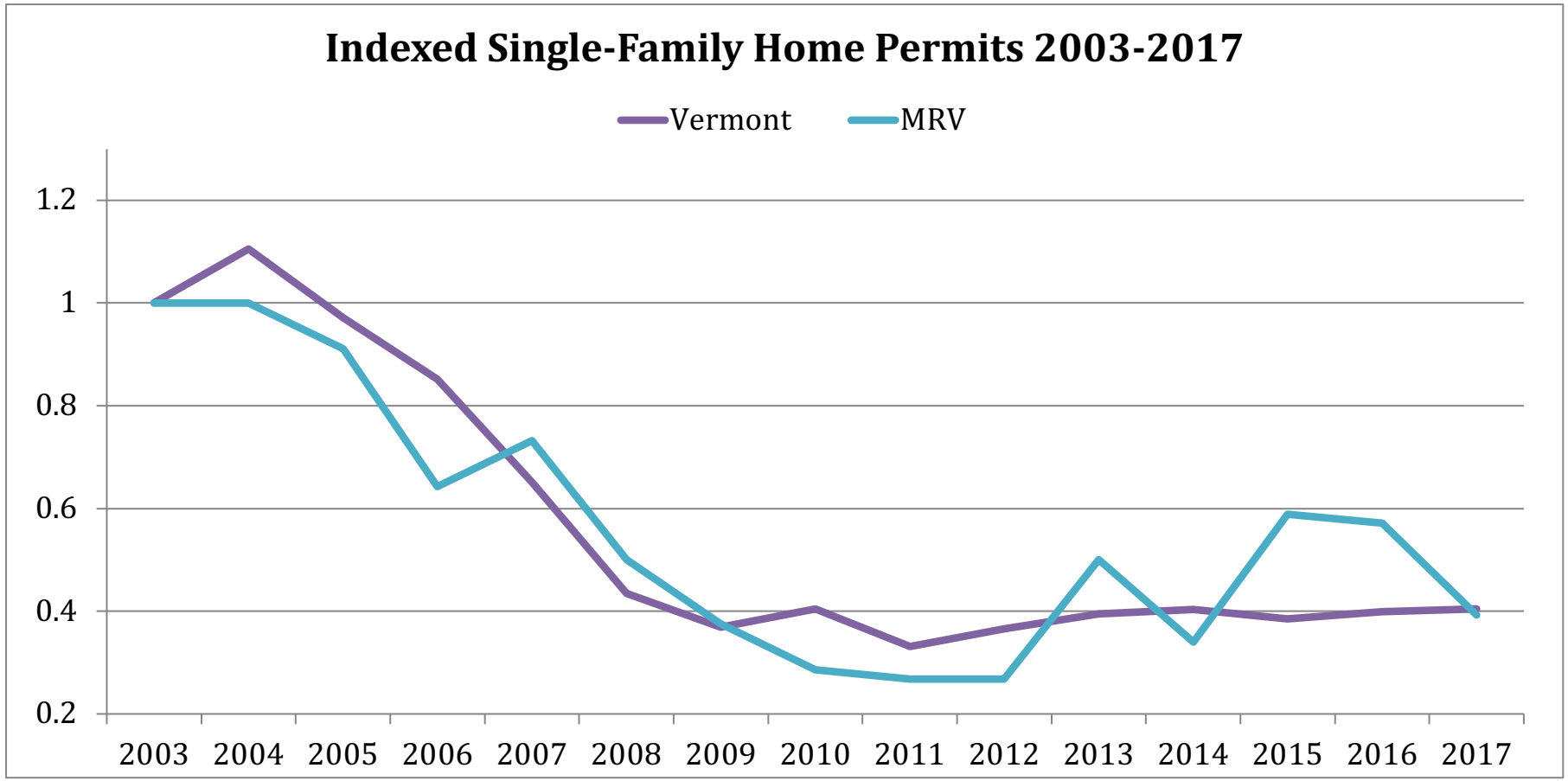



**FIGURE 18- SOURCE: U.S. DEPT. OF HOUSING & URBAN DEVELOPMENT, VT HOUSING DATA**

While the raw number of single-family homes permitted is important, the total dollars attributed to those permits is also an important figure.[5] **Figure 19** shows slight increases in the cost of construction for single-family homes in both Fayston and Waitsfield in 2017, while decreasing markedly in Warren compared to the previous year. Warren's decrease is consistent with a similar trend in the number of single-family home permits Warren issued in 2017.

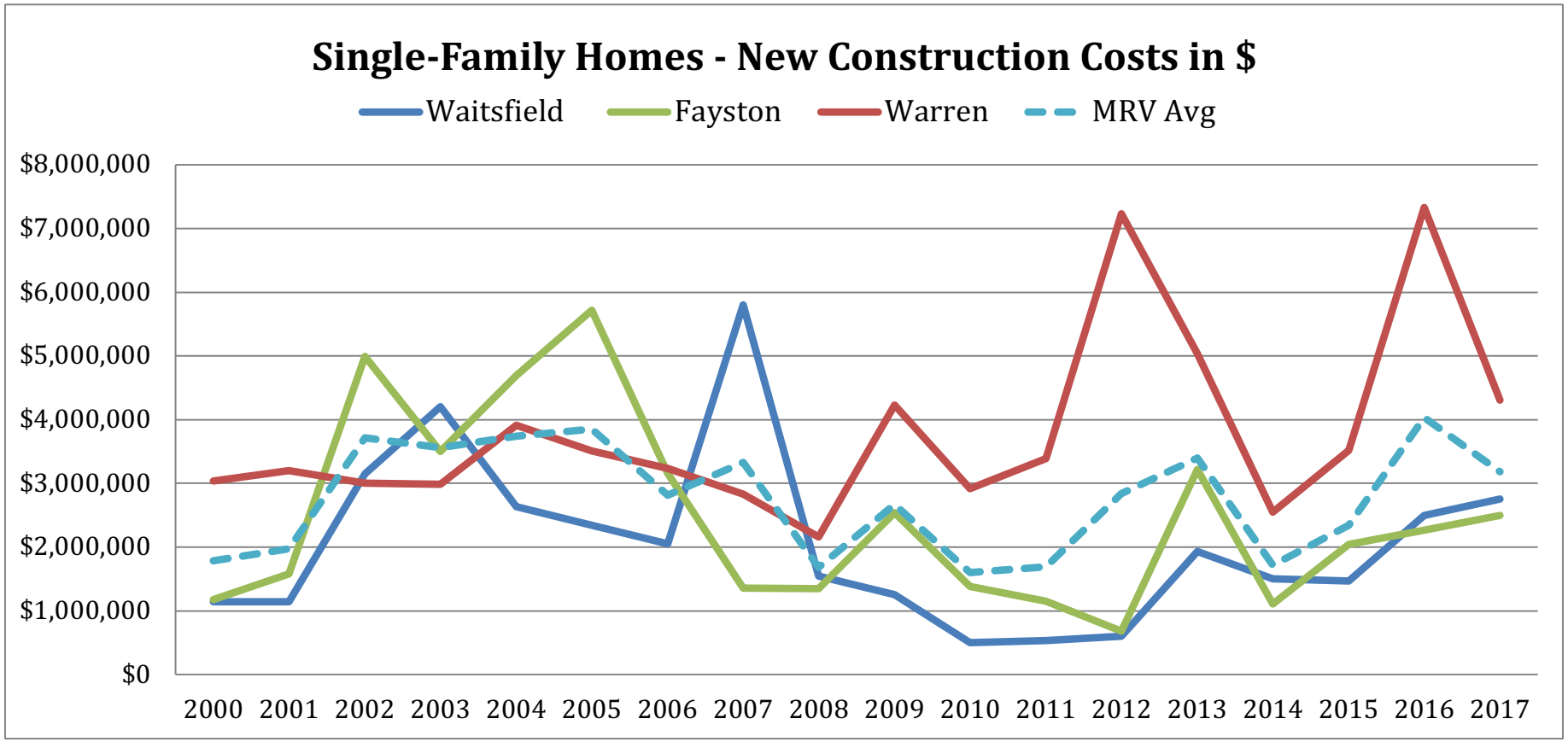



**FIGURE 19-SOURCE: U.S. CENSUS BUREAU, U.S. DEPT. OF HOUSING & URBAN DEVELOPMENT**

[5] In 2018, all permit numbers in the graph were updated using the Department of Housing & Urban Development's Building Permit Database to standardize data collection (US Census Building Permits Survey).

A snapshot of available housing[6] in **Figure 20** shows that most housing units in the MRV are seasonal or vacation homes[7] (51%) compared to primary residences (45%), and that there is a small percentage of vacant units (4%). The number of seasonal homes has increased as a percentage of total MRV housing units between 2010 and 2016, from 48% to 51%.

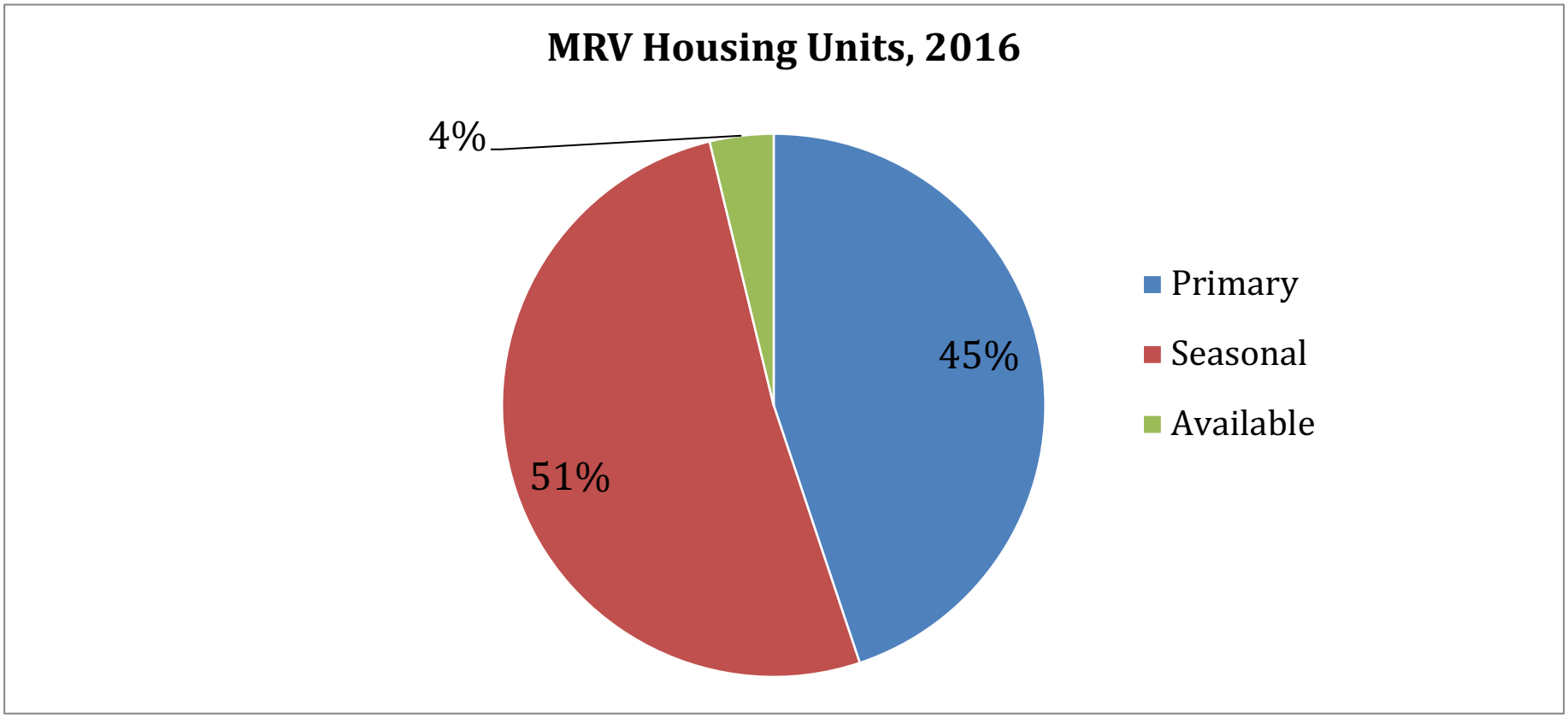



**FIGURE 20- SOURCE: AMERICAN COMMUNITY SURVEY, 2016, U.S. CENSUS BUREAU**

[6] The most recent available data from the U.S. Census Bureau's American Community Survey about housing availability is from 2016.
[7] "Seasonal," "Vacation," or "Occasional Use" homes are defined by the U.S. Census Bureau as, "intended by the owner to be occupied during only certain seasons of the year. They are not anyone's usual residence. A seasonal unit may be used in more than one season; for example, for both summer and winter sports. Published counts of seasonal units also include housing units held for occupancy by migratory farm workers."

## Housing Affordability

Sugarbush Resort collects data annually via surveys given to its seasonal and year-round employees, and in 2017-18, 746 Sugarbush employees participated in the survey. The data in **Figure 21** indicates where Sugarbush employees lived during the 2017-2018 ski season. The number of seasonal employees who reported living in one of the three MRV towns (Fayston, Waitsfield, or Warren) was 43.9%, while 57.1% of the year-round staff call one of these three towns home (compared to 45.5% of seasonal staff and 53.4% of year-round staff, respectively, during the previous season).

**FIGURE 21- SOURCE: SUGARBUSH RESORT**

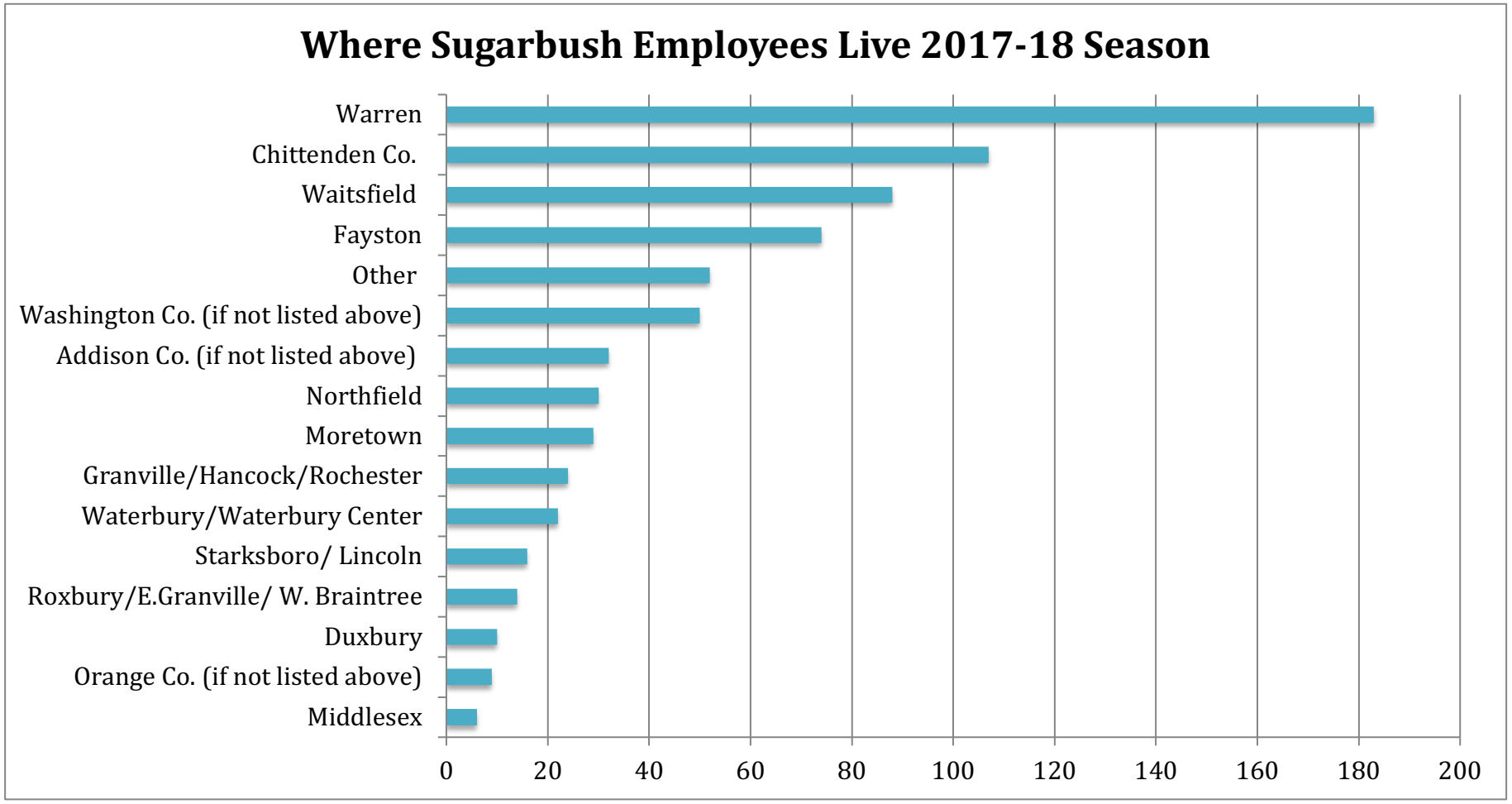


**Figure 22** identifies the type of housing situations that Sugarbush employees lived in during the 2017-18 season. The largest percentage of employees own their residence (42%), followed by rent (33%), live with family (16%), live in employee housing (3%), and stay at a motel/inn/B&B or in a camper/vehicle/tent (less than 1%).[8]

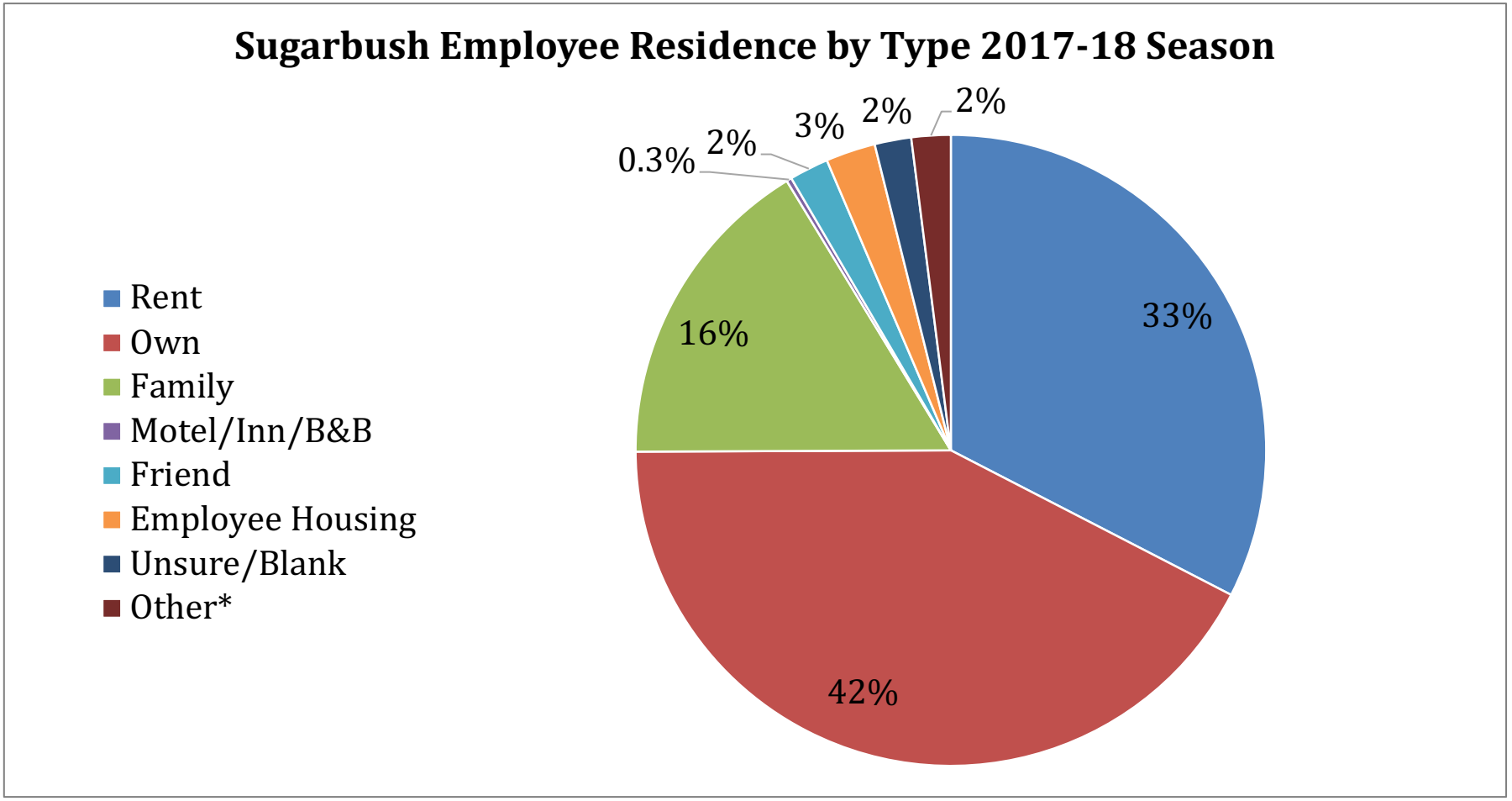



**FIGURE 22- SOURCE: SUGARBUSH RESORT**

[8] "Other*" indicates a choice on the Sugarbush Resort Employee Survey, which asked respondents to specify their residence if it wasn't listed.

An analysis of housing costs reveals fewer housing options available at $0-799/month in the MRV in 2016 compared to the county and state, as seen in **Figure 23** below. A greater percentage of households in the MRV are also spending more than $1,500/month on housing costs compared to the county and state: 39% combined in the MRV vs 30% for both Washington County and Vermont.

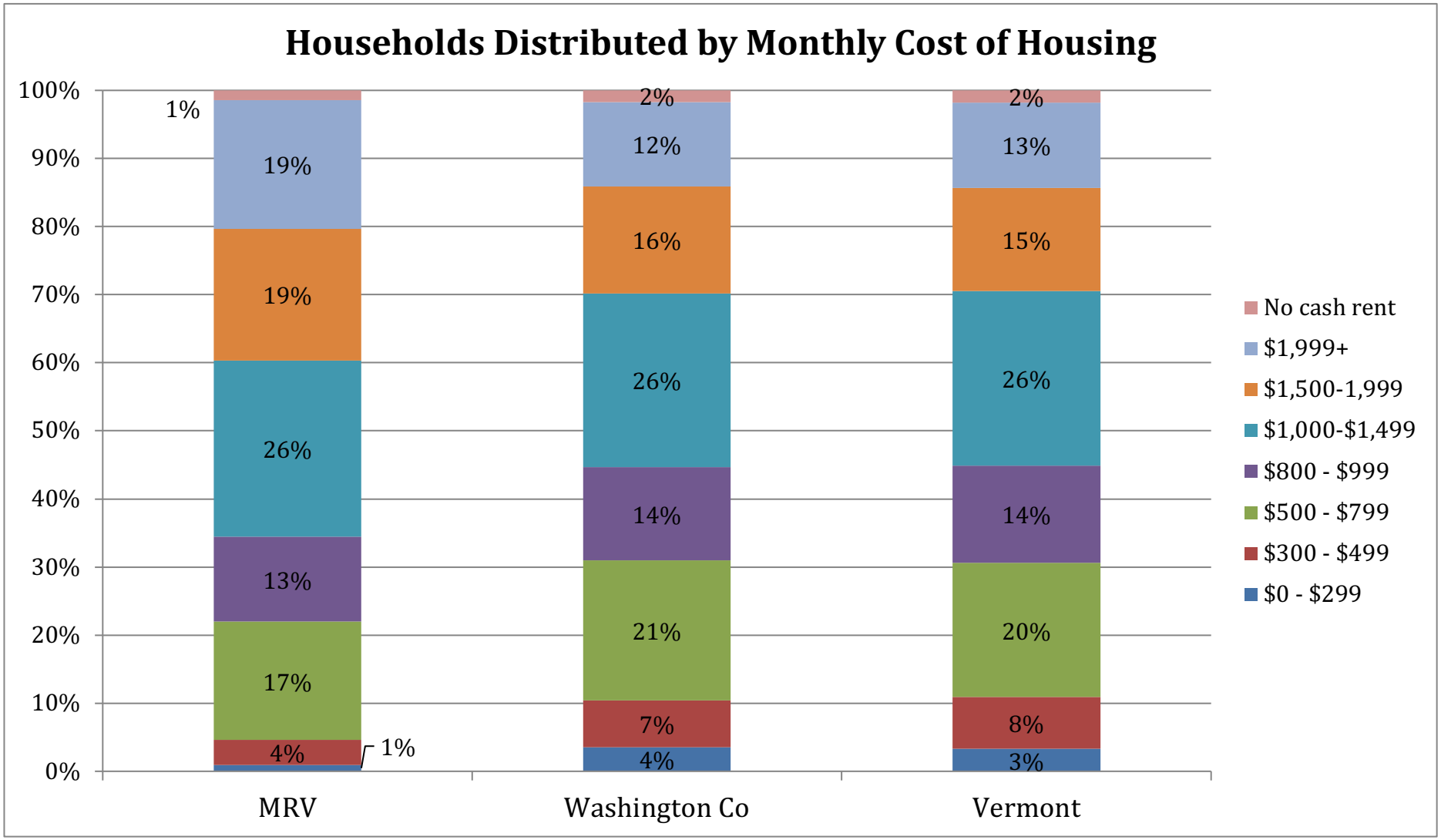
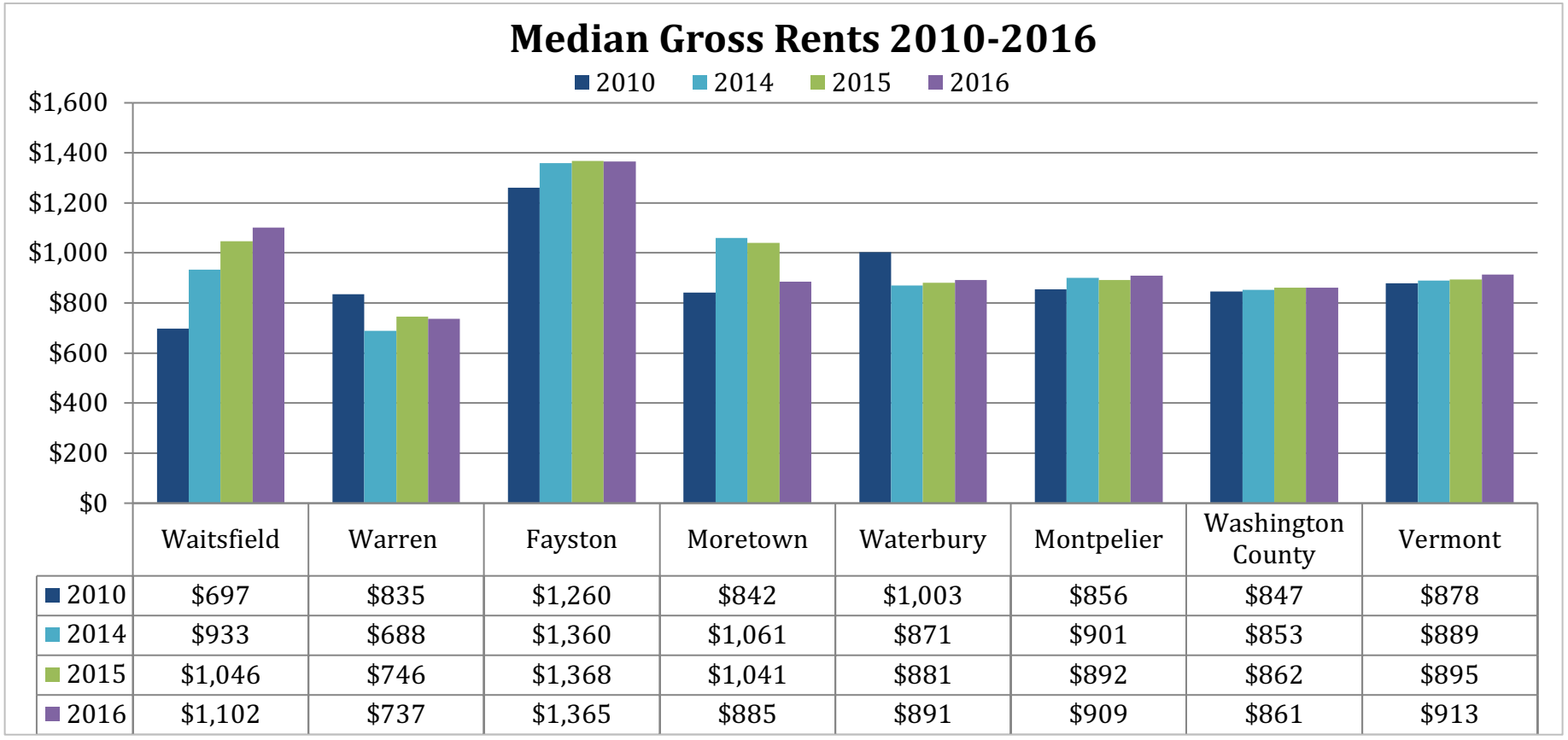



**FIGURE 23- SOURCE: AMERICAN COMMUNITY SURVEY, 2016, U.S. CENSUS BUREAU**

**Figure 24** compares the most recent data at the time of writing for median gross rent[9] in the three MRV towns as compared to surrounding communities. The average median gross rent for the three MRV towns combined was $1,068 in 2016, up from $994 in 2014. The three highest median gross rents in 2016 are in Waitsfield, Fayston & Montpelier. Comparing median gross rent over time in the MRV towns shows a substantial increase in Waitsfield between 2010 and 2016 (up 58%). Warren has the most affordable rent, continuing to track below the statewide average.




| | Waitsfield | Warren | Fayston | Moretown | Waterbury | Montpelier | Washington County | Vermont |
|---|---|---|---|---|---|---|---|---|
| 2010 | $697 | $835 | $1,260 | $842 | $1,003 | $856 | $847 | $878 |
| 2014 | $933 | $688 | $1,360 | $1,061 | $871 | $901 | $853 | $889 |
| 2015 | $1,046 | $746 | $1,368 | $1,041 | $881 | $892 | $862 | $895 |
| 2016 | $1,102 | $737 | $1,365 | $885 | $891 | $909 | $861 | $913 |

**FIGURE 24-SOURCE: U.S. CENSUS BUREAU, VT HOUSING DATA**

[9] Gross rent is defined by the U.S. Census Bureau as the "contract rent plus the estimated average monthly cost of utilities (electricity, gas, and water and sewer) and fuels (oil, coal, kerosene, wood, etc.) if these are paid by the renter (or paid for the renter by someone else)." The median gross rent is the middle value (50th percentile) when all rents for all unit sizes are arranged from lowest to highest.

**Table 2** below shows the U.S. Department of Housing & Urban Development's (HUD) definition of Fair Market Rents (FMRs) in Washington County from 2016 to 2018. HUD's FMR calculations are displayed by number of bedrooms per unit. A household selected to receive a federal subsidy to cover housing costs is only allowed to utilize its subsidy for units at or below the rent levels displayed in **Table 2.**

Fair Market Rent (FMR) is defined by the U.S. Department of Housing & Urban Development (HUD) as, "the 40th percentile of gross rents [including utilities] for typical, non-substandard rental units occupied by recent movers in a local housing market."[10] The 50th percentile would be the median, or middle price for gross rent in a specific market. FMRs are used by HUD to allocate federal housing assistance, and the 40th percentile is the standard used to best capture units that are of acceptable quality, while not being luxurious compared to the quality of "typical," or 50th percentile units.

| Washington County VT | Studio | 1 Bed | 2 Beds | 3+ Beds |
|---|---|---|---|---|
| Fair Market Rent 2016 | $732 | $737 | $986 | $1,224+ |
| Fair Market Rent 2017 | $776 | $781 | $1,033 | $1,292+ |
| Fair Market Rent 2018 | $803 | $808 | $1,064 | $1,388+ |

**TABLE 2- SOURCE: U.S. DEPT. OF HOUSING & URBAN DEVELOPMENT**

[10] U.S. Dept. of Housing & Urban Development (HUD) Fair Market Rent and thresholds for Low Income status can be found at: https://www.huduser.gov/portal/datasets/fmr.html

**Figure 25** shows the change in the number of owner and renter-occupied housing units in Waitsfield, Warren, and Fayston from 1990 to 2016 tracked against population. Since 2010, the MRV has seen a 16% reduction in the number of renter-occupied housing units and 4% increase in owner-occupied units. The trend in MRV population over this period shows stability, with a 2% decrease from 2010-2016. These shifts in housing tenure could be related to the rise in popularity of online short-term rental websites removing rental

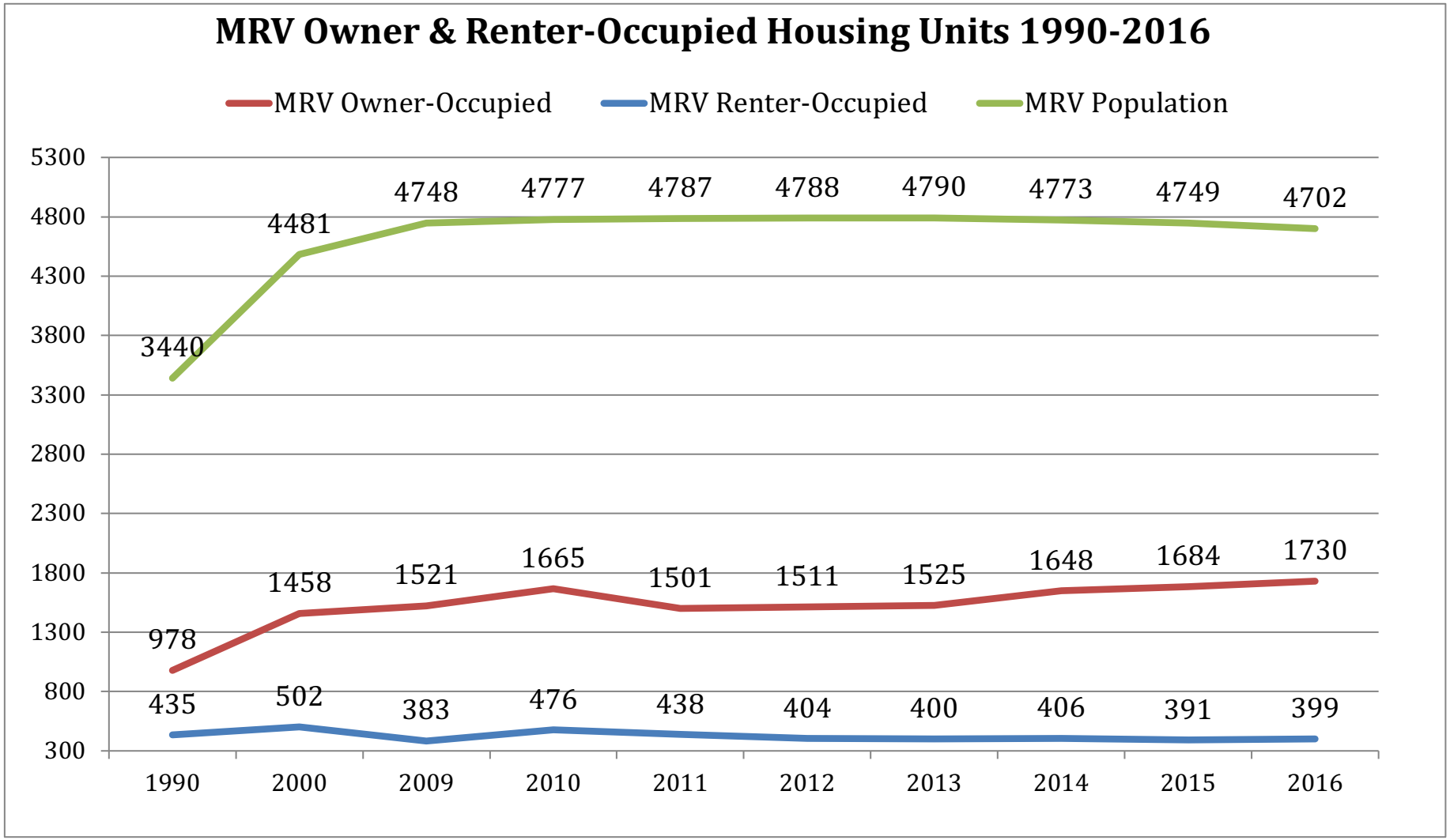



**FIGURE 25-SOURCE: VT HOUSING DATA, U.S. CENSUS BUREAU**

units from the market, though there is not sufficient data to prove causation at this time. However, additional data regarding the value of owner-occupied homes and cost burden of these housing types was investigated, and findings are shown in **Figures 26, 27, & 28**.

**Figure 26** illustrates the higher value of owner-occupied units in the MRV compared to the state. However, median value of owner-occupied units has increased 6% since 2010, while the MRV average median gross rent (**Figure 24**) increased 25% during this period.

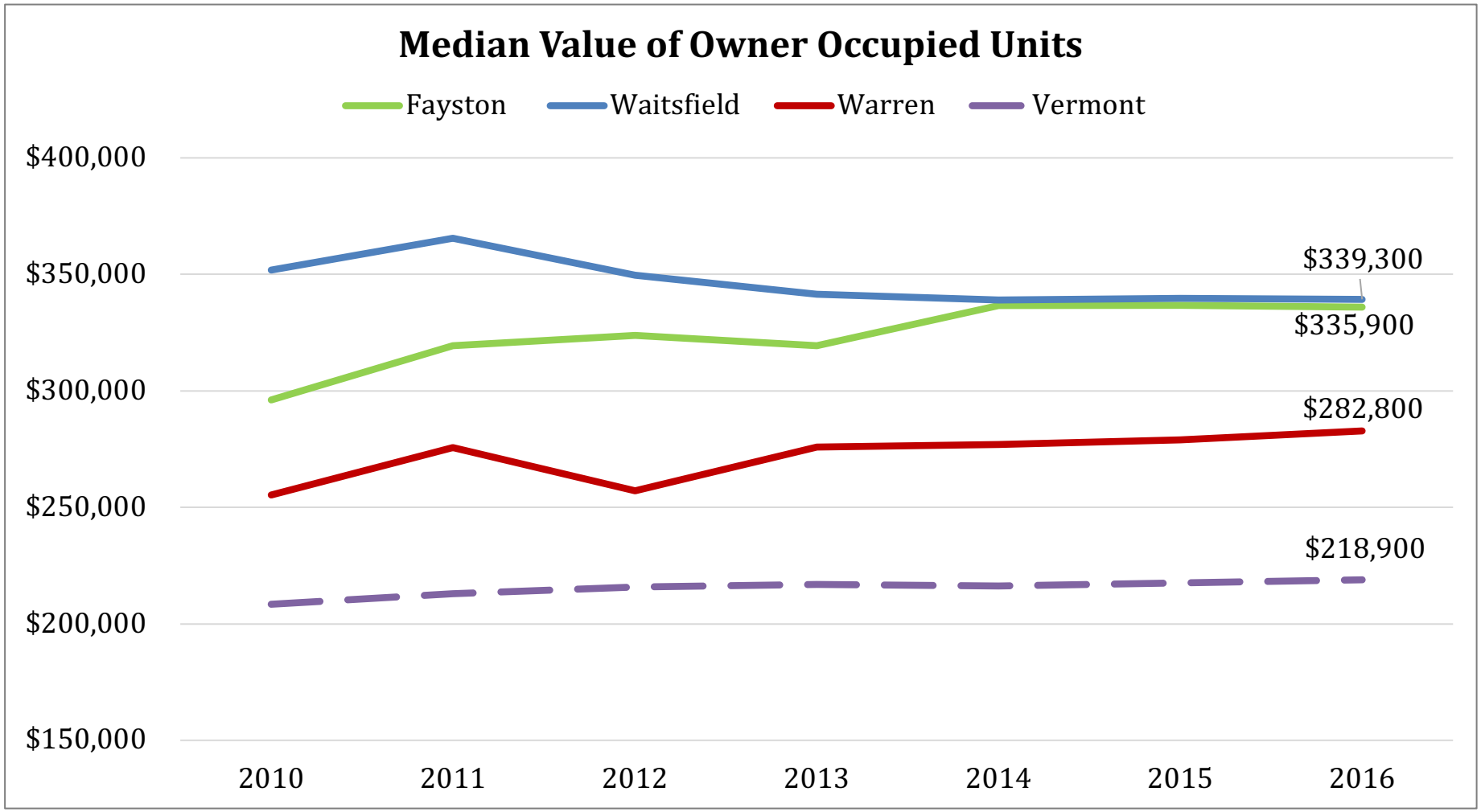



**FIGURE 26-SOURCE: VT HOUSING DATA**

To put these housing costs into context, the cost burden of both owner and renter-occupied housing is explored in **Figures 27 & 28.**

The U.S. Dept. of Housing and Urban Development (HUD) defines "affordable housing" as paying 30% or less of household income for gross housing costs (rent/mortgage plus utilities). Households paying more than 30% are defined by HUD as "cost-burdened" and those paying 50% or more of their income for housing are defined as "severely cost-burdened." **Figures 27 & 28** show the percentage of households in the MRV towns, Washington County, and the state overall who pay more than 30% of income for housing and the percentage paying 50% or more of their income.

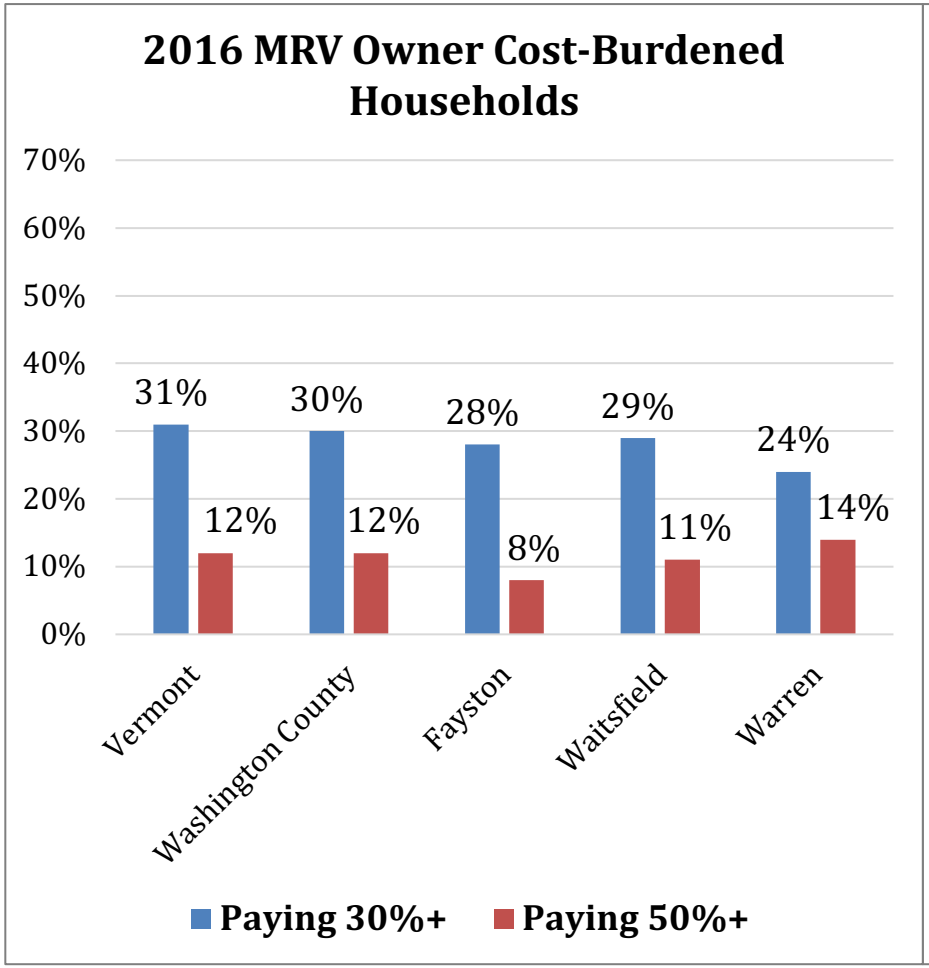



**FIGURE 27-SOURCE: VT HOUSING DATA**

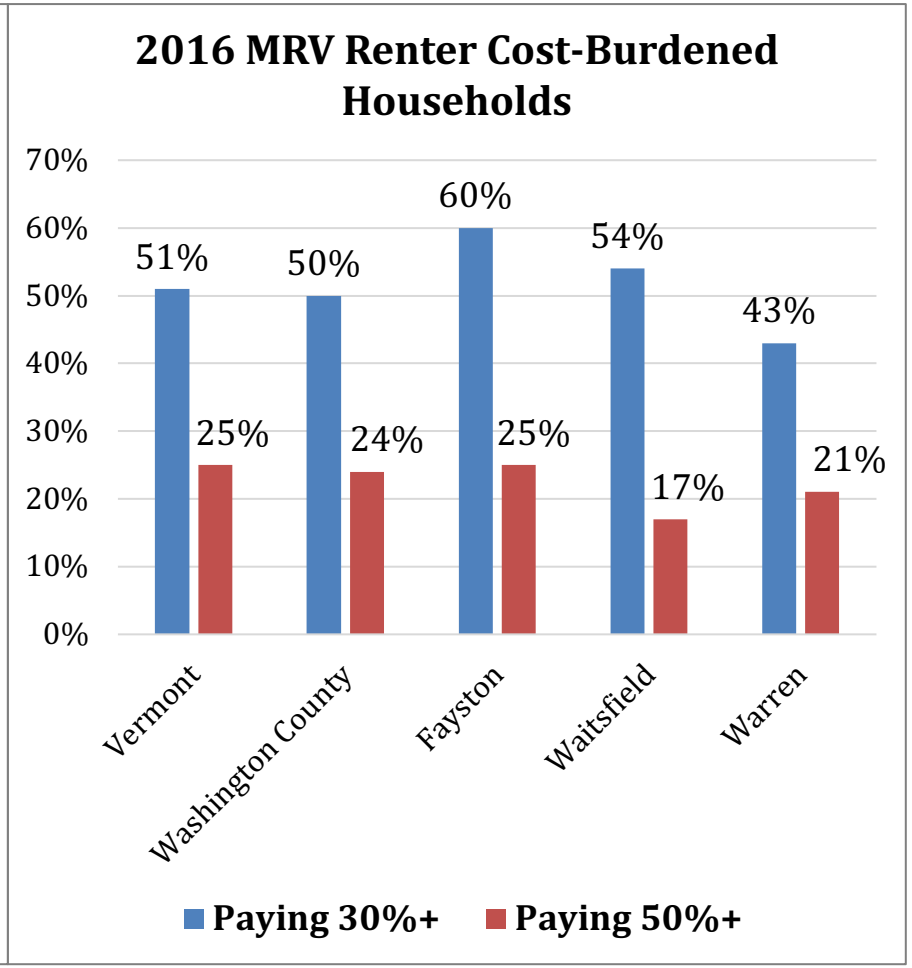



**FIGURE 28-SOURCE: VT HOUSING DATA**

**Figures 27 & 28** show that housing affordability is a challenge beyond the MRV community, with similar levels of cost burden in Washington County and the state. Data also shows that renters are demonstrably more cost-burdened than homeowners at both the 30%+ of income and 50%+ of income levels across all regions displayed.

Another metric used to analyze housing affordability is a community's "housing wage," defined by the National Low Income Housing Coalition as "the hourly wage a full-time worker (40 hrs./week) must earn to afford a modest rental home while spending no more than 30% of her or his income on rent and utilities." In 2018[11], the Washington County housing wage for a modest 2-bedroom apartment was $20.46 per hour. **Figure 29** shows the 2018 Washington County Housing wage for 1, 2, and 3-bedroom units compared to the 2018 Vermont minimum wage ($10.50 per hr.).

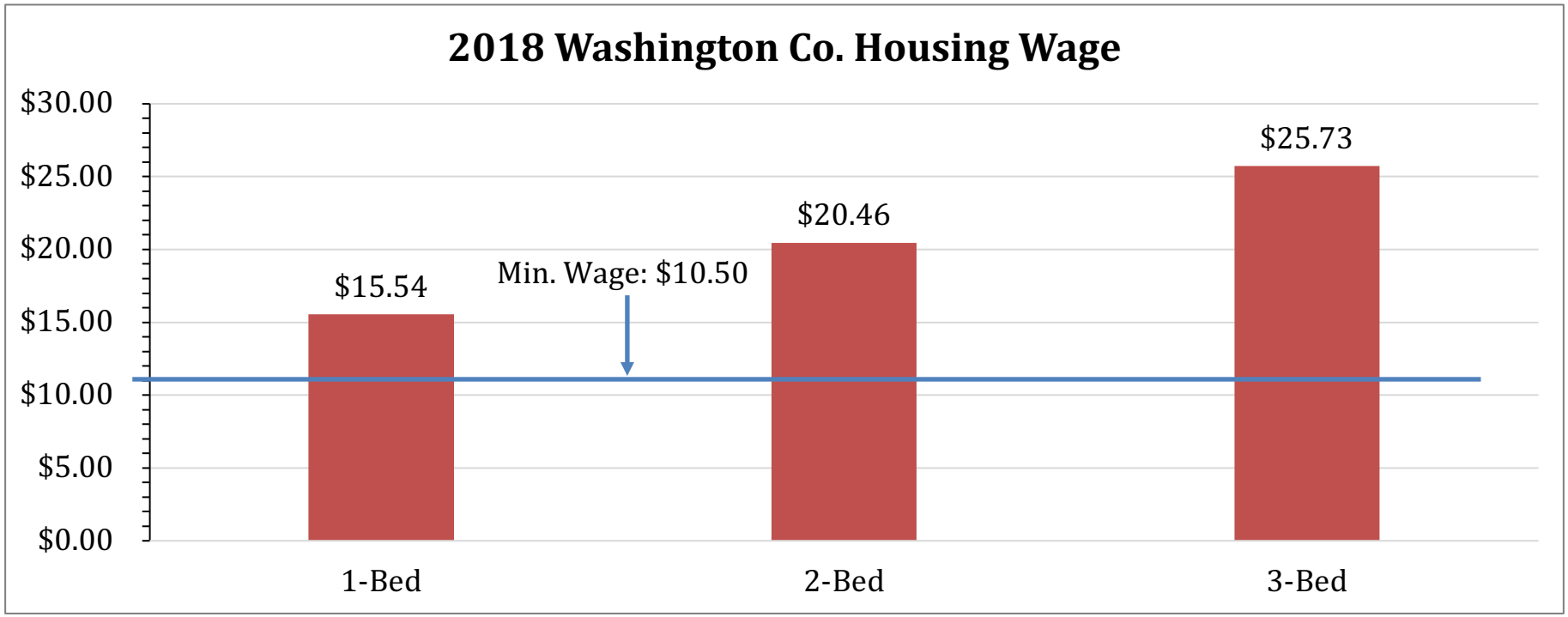


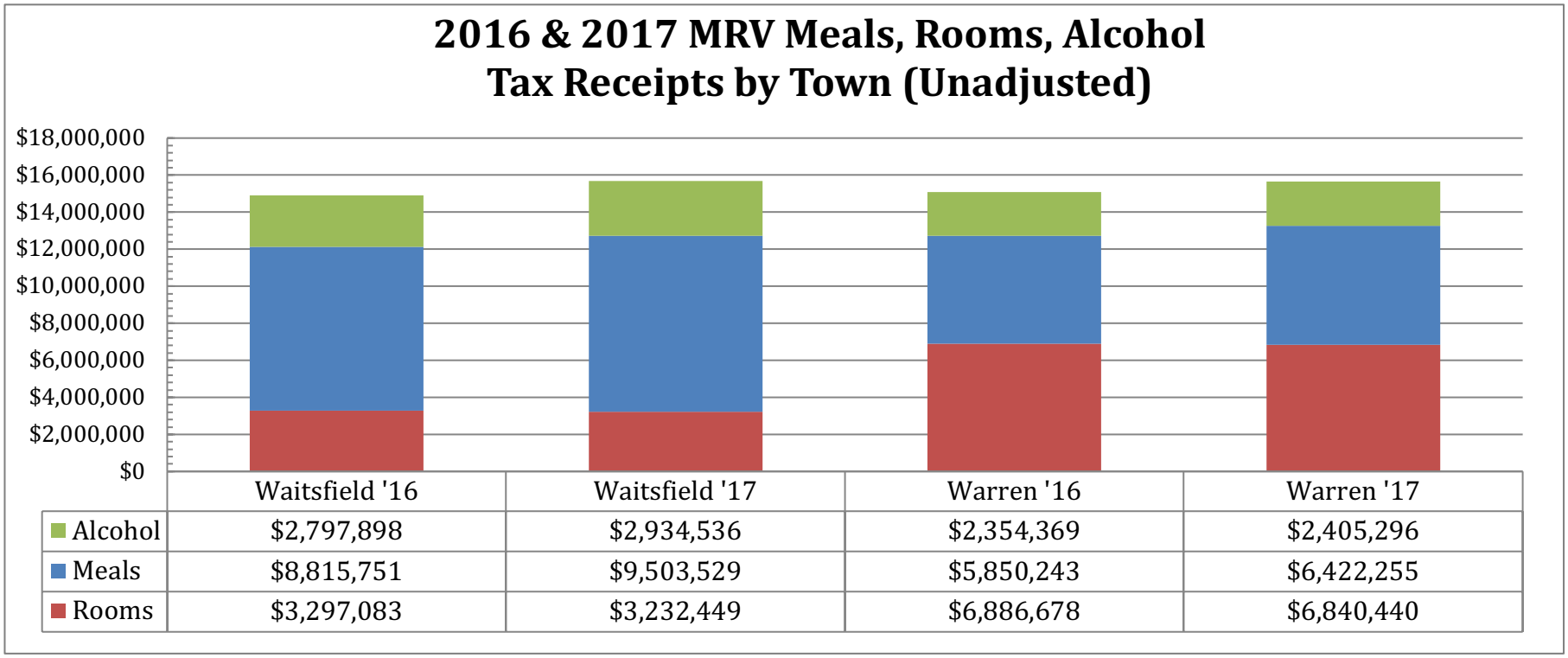

**FIGURE 29- SOURCE: NATIONAL LOW INCOME HOUSING COALITION, VT HOUSING DATA**

[11] The most recent housing wage data available for this report was from 2018.

# SECTION II: ECONOMICS

*Includes Items #35 & 36 from the Memorandum of Understanding*

## TOURISM & HOSPITALITY



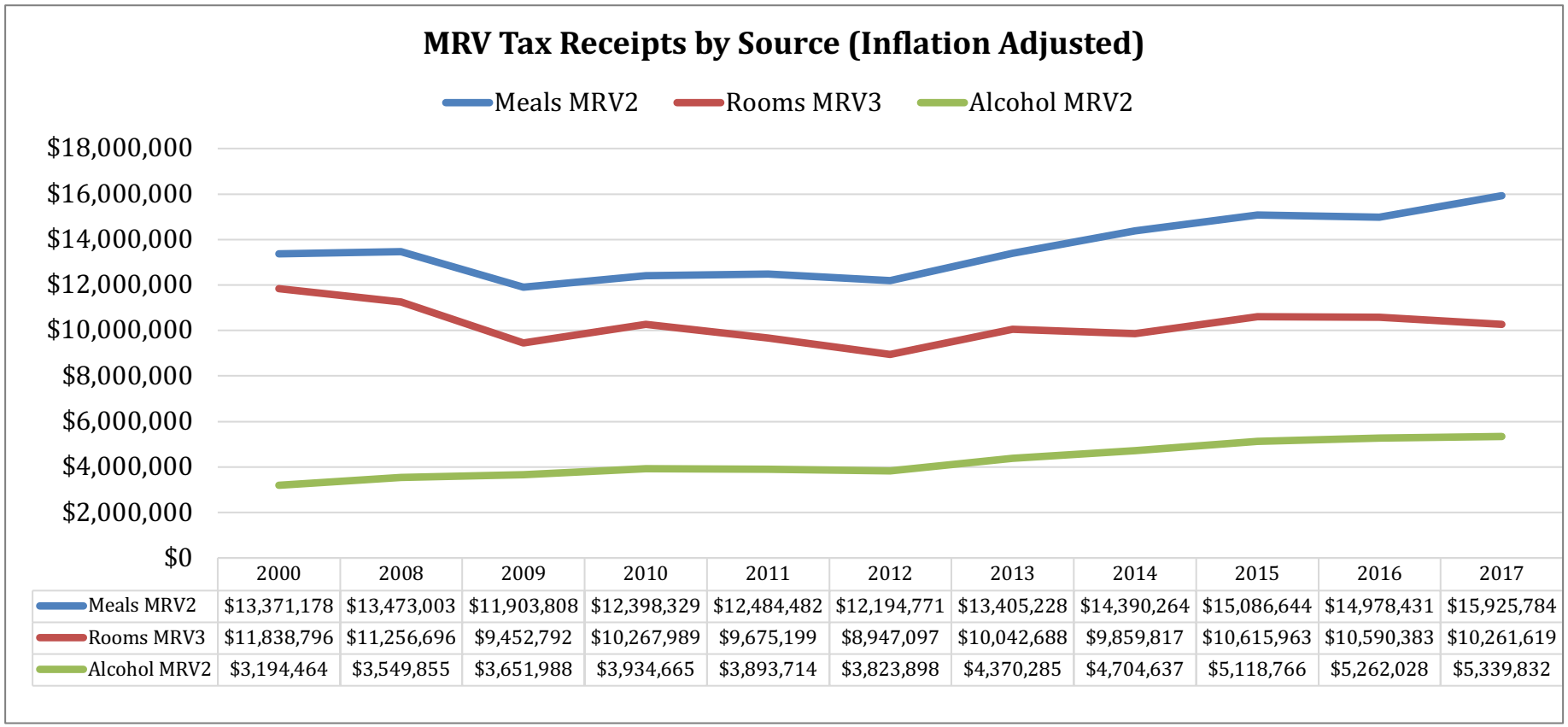

| | Waitsfield '16 | Waitsfield '17 | Warren '16 | Warren '17 |
|---|---|---|---|---|
| Alcohol | $2,797,898 | $2,934,536 | $2,354,369 | $2,405,296 |
| Meals | $8,815,751 | $9,503,529 | $5,850,243 | $6,422,255 |
| Rooms | $3,297,083 | $3,232,449 | $6,886,678 | $6,840,440 |

**FIGURE 30-SOURCE: VT DEPT. OF TAXES**

A comparison of tax receipts by town[12] in **Figure 30** shows a cumulative increase in both towns over the last year, with a predominance of Meals revenue in Waitsfield and Rooms (lodging) revenue in Warren[13]. Compared to 2016, both Waitsfield and Warren experienced

[12] "Meals" includes prepared and restaurant meals. "Rooms" includes lodging and meeting rooms. "Alochol" includes beverages served in restuarants.
[13] Fayston contributes Meals, Rooms, & Alcohol tax receipts data, however, due to the small number of businesses (fewer than 10 establishments reporting) the data is suppressed due to confidentiality thresholds at the VT Dept. of Taxes.

increases for Meals and Alcohol tax receipts, while both also experienced a decrease in the Rooms category. Waitsfield saw Meals receipts increase by 8%, Alcohol receipts increase by 4.9%, and Rooms receipts decrease by 2%. In Warren, Meals receipts increased by 10%, Alcohol receipts increased by 2%, and Rooms receipts decreased by 1%.




| | 2000 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Meals MRV2 | $13,371,178 | $13,473,003 | $11,903,808 | $12,398,329 | $12,484,482 | $12,194,771 | $13,405,228 | $14,390,264 | $15,086,644 | $14,978,431 | $15,925,784 |
| Rooms MRV3 | $11,838,796 | $11,256,696 | $9,452,792 | $10,267,989 | $9,675,199 | $8,947,097 | $10,042,688 | $9,859,817 | $10,615,963 | $10,590,383 | $10,261,619 |
| Alcohol MRV2 | $3,194,464 | $3,549,855 | $3,651,988 | $3,934,665 | $3,893,714 | $3,823,898 | $4,370,285 | $4,704,637 | $5,118,766 | $5,262,028 | $5,339,832 |

**FIGURE 31 - SOURCE: VT DEPT. OF TAXES**

An inflation adjusted comparison of Meals, Rooms, and Alcohol tax receipts, **Figure 31**, illustrates the stabilization occurring from 2015-2017 in the MRV with modest gains in all but Rooms receipts. The MRV2[14] saw a 6% increase in Meals receipts from 2016 to

[14] MRV3 refers to the towns of (Waitsfield, Warren, & Fayston), while MRV2 includes just Warren & Waitsfield.

2017. There was a 1% increase in Alcohol receipts for Waitsfield and Warren combined (MRV2) in 2017, which have generally been on an upward trajectory since 2012. Rooms receipts experienced a decline of 3% for the combined MRV towns (MRV3) in 2017. Tax revenue trends illuminate the relative health of the MRV's primary tourist industries - skiing, foliage and weddings, which impact each of these sectors. The craft food and beverage industry also influences these trends, and with the launch of several new eating and drinking establishments in 2018, it will be interesting to monitor changes in the coming years.

A comparison of Waitsfield and Warren's combined inflation adjusted Meals, Rooms, and Alcohol tax receipts in **Figure 32** illustrates the continued gains in Waitsfield since 2012 with an increase of 3% from 2016 to 2017. From 2012 to 2017, Waitsfield experienced a 54% increase in combined Meals, Rooms, and Alcohol revenues. Warren has experienced an overall upward trend from 2006 to 2017, peaking in 2015. Following a decline in 2016, Warren rebounded in 2017 with an increase of 2%, and from 2012 to 2017 saw an overall increase of 11%. Interestingly, Waitsfield and Warren's overall tax recepits in 2017 were nearly identical, with totals differing by only

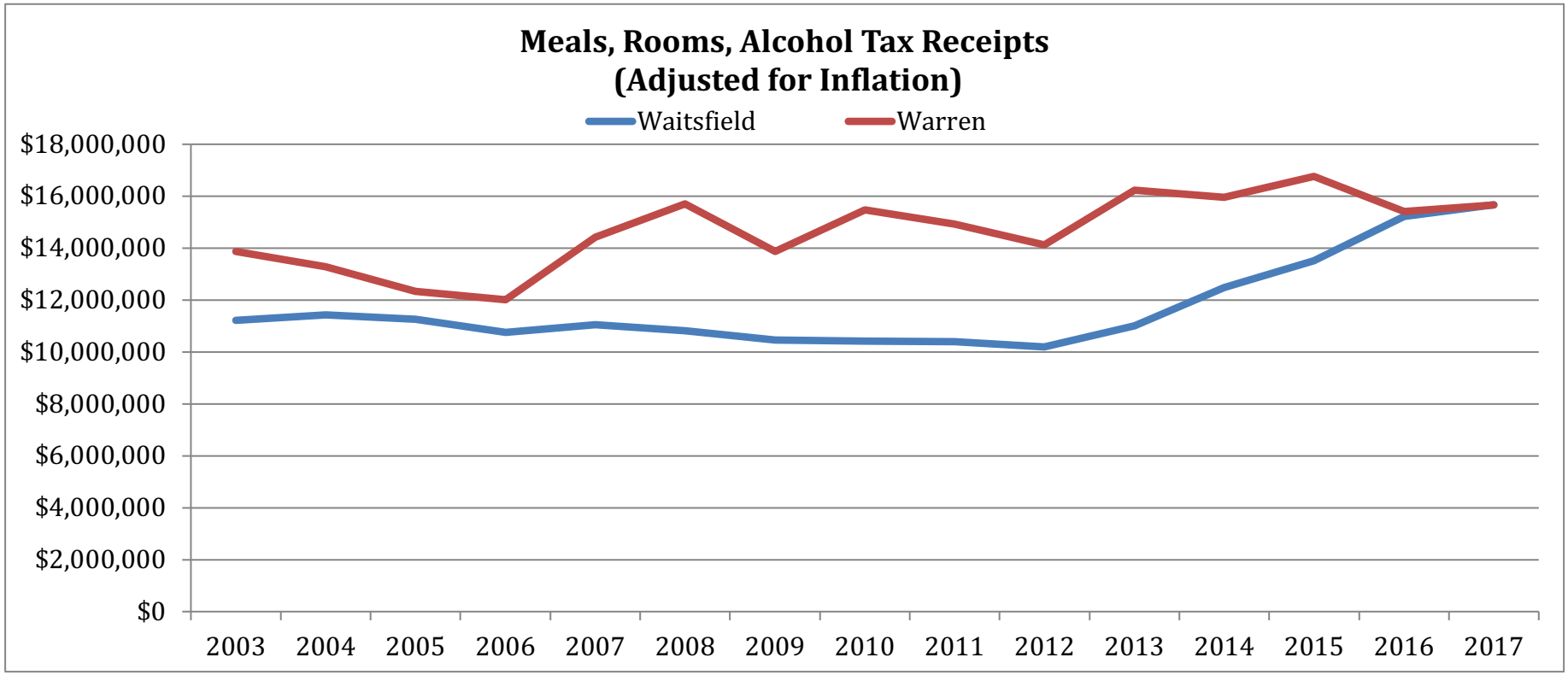



**FIGURE 32- SOURCE: VT DEPT. OF TAXES**

$2,522. Year to year Waitsfield's change has been more consistent, while Warren has experienced more dramatic swings – likely a reflection of corresponding ski seasons.

**Figure 33** provides a regional perspective on the health of the hospitality sector over time, showing upward though stabilizing trends for Montpelier, Barre City, Waterbury, Waitsfield and Warren from 2003 to 2017. Note that trends rather than total gains in dollar values are compared as Waitsfield and Warren have smaller populations than the other municipalities.

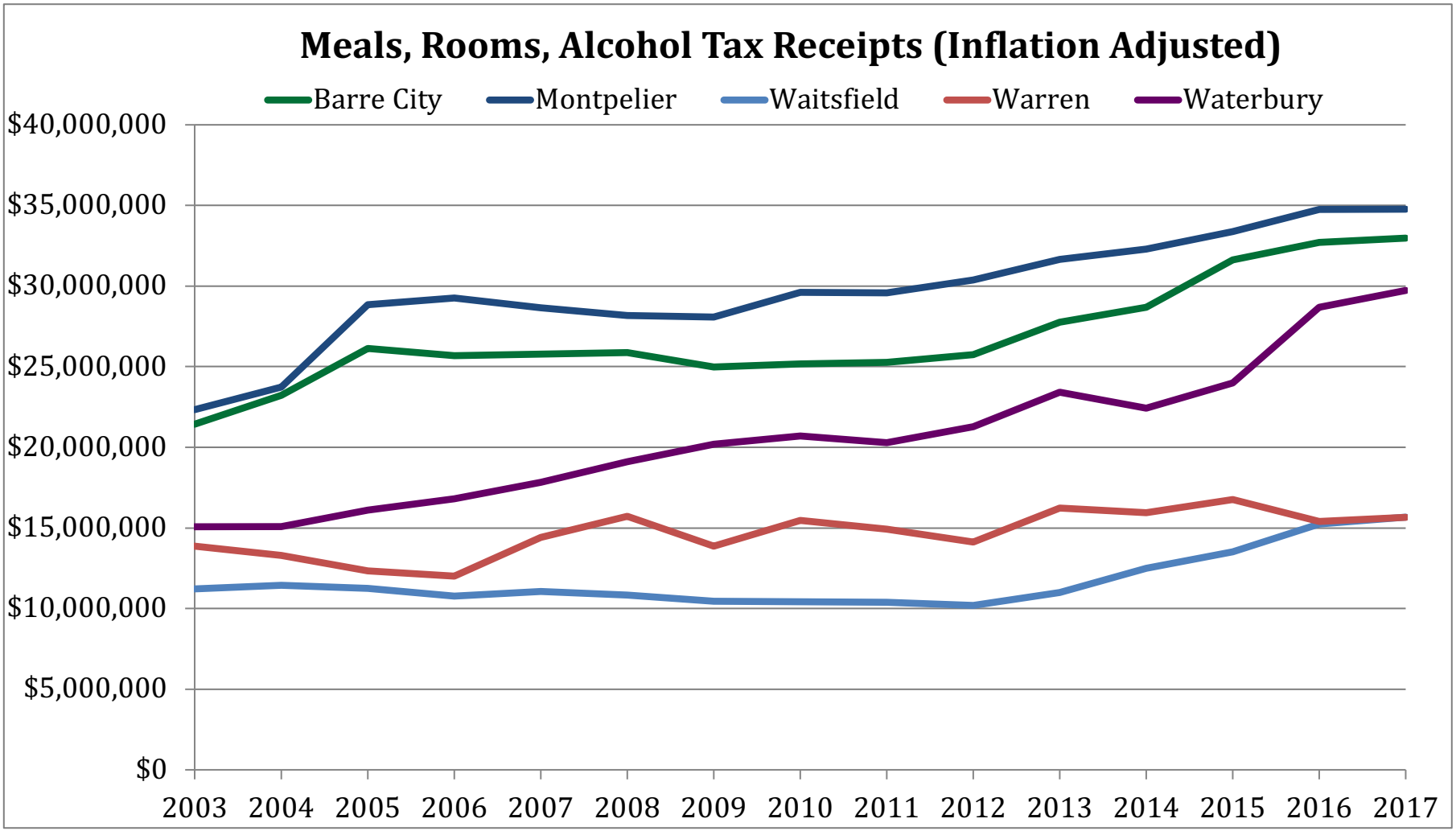



**FIGURE 33- SOURCE: VT DEPT. OF TAXES**

The robustness of the Mad River Valley's winter and summer tourist seasons can be approximated by using quarterly tax receipt data, though the quarters (First: January–March, Third: July–September) omit a percentage of the actual seasons. **Figure 34** shows greater volatility in first quarter receipts compared to the relatively steady increases seen in the third quarter (summer months). This is likely related to the impact weather plays on winter revenues during the first quarter.

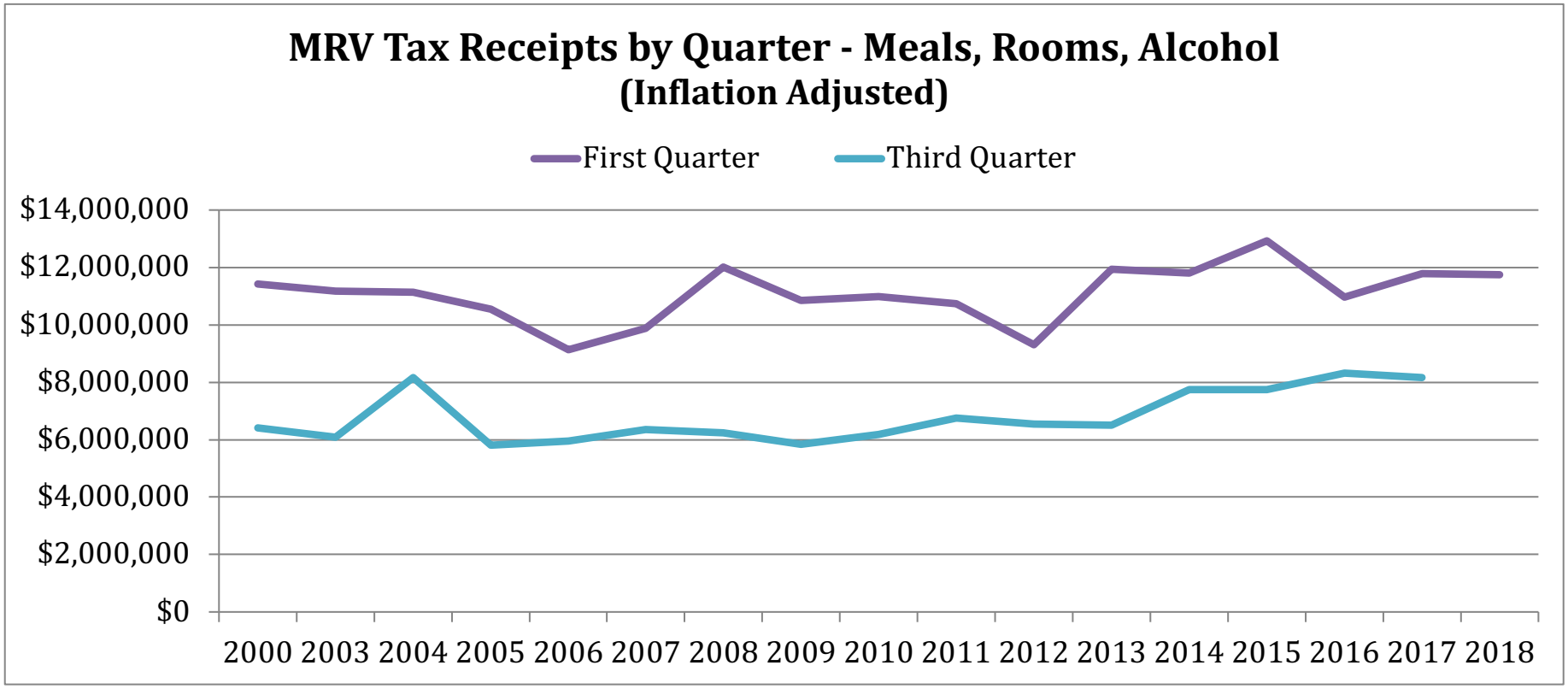



**FIGURE 34-SOURCE: VT DEPT. OF TAXES**

Tax receipts for the first quarter of 2018 remained stable, declining by only .4% from 2017, and the third quarter of 2017 saw a slight 2% decrease in summer activity compared to the same period in 2016.

On the following page, a comparison of monthly tax revenue for Waitsfield and Warren during the month of October (**Figures 35 & 36**) provides further insight into the fall tourist and wedding season. 2017 saw a 5% decrease in overall October tax revenue in Waitsfield over the previous year, with Rooms and Alcohol revenues falling by 11% and 10%, respectively. However, October tax receipts for Meals, Rooms, and Alcohol have increased dramatically between 2014 to 2017 in Waitsfield (up 35%, 50%, and 44%, respectively).

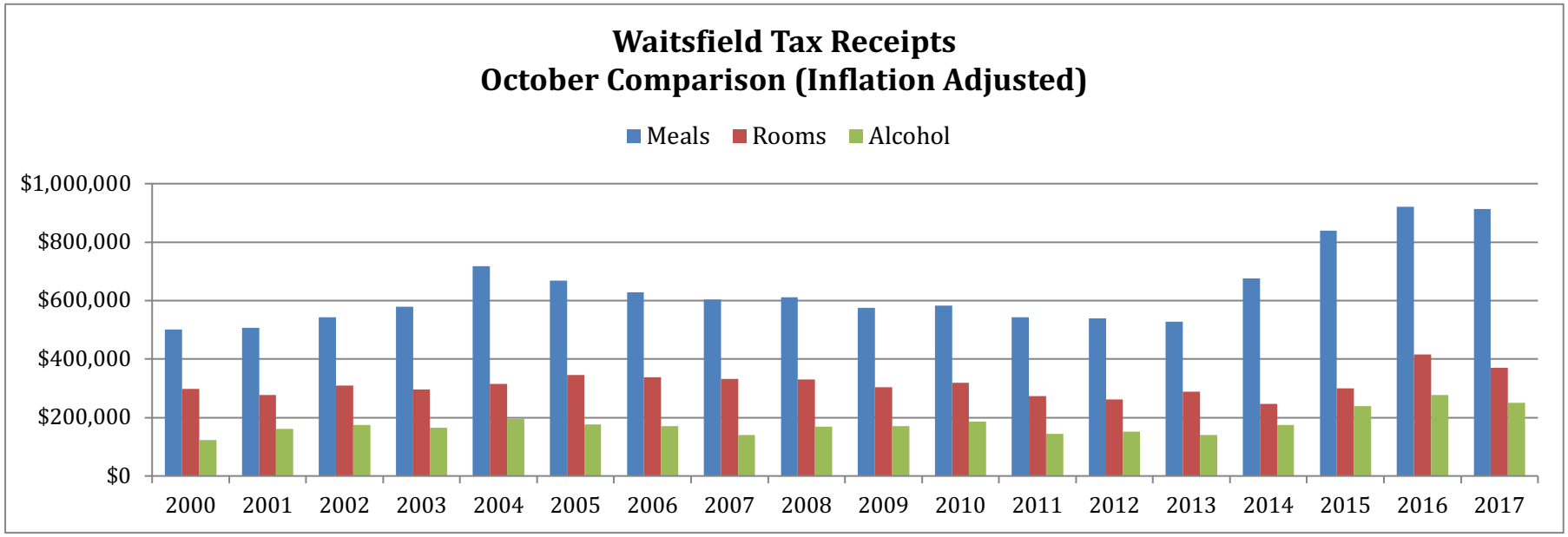



**FIGURE 35- SOURCE: VT DEPT. OF TAXES**

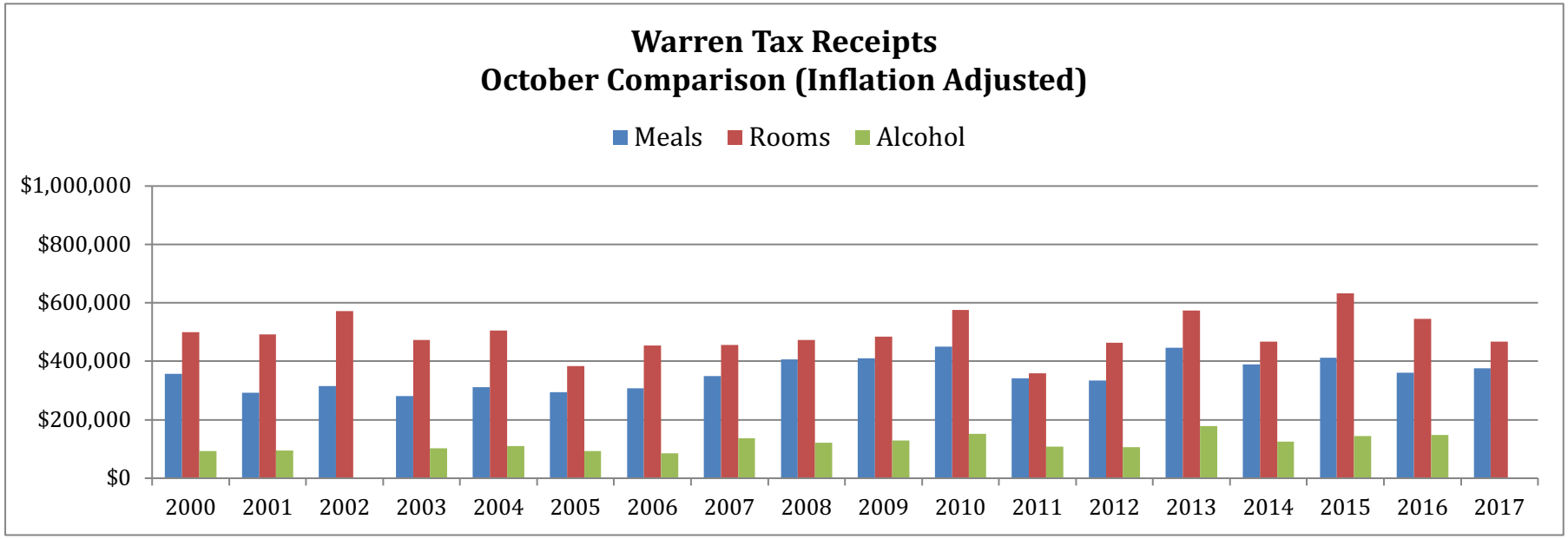



**FIGURE 36- SOURCE: VT DEPT. OF TAXES**

2017 saw an overall decrease of Warren's Meals, Rooms, and Alcohol reciepts by 20% compared to the previous year. Note that Sugarbush Resort combined alcohol licenses among its facilities, resulting in a reduction of the total number of reporting businesses to below the suppression threshold for the State of Vermont. Therefore, the 2017 decline in alcohol recepits in Warren may not be indicative of declines in sales. Meals revenue in Warren increased by 4% over the previous year, and Rooms receipts decreased by 14% from October 2016 to October 2017.

Weddings provide significant revenue across the state and within the MRV. The Town Clerks in Waitsfield, Warren, and Fayston issued 83 marriage licenses in 2018 and 82 in 2017, versus 79 in 2016 and 73 in 2015.

## Retail Sector

**Figure 37** provides a comparison of 2017 Gross Sales tax receipts by town[15], illustrating a predominance of sales tax revenue in Waitsfield and confirming Waitsfield's role as the MRV's commercial center.[16]

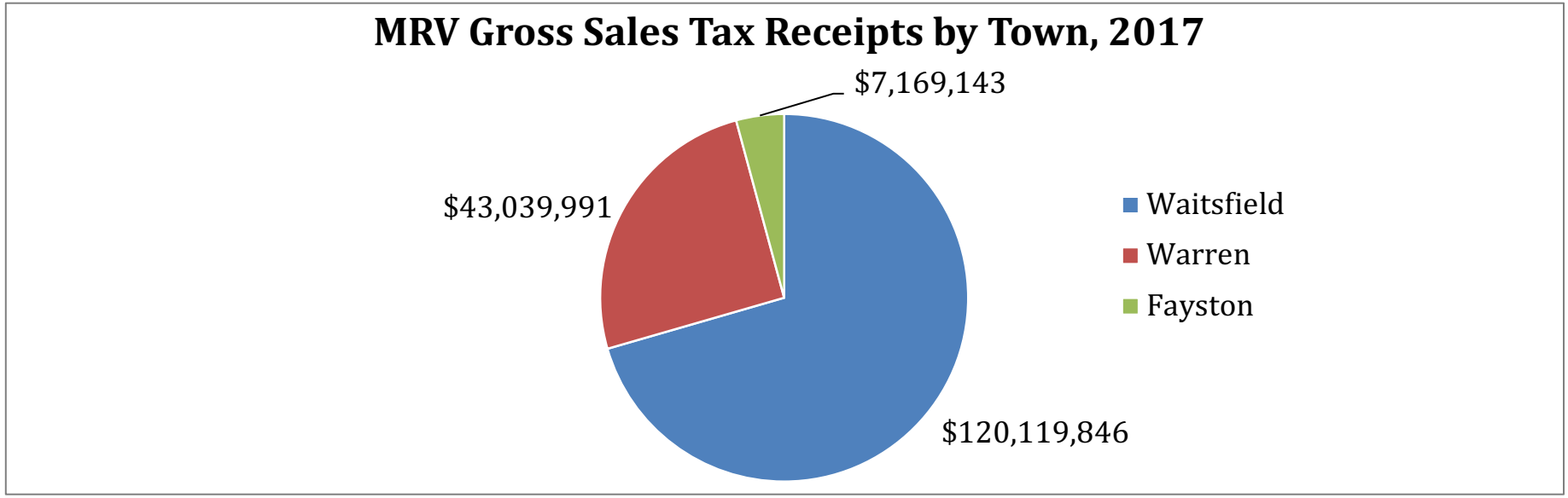



**FIGURE 37- SOURCE: VT DEPT. OF TAXES**

[15] "Gross" receipts may or may not include sales subject to exemptions. This category can be thought of as the sum of all sales that happen in a municipality. This may include both taxable sales (toys, tools, etc) and nontaxable sales (clothing, food products, etc.) but will not include the sales for which Use tax is remitted by businesses in that town.

[16] MRV Town Plans

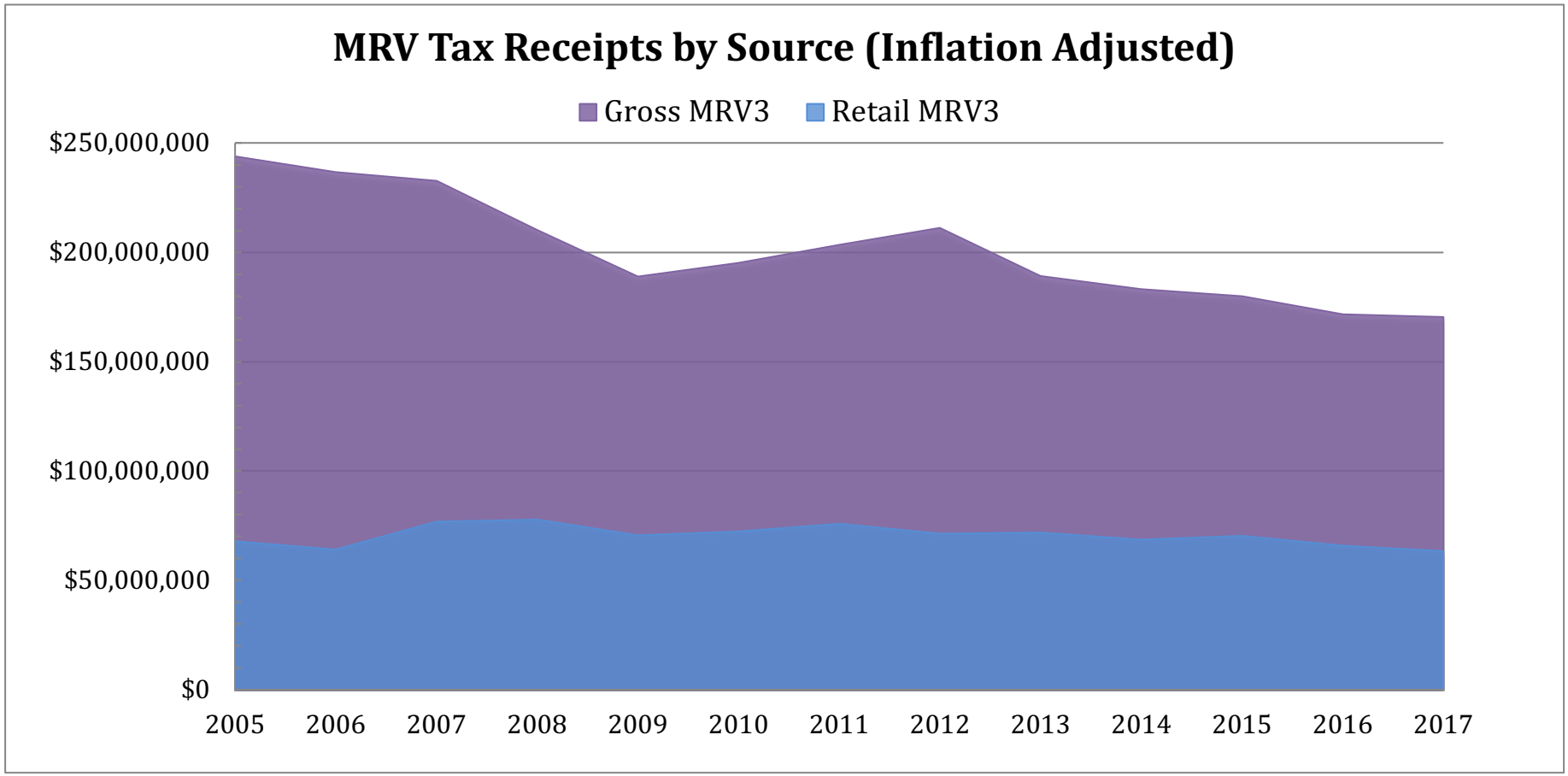



**FIGURE 38- SOURCE: VT DEPT. OF TAXES**

An inflation adjusted comparison of Gross Sales and Retail tax receipts in **Figure 38** illustrates the MRV's mixed results since 2005.[17] Gross Sales experienced a downward trend between 2005-2009, partially rebounding following the recession, but has since been on a downward trajectory. Overall, MRV Gross Sales tax receipts have fallen 30% since 2005 (inflation adjusted). Retail receipts, on the

[17] Gross Sales tax receipts include Retail tax receipts (i.e. taxable sales); they are shown here separately for visualization purposes.

other hand, have been relatively stable over time, and surprisingly did not take a major hit even during the recessionary period of 2007-2009.

**Figure 39** provides insight into the MRV's Gross Sales tax receipts by breaking them out by town. The majority of the decrease in the MRV can be attributed to Waitsfield, which has experienced a 44% decrease in receipts since 2005. While a much smaller volume of receipts, Warren has experienced an upward trend during this same time period, increasing 67%. Gross Sales receipts in Fayston have increased by 30% from 2005-2017. Despite gains in Warren and Fayston, Waitsfield is responsible for a majority of the Gross Sales receipts in the MRV, and therefore has a larger impact on overall sales trends.

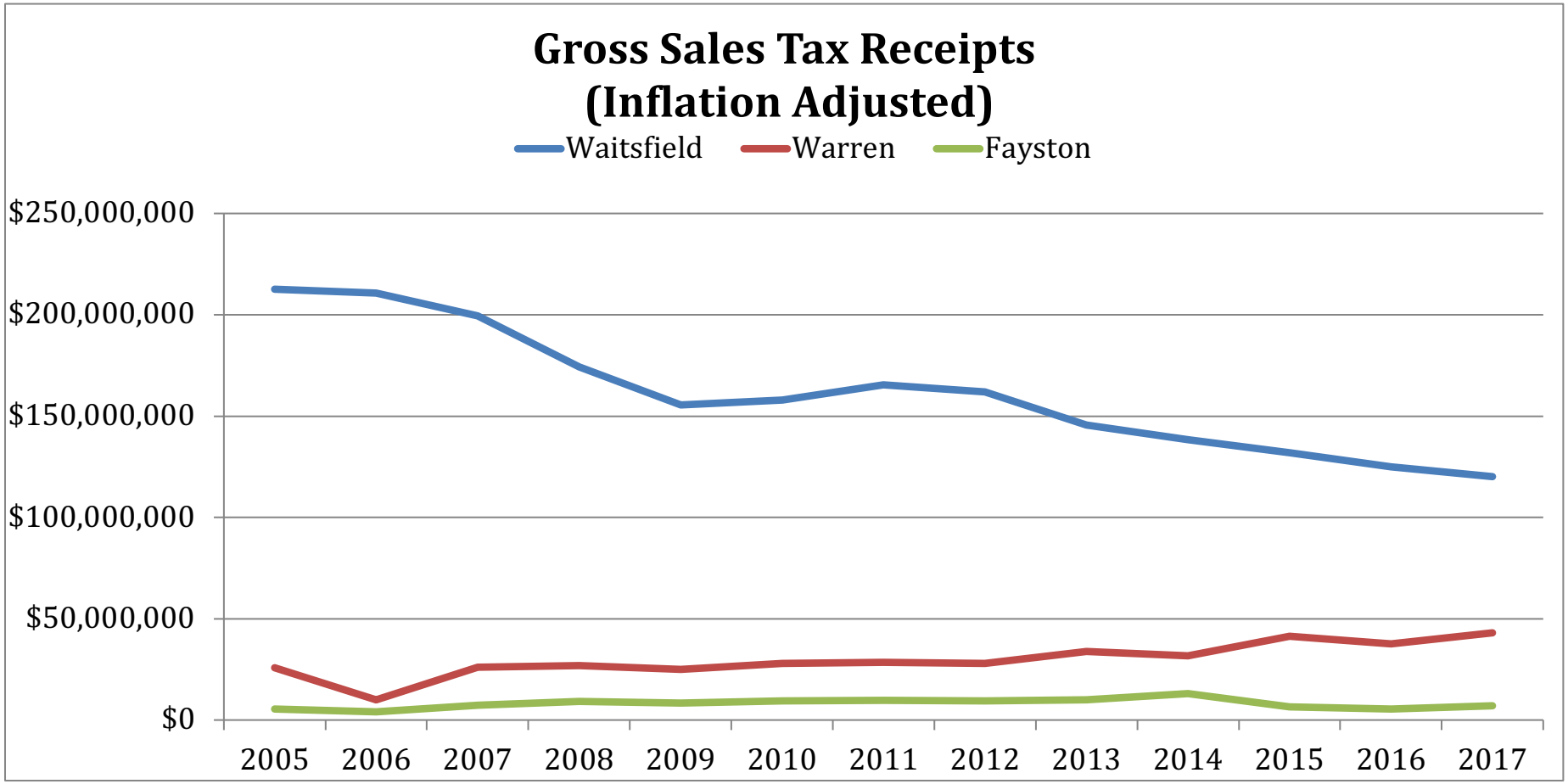



**FIGURE 39- SOURCE: VT DEPT. OF TAXES**

## Skier Visits

In Vermont overall, the 2017-18 ski season drew 3.97 million skier visits, an approximate 1.2% increase over the previous season despite reduced snowfall.[18] Sugarbush Resort experienced a larger improvement than the state in skier visits with an increase of 9% (shown in **Figure 40** below), despite a 48% decrease in annual snowfall. Sugarbush Resort reported 190 inches of natural snowfall through the 2017-2018 season, much lower than their annual average of 241 inches, much of it coming late in the season.

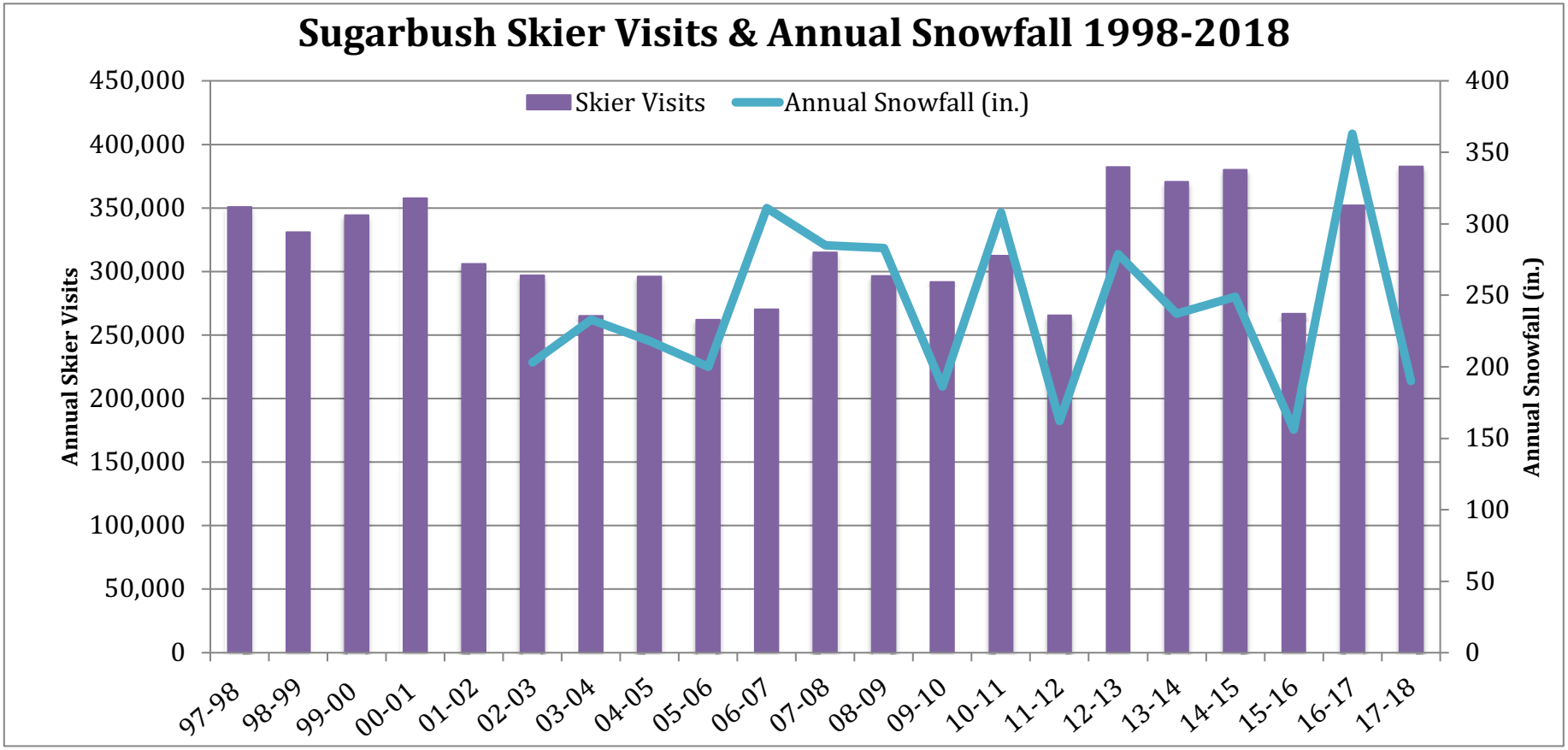



**FIGURE 40- SOURCE: SUGARBUSH RESORT**

[18] Vermont Ski Areas Association

Mad River Glen is not part of the MOU, but they provide skier visit data. **Figure 41** shows a snapshot of Mad River Glen's annual activity. The 2017-2018 season saw 61,397 skier visits, a 1% decrease in total visits from the previous season.

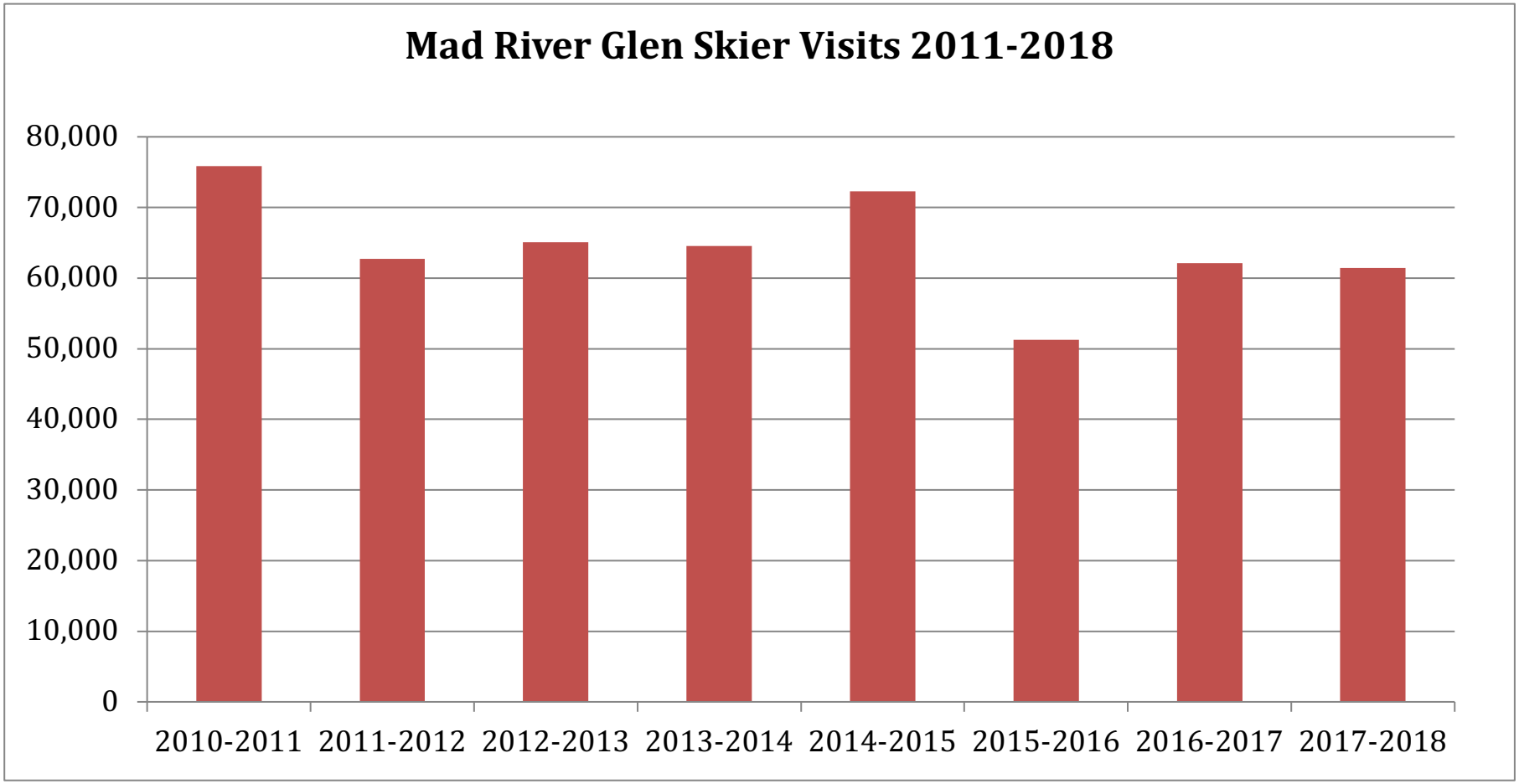



**FIGURE 41- SOURCE: MAD RIVER GLEN**

**Figure 42** below shows snowfall depth data collected at Mount Mansfield and provides a visual comparison of the 2015-16 ski season (light brown line), the 2016-17 ski season (black line), the 2017-18 season (blue line), and average snowfall depth (green). Snowfall was below normal during much of the 2017-18, though late season snow far above average allowed resorts to rebound statewide. This indicates that the timing of snowfall can be just as important to skier visitation as how much falls.

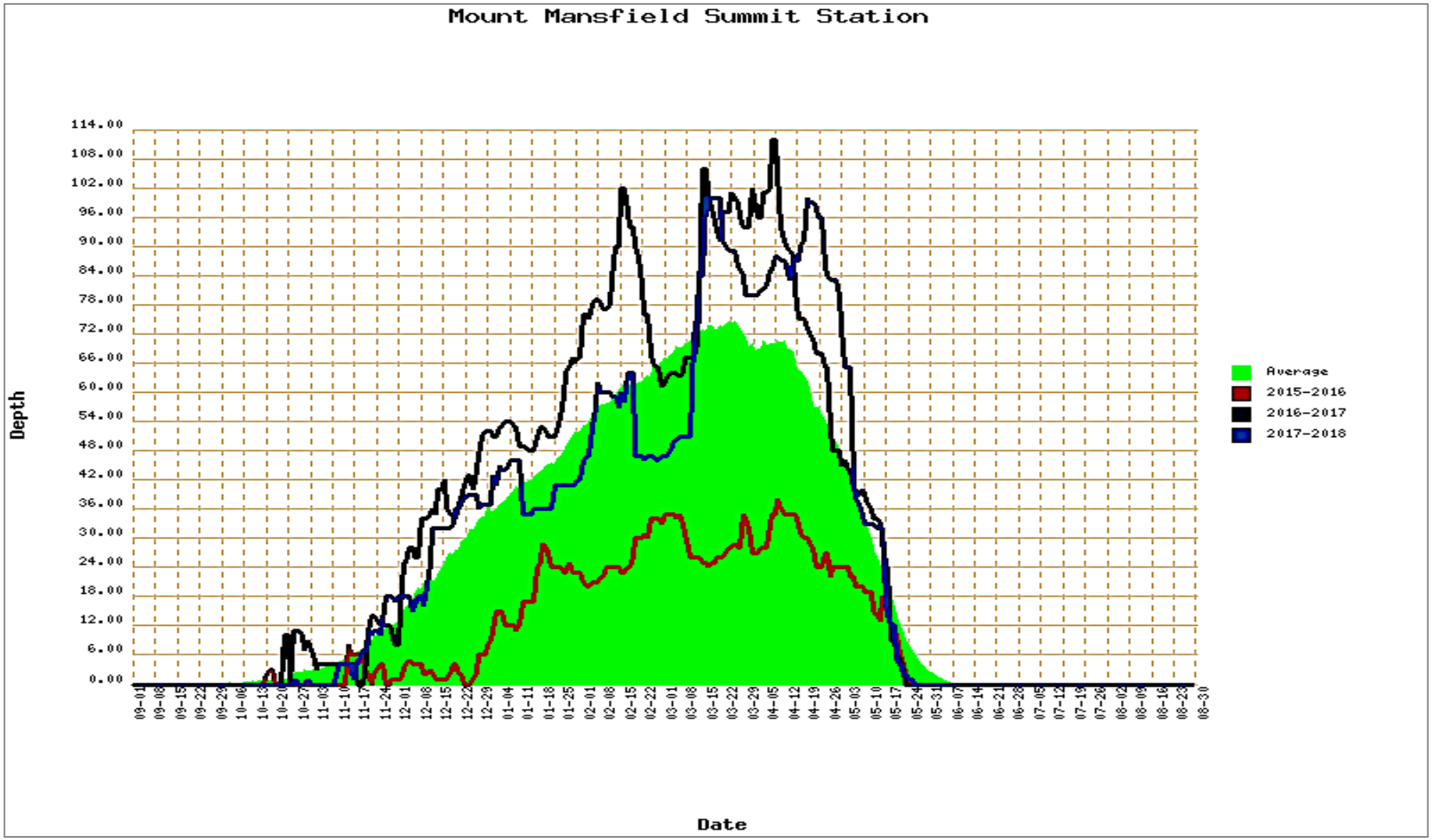



**FIGURE 42- SOURCE: UVM ECO INFO PROJECT**

## Recreation Trail Use

In 2018, the MRVPD, in partnership with the Central Vermont Regional Planning Commission (CVRPC) and the Mad River Valley Trails Collaborative, updated trail user count data taken during the 2016 MRV Moves Active Transportation Plan & Study. The four count sites profiled in 2016, along with 2 additional locations (Chase Brook Town Forest & Mad River Greenway), were analyzed in 2018 during ~2-week periods from August 16 – October 21. 2018 Counts employed the most up to date extrapolation methodology.

As with the MRV Moves Study, the National Bike & Pedestrian Documentation Project Extrapolation Formula Workbook was used to extrapolate average weekly data to annual average daily counts. The average annual numbers account for seasonal variation in user activity as summer/fall activity is generally higher than winter/spring. 2018 pedestrian count data is illustrated in **Figure 43** below.

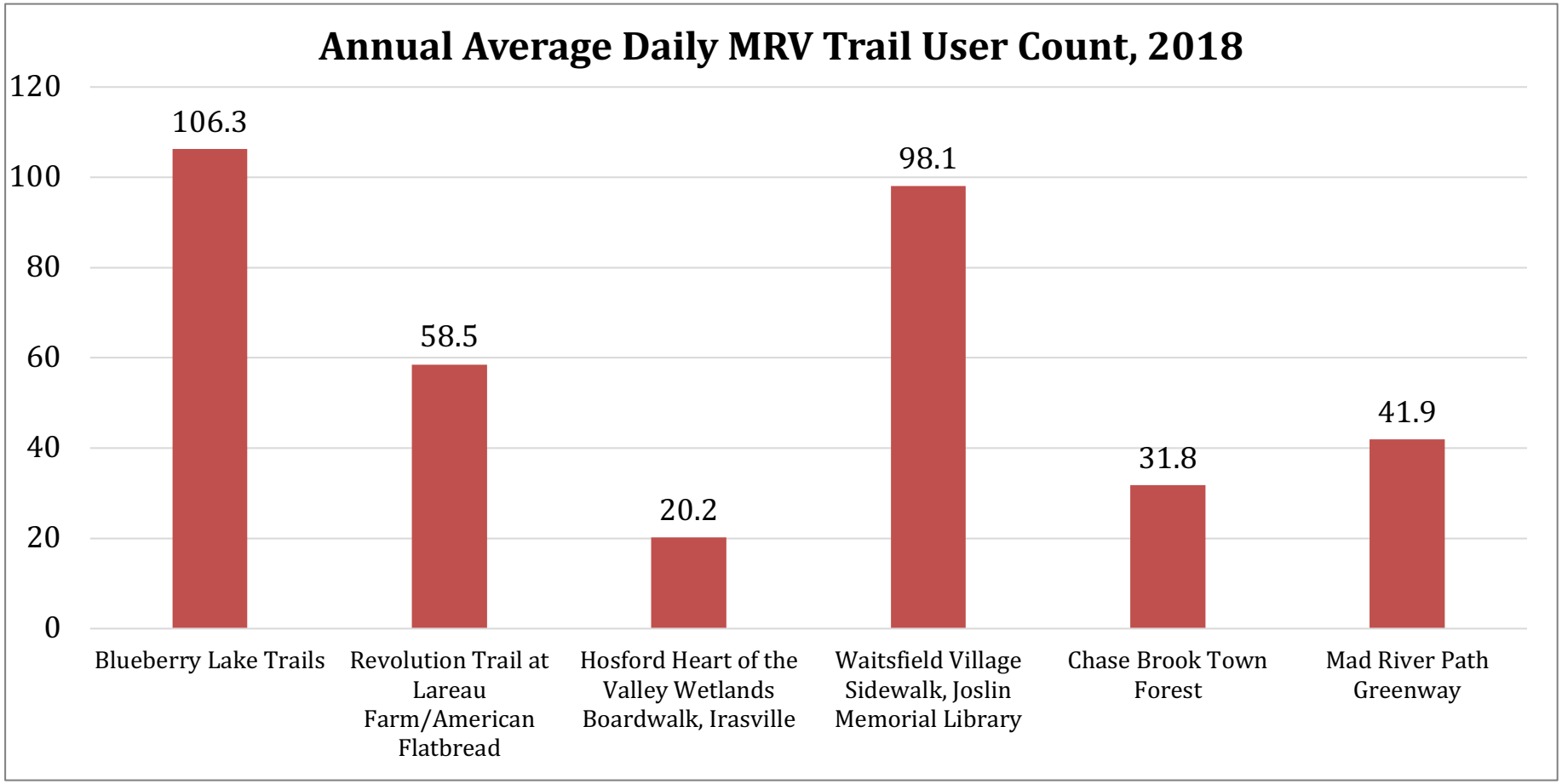



**FIGURE 43-SOURCE: MRVPD, CVRPC, MRV TRAILS COLLABORATIVE**

Compared to 2016, Blueberry Lake Trails activity increased by 59%, Revolution Trail activity increased by 41%, Waitsfield West Sidewalk increased by 28%, and the Hosford Heart of the Valley Wetlands Boardwalk decreased slightly, though this is likely due to significant construction taking place on the boardwalk during the counting period in 2018 that was not occurring in 2016. [19] [20]

[19] *NOTE: This publication presents the most current data available, and the methodology for extrapolation was updated based on improvements adopted by the consultant who completed the 2016 MRV Moves Study. Trends in the data remain very similar to data computed in the original methodology, though actual count numbers may differ.

[20] Activity levels at sites naturally differ based on their geographic location and predominant activities that take place there. Please also note that the Labor Day counts at Blueberry Lake and Revolution Trail were excluded to ensure extrapolated counts were not overestimated based on increased holiday activity.

# SECTION III: EMPLOYMENT

*Includes Items #35 & 36 from the Memorandum of Understanding*

Industry categories are described below, as reflected in the Quarterly Census of Employment and Wages (QCEW), which provides for all firms covered by unemployment insurance in Vermont. Data includes monthly employment level and wages at each worksite. Please see descriptions of each industry[21] below:

- Agriculture includes forestry, fishing, and hunting
- Construction industry includes building construction, engineering and contractors
- Manufacturing includes manufacturers of durable (wood products, mineral products, transportation equipment, furniture, etc.) and non-durable goods (food, beverage, tobacco, and printing)
- Retail trade includes sellers of motor vehicles and parts, furniture, home furnishings, electronics, appliances, building materials, garden supplies, food and beverages, personal care, gasoline, clothing, sporting goods, books, music and general merchandise
- Information industry includes publishing, motion picture, sound recording, broadcasting and some telecommunications
- Financial activities include financial services, insurance, credit services, securities and other investments, real estate services
- Professional and business services includes professional services, technical services, administrative services, and other support services
- Educational services include non-government schools, technical or trade schools. Since this data is suppressed for our LMA towns, the info depicted in the subsequent graphs is for government (public) elementary and secondary schools.
- Health care includes outpatient, ambulatory care, nursing services and facilities, social assistance
- Leisure and hospitality includes art, entertainment, recreation, performing arts, spectator sports, gambling, accommodation, food services, drinking places
- Other services include repair and maintenance, personal services, laundry services, membership associations
- Local government as represented in the subsequent graphs includes public administration.

[21] A full list of industries by North American Industry Classification System (NAICS) code is available at https://www.bls.gov/iag/tgs/iag_index_naics.htm.

Total annual average employment[22] data from the Vermont Department of Labor's Economic & Labor Market Information (VTLMI) website shows an employment peak in 2005, with stable numbers since 2010, in **Figure 44** below.

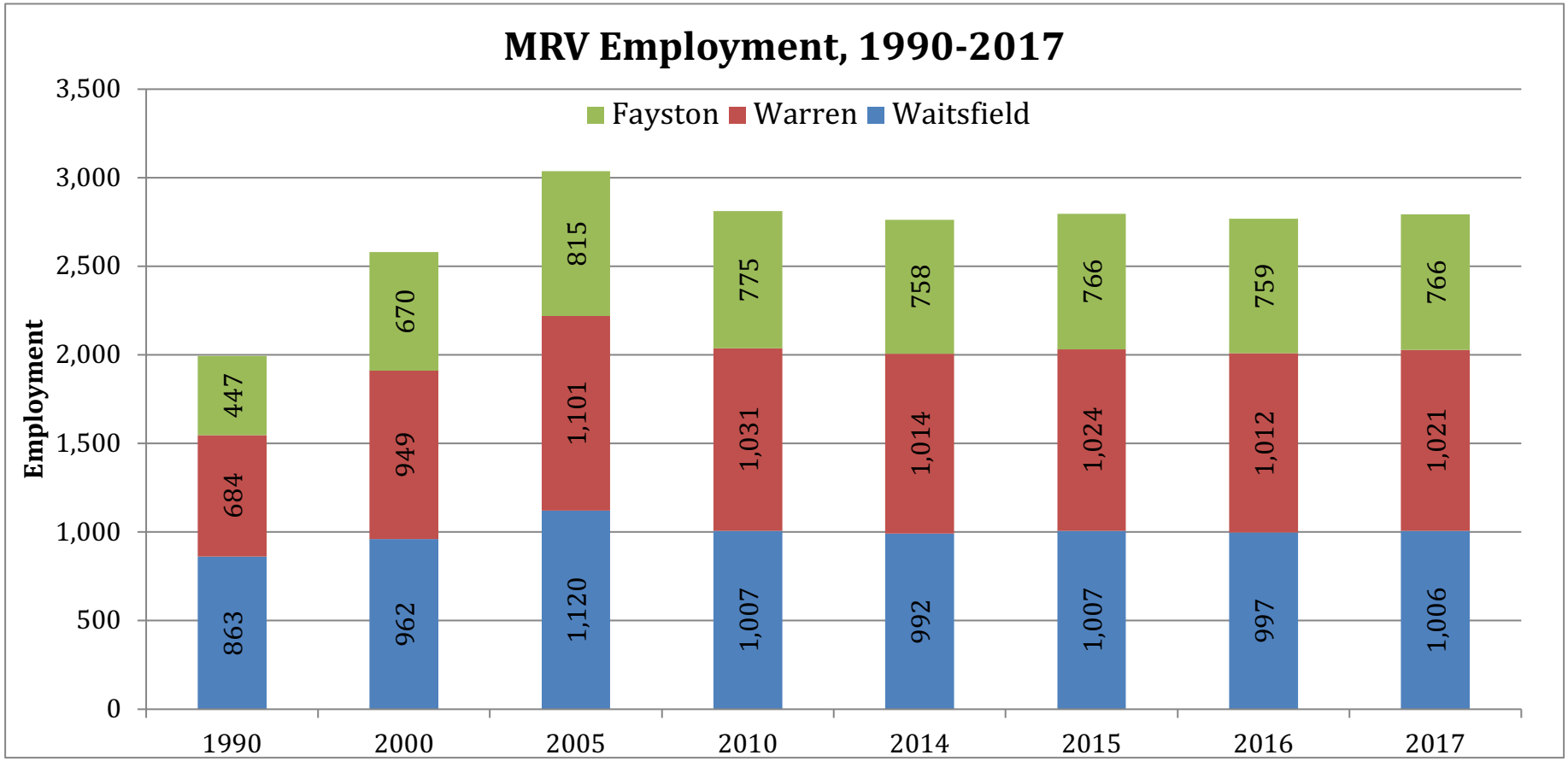



**FIGURE 44-SOURCE: VERMONT DEPT. OF LABOR, VT ECONOMIC & LABOR MARKET INFORMATION (VTLMI)**

[22] **Employment (total)** - A count of all civilians 16 years of age or older who worked for compensation in a business or on a farm during the week which included the 12th day of the month; or worked at least 15 hours (during the week which includes the 12th day of the month) as unpaid workers in a family business; or had jobs from which they were temporarily absent due to illness, bad weather, vacation, or labor-management dispute. This count is based on the residence of the workers, and each worker is counted only once, even if they hold more than one job. Therefore, this is sometimes referred to as employment "by place of residence." The Vermont Department of Labor's Local Area Unemployment Statistics (LAUS) staff compiles total employment data.

The trend in MRV Employment shows a greater growth rate relative to the county and state over the past 16 years, as shown in **Figure 45** below.

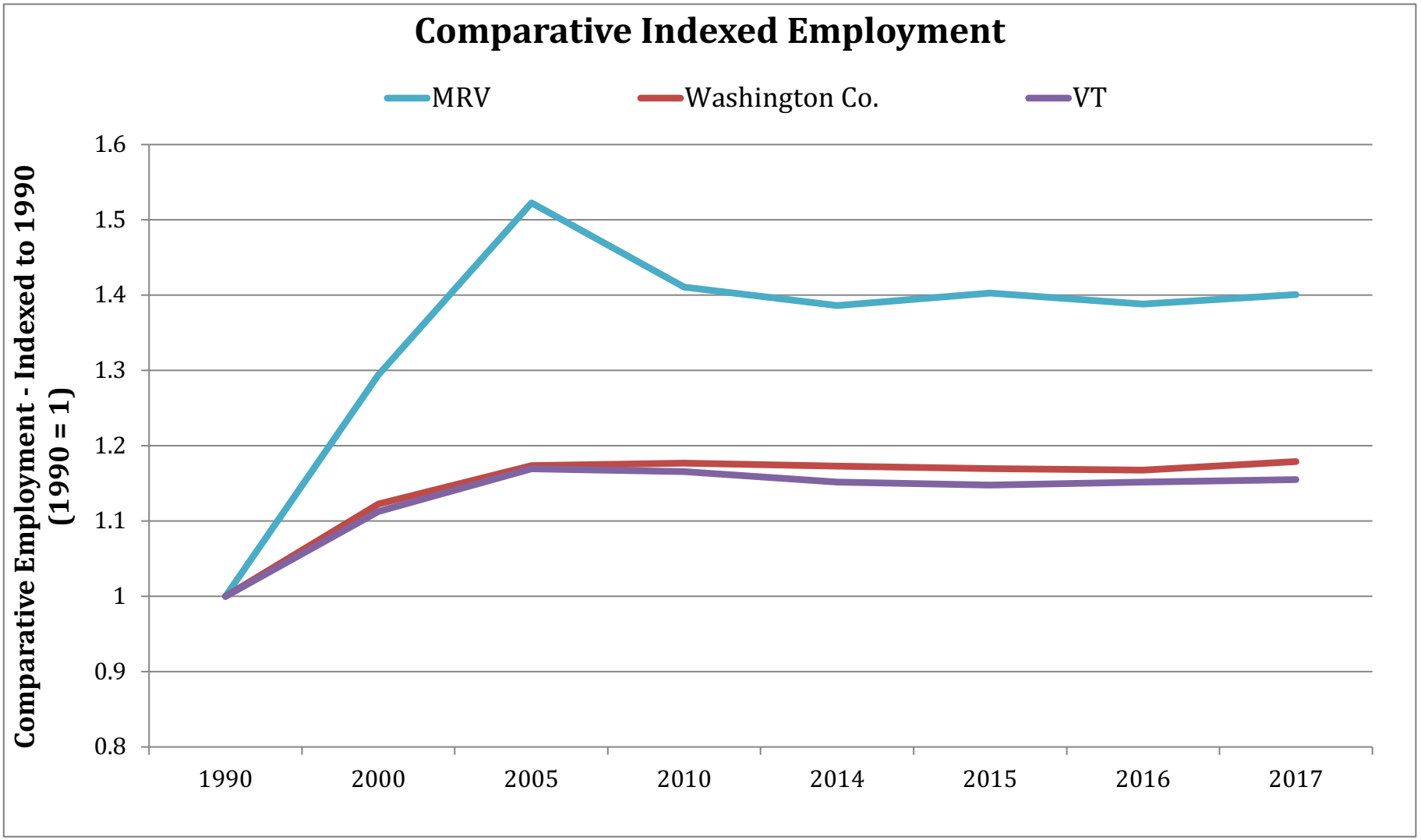



**FIGURE 45-SOURCE: VTLMI**

## INDUSTRIES

**Figure 46** shows more gains than losses in the number of MRV businesses between 2016 and 2017. Industries that gained businesses include Financial Activities, Local Government, Leisure & Hospitality, Information, Manufacturing, and Professional & Business Services.

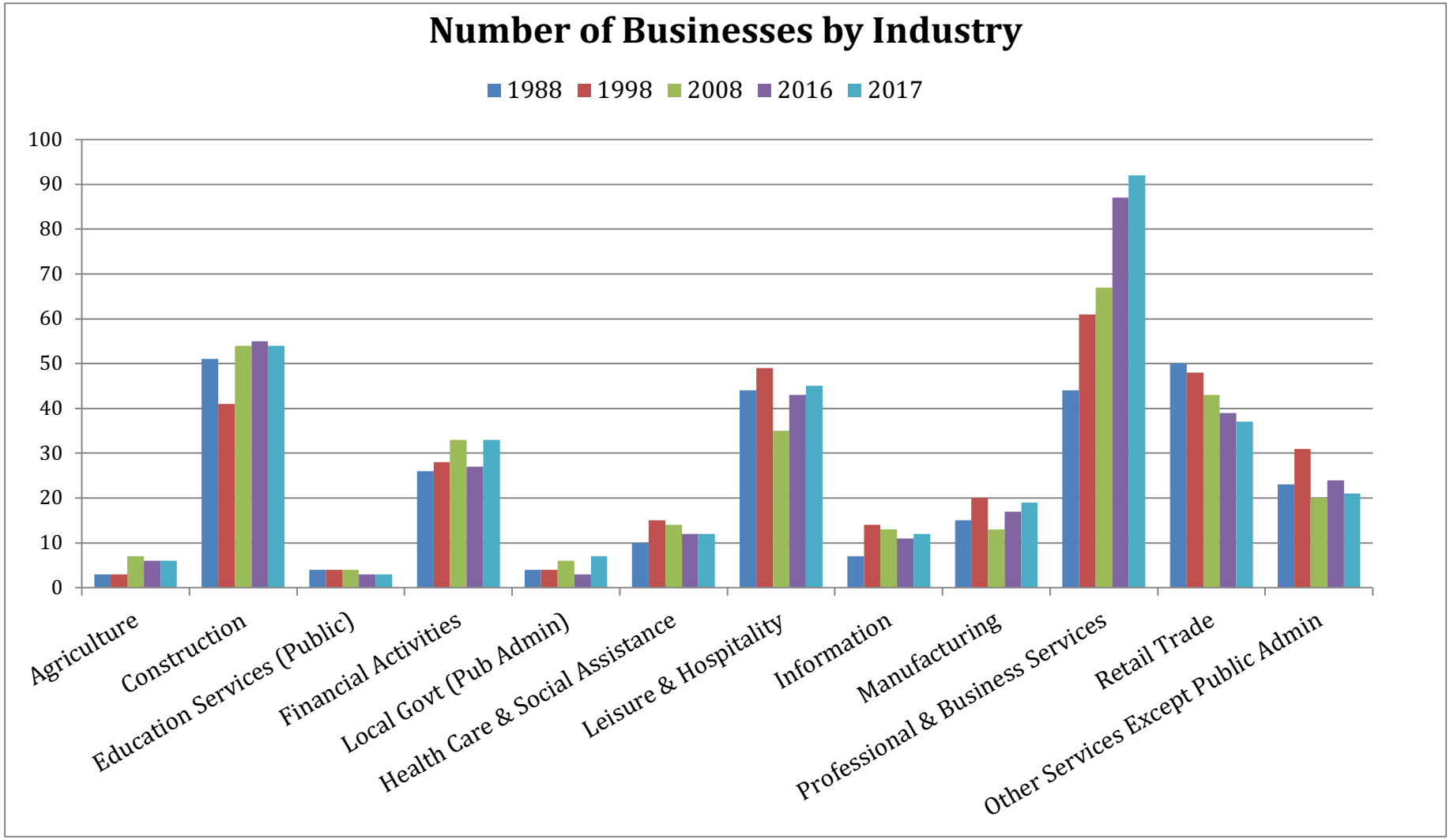



**FIGURE 46-SOURCE: VTLMI**

While the MRV has attracted businesses in most major sectors, **Figure 47** below depicts the dominant role of the Leisure & Hospitality sector in terms of number of employees, representing 38% of all covered employment[23] jobs in 2017. The employment numbers are an aggregate including part-time and seasonal jobs, which contribute significantly to this sector. Though much lower, Retail is the next largest industry in terms of total jobs (12% of MRV covered jobs) with Professional & Business services being a close third (11% of jobs). The total number of covered employment jobs in the MRV in 2017 was 2,668[24].

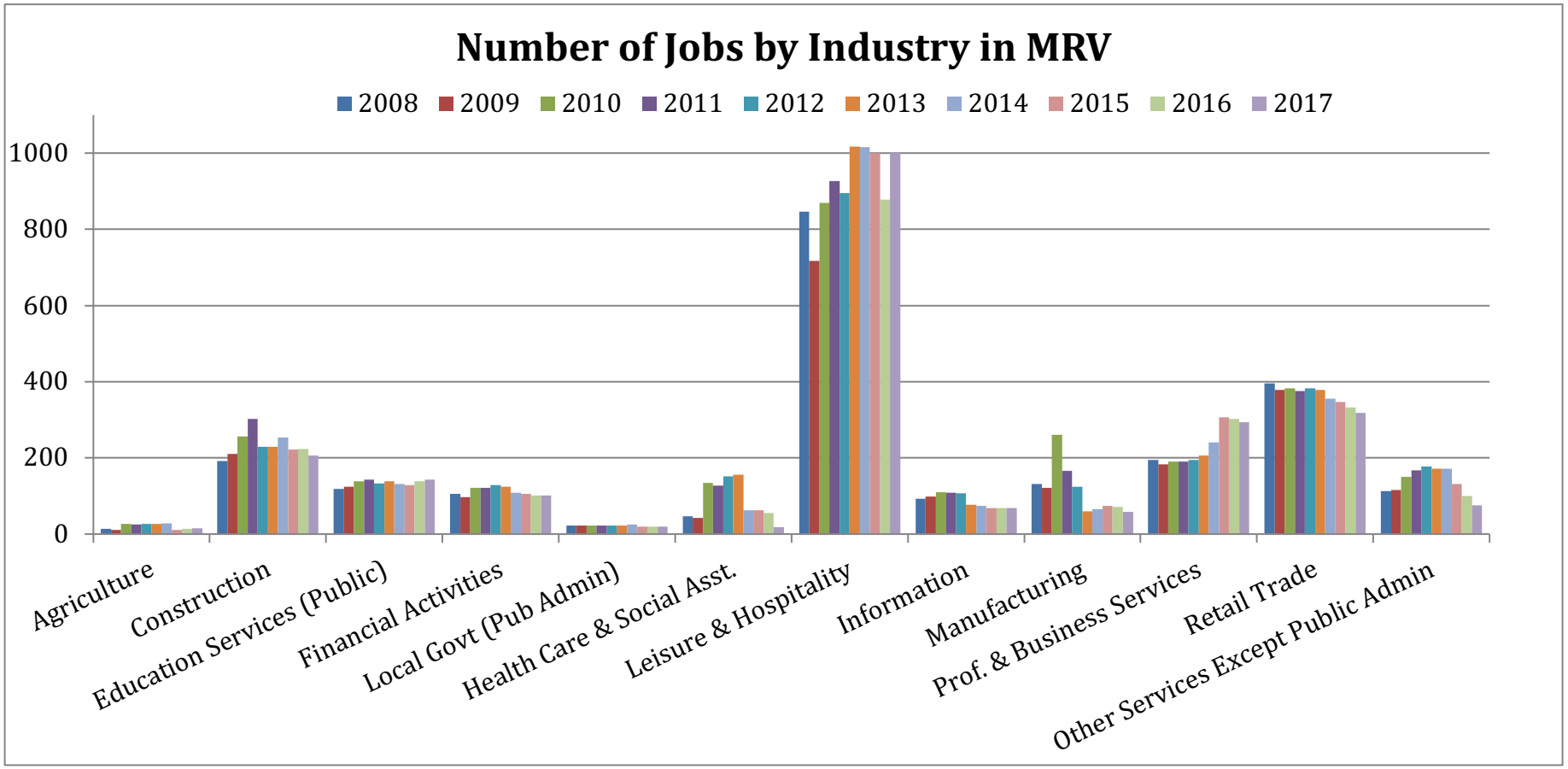



**FIGURE 47-SOURCE: VTLMI**

[23] *Covered employment* is the number of jobs covered by unemployment insurance.

[24] **Figure 47** does not depict all industry categories, though the key sectors chosen represent 87% of jobs in the MRV.

The continued strength of the Professional & Business Services sector's total wages, as depicted in **Figure 48,** suggests the retention or creation of higher paying jobs in the MRV. The Leisure & Hospitality industries also saw an increase in total annual wages compared to 2016. 2017 saw losses in total annual wages for the Education Services (Public), Health Care & Social Assistance, Information, Manufacturing, Retail Trade, and Other Services sectors.

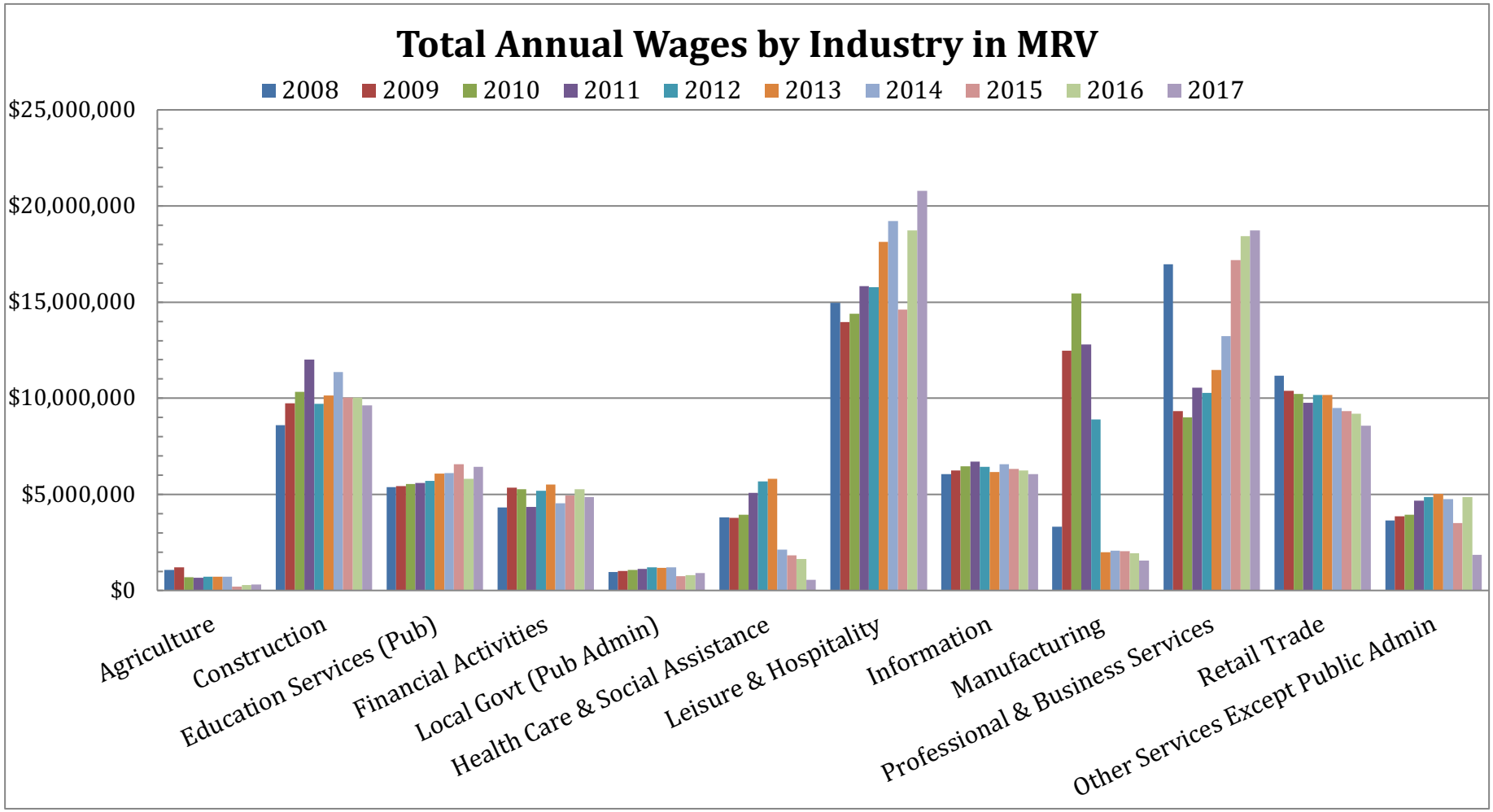



**FIGURE 48-SOURCE: VTLMI**

**Figure 49** shows the average annual wage in the MRV ranging from ~$20,000 in the Agriculture and Leisure & Hospitality sectors to over $90,000 in the Information sector. Wages increased by over 15% from 2016 to 2017 in the Local Government: Public Administration ($41,663 vs $45,494) and Health Care & Social Assistance sectors ($25,761 vs. $29,809). Average wages are affected by the proportion of part-time and seasonal jobs, which depresses the annual average compared to full-time jobs. It is important to

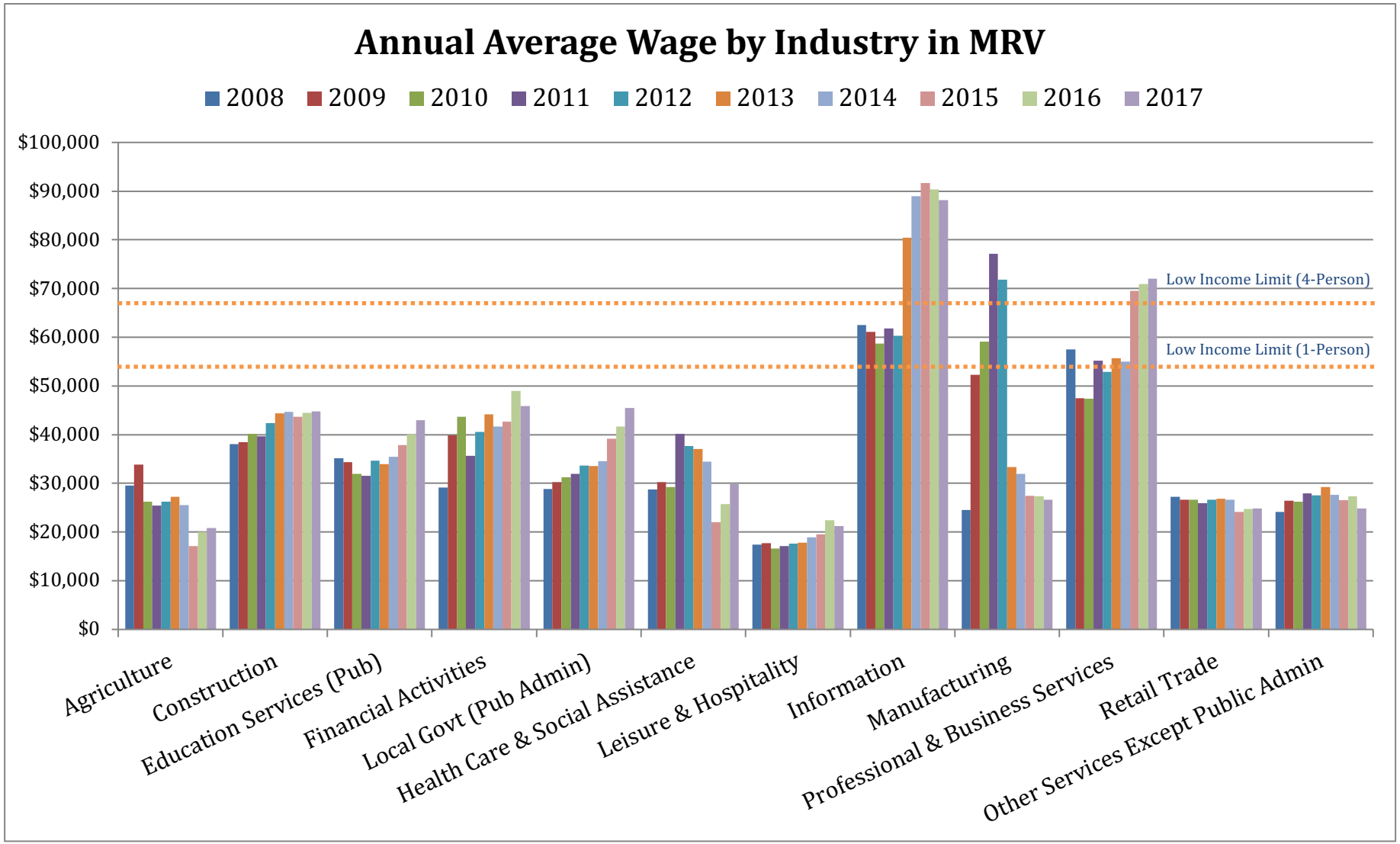



**FIGURE 49-SOURCE: VTLMI**

note that the Dept. of Housing and Urban Development's definition of "Low Income" is 80% of the Area Median Income. For Washington County in FY2017 (effective April 14, 2017) the Area Median Income was $73,900 for a 4-person household and the Federal Low Income limit was $59,100 for a 4-person household. For a 2-person household the Low Income limit was $47,300, and for 1 person the Low Income limit was $41,400 (Low Income Limits identified as orange dashed lines in **Figure 49**).

The MRV's largest employment sectors—Leisure & Hospitality and Retail— represent 50% of MRV jobs combined, and these jobs garner average annual wages below the Federal Low Income limit for a single earner. Leisure & Hospitality average annual wages were $21,246, or $20,154 below the 1-person household Low Income limit. Retail average annual wages were $24,786, or $16,614 below the Low Income limit. This would indicate the need for many MRV workers living alone to hold multiple jobs to rise above the Low Income level.

**Figure 50** shows that the unemployment rate has continued to drop in the MRV since 2009, with Fayston being the only exception. Of the three MRV towns, Fayston had the highest unemployment rate in 2017 (3.6%). The overall MRV average in 2017 (2.6%) is lower than that of the county (3%) and state (3%).

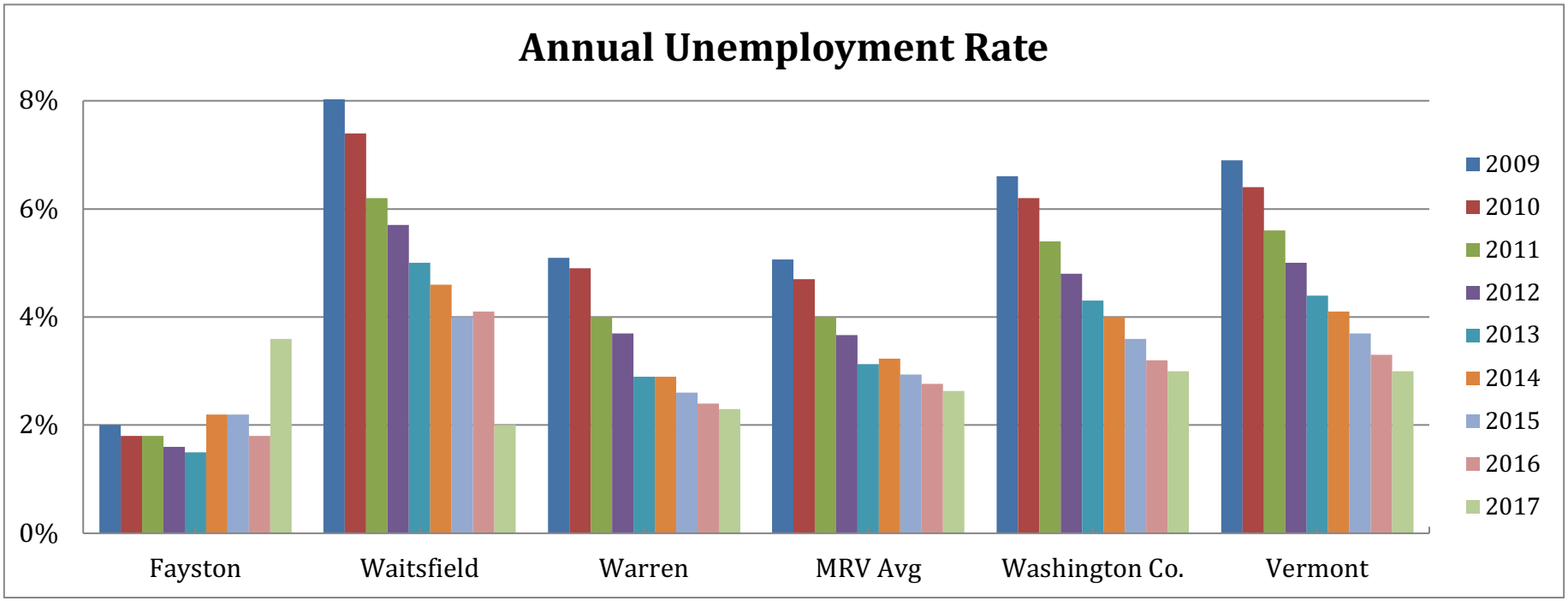



**FIGURE 50-SOURCE: VT DEPT. OF LABOR, VT ECONOMIC & LABOR MARKET INFORMATION**

## Worker Flow

Worker flow data in **Figure 51** shows more people commuting into the MRV than those commuting out (2015 being the most current data). The percentage of those commuting in was 46% in 2005, decreasing to 41% in 2015. Those commuting out comprised 22% of workers in 2005, increasing to 30% in 2015. People who both live and work in the MRV represented 32% of workers in 2005, slightly decreasing to 30% in 2015. The total worker population analyzed was 3,260 in 2005 and 3,393 in 2015. This data does not capture self-employment.[25]

MRV Commuting Patterns, 2005

MRV Commuting Patterns, 2015

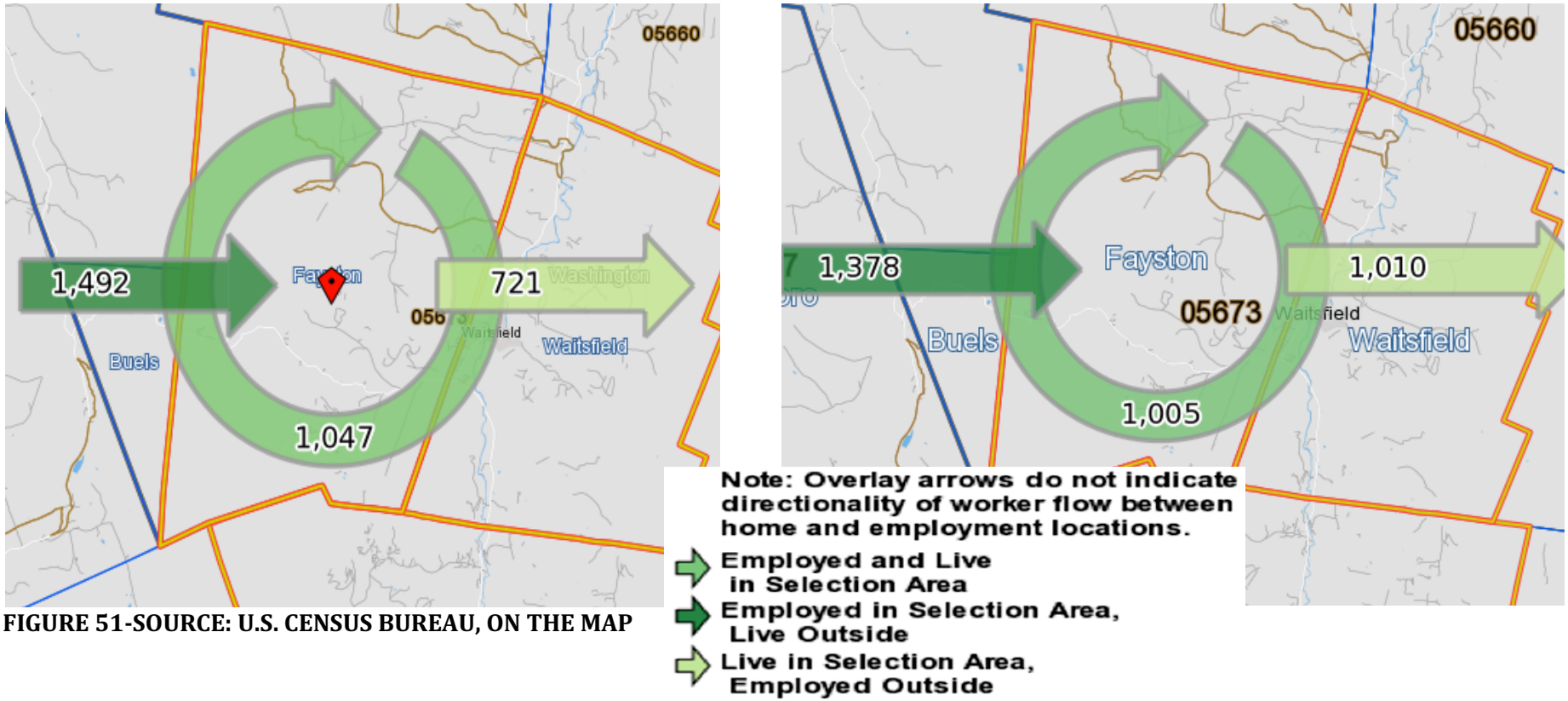



**FIGURE 51-SOURCE: U.S. CENSUS BUREAU, ON THE MAP**

[25] The 2014 MRV Economic Study estimated self-employment income in the MRV at 13% in 2012, nearly twice that of the state.

**Figure 52** shows commuting habits over time. Most workers continue to commute into the MRV, but those commuting out have seen the greatest change since 2002 (31% increase from 2002 to 2015 vs. a 19.8% increase for commuting in and a .8% decrease for those employed and living in the MRV during that period).

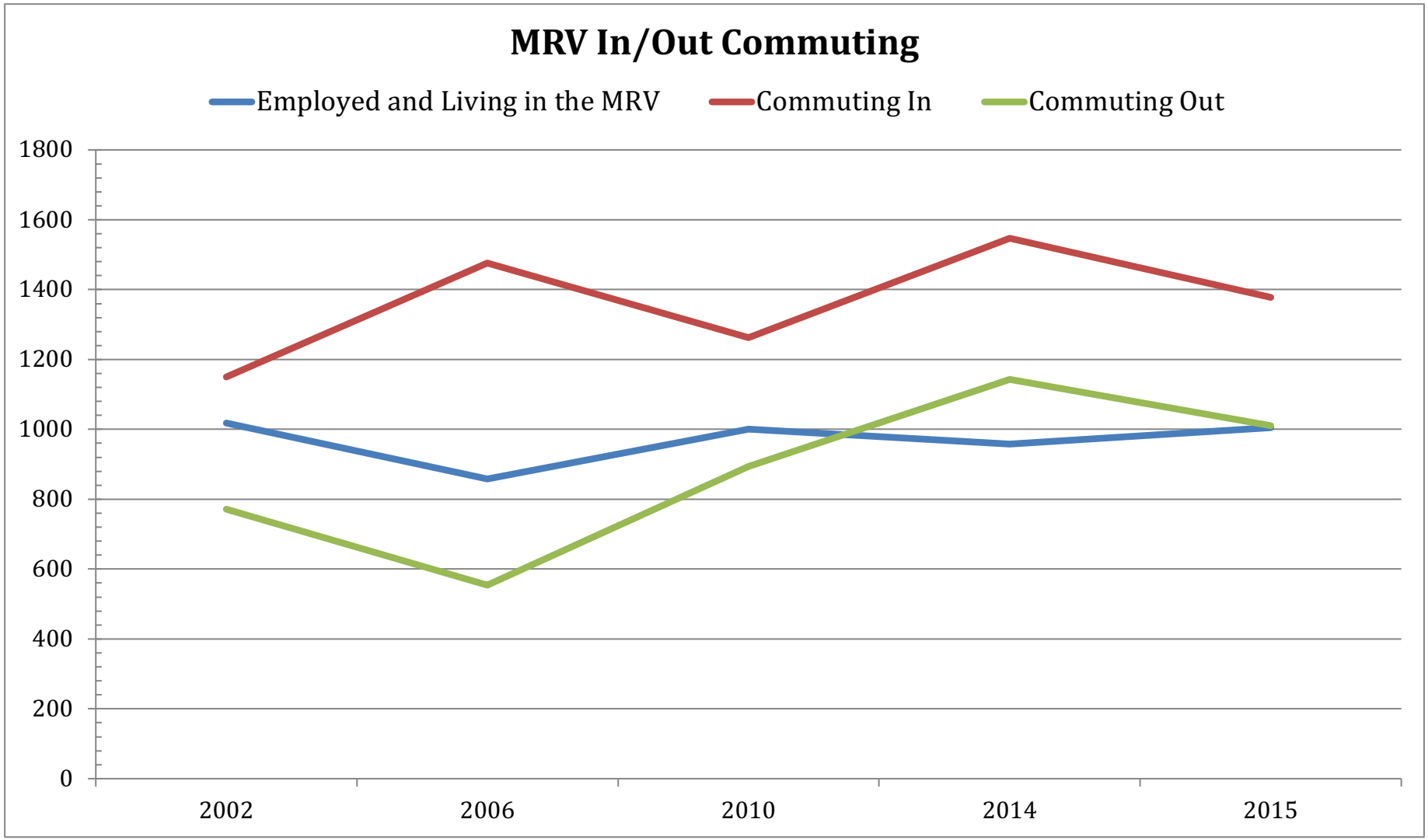



**FIGURE 52-SOURCE: U.S. CENSUS BUREAU, ON THE MAP**

**Figures 53 & 54** below specify where MRV commuters are travelling to and from, with **Figure 53** showing where residents of the MRV travel to work, and **Figure 54** showing where people employed in the MRV live. These graphics depict the top 10 locations in each case. Of those who do not live and work in the MRV, many who are employed outside are employed in metropolitan areas. Those travelling to the MRV for work are mainly from neighboring towns.

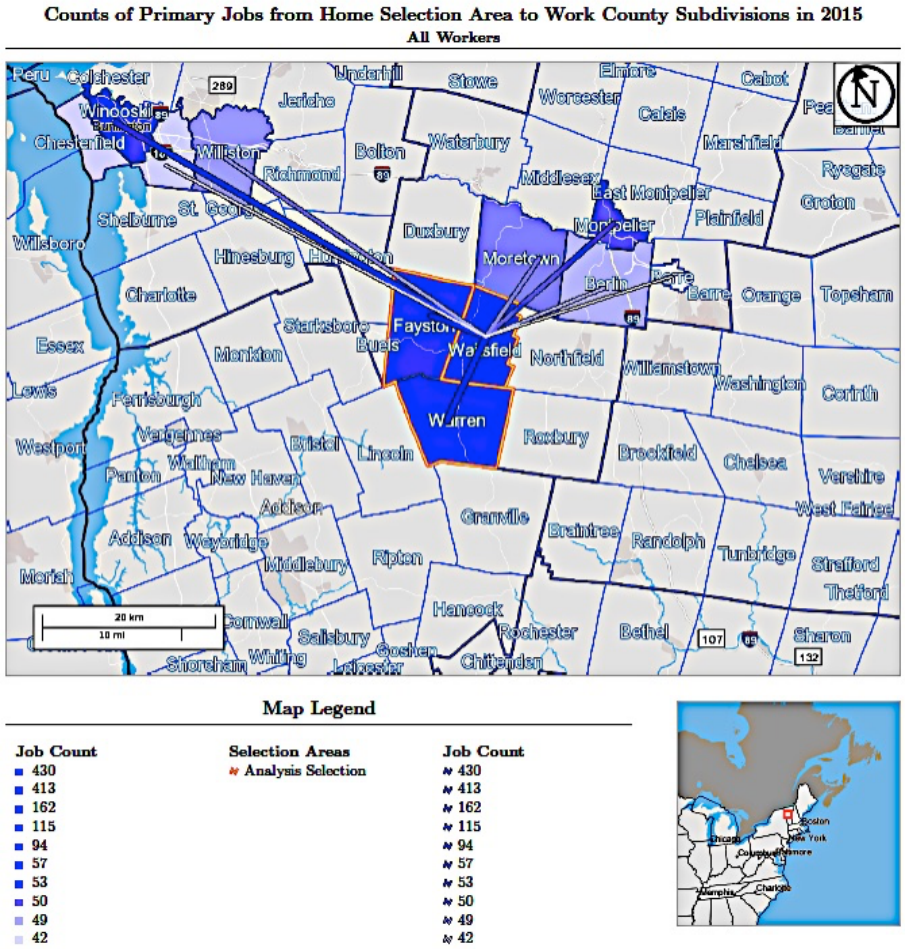



**FIGURE 53- SOURCE: U.S. CENSUS, ON THE MAP**

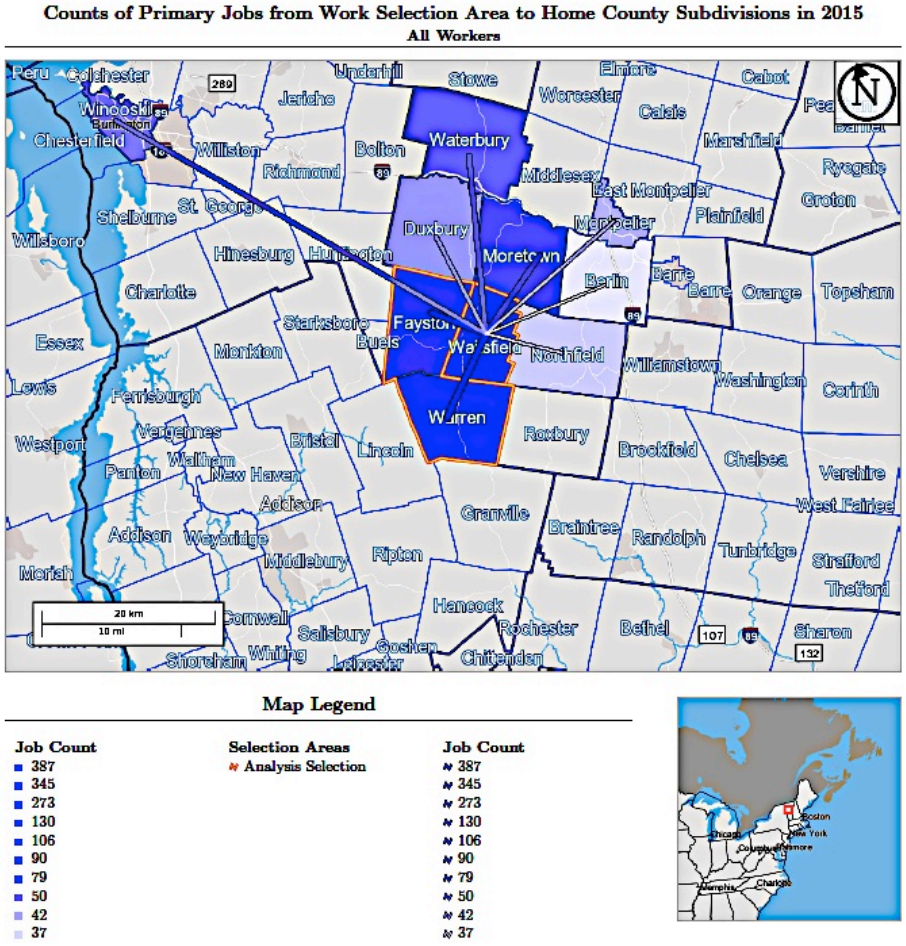



**FIGURE 54- SOURCE: U.S. CENSUS BUREAU, ON THE MAP**

# SECTION IV: TRAFFIC & TRANSIT

*Includes Items #24, 25 & 32 from the Memorandum of Understanding.*

## ANNUAL TRAFFIC SUMMARY

As specified in the 1998 MOU, this report contains data from traffic counters in the following key locations: The intersection of Route 100 and Route 17, the Sugarbush Access Road north of the Sugarbush Inn, and Route 17 west of German Flats Road. The counter located on the Sugarbush Access Road west of Route 100 has been deactivated and is not included in this analysis. **Figure 55 & 56** depict the Average Annual Daily Traffic (AADT) from 1997 to 2017 (the most recent data available). AADT is the total volume of traffic on a highway segment for one year divided by the number of days in the year.

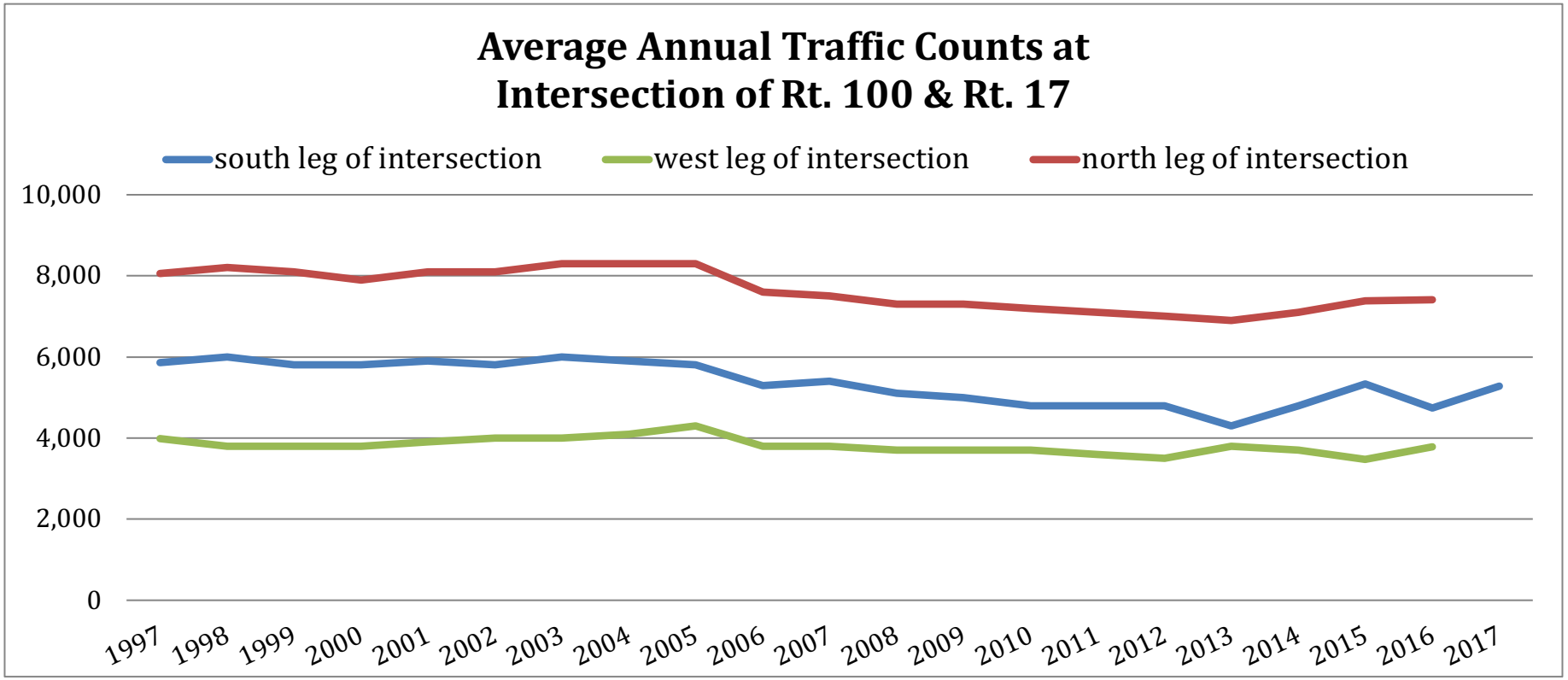



**FIGURE 55-SOURCE: VTRANS**

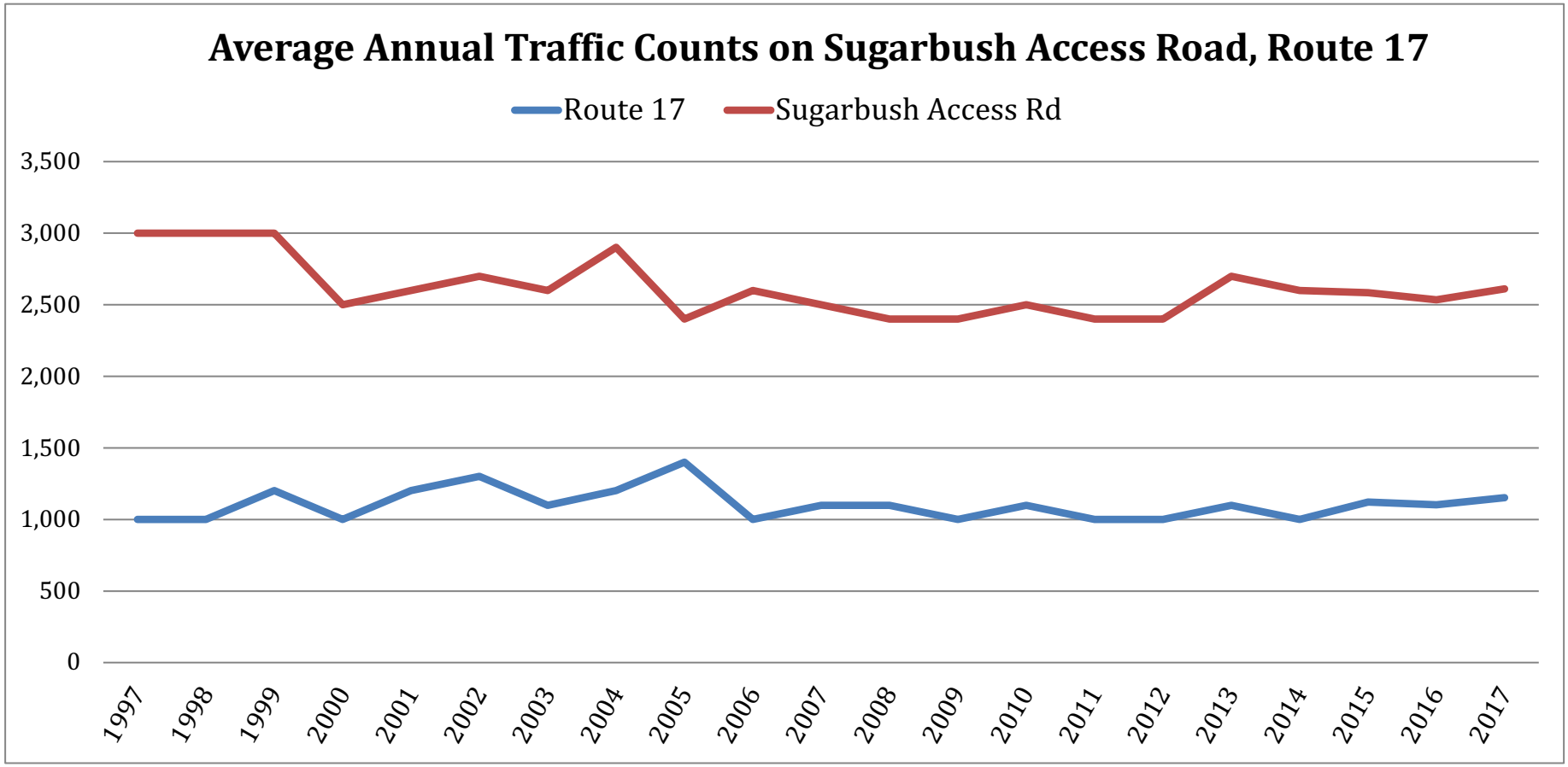



**FIGURE 56-SOURCE: VTRANS**

During the 1990s, Sugarbush Access Road experienced higher traffic counts, whereas more recent annual vehicle trips have settled lower. However, 2017 saw Access Road traffic volumes rebound after a few years of decline to 2,610 in 2017. Average annual daily traffic measured on Route 17 west of German Flats Road increased by more than 100% over 30 years, from 680 in 1976 to a high of 1,400 in 2005; since that time traffic volumes have been relatively stable (1,152 in 2017).

## TRANSIT

Green Mountain Transit (GMT) began operating in the Mad River Valley in late 2003 under the name Mad Bus and now MRV Bus Service. Year-round service on the Valley Floor route (connecting Warren, Waitsfield and Lincoln Peak) was offered from October 2003 until April 2005, when it was scaled back to winter season service (Nov-March) due to low ridership. **Figure 57** below shows ridership from Fiscal Year 2003 to Fiscal Year 2018. GMT operated 5 MRV Bus routes during FY18, all free-of-charge. FY18 saw a continued increase in ridership of 2%, following a 26% increase in ridership from FY16 to FY17. GMT also operates a Volunteer Driver Service in the MRV that transports adults over 60 years of age and residents with limited mobility to medical appointments as well as other destinations when they call GMT to request a ride in advance.

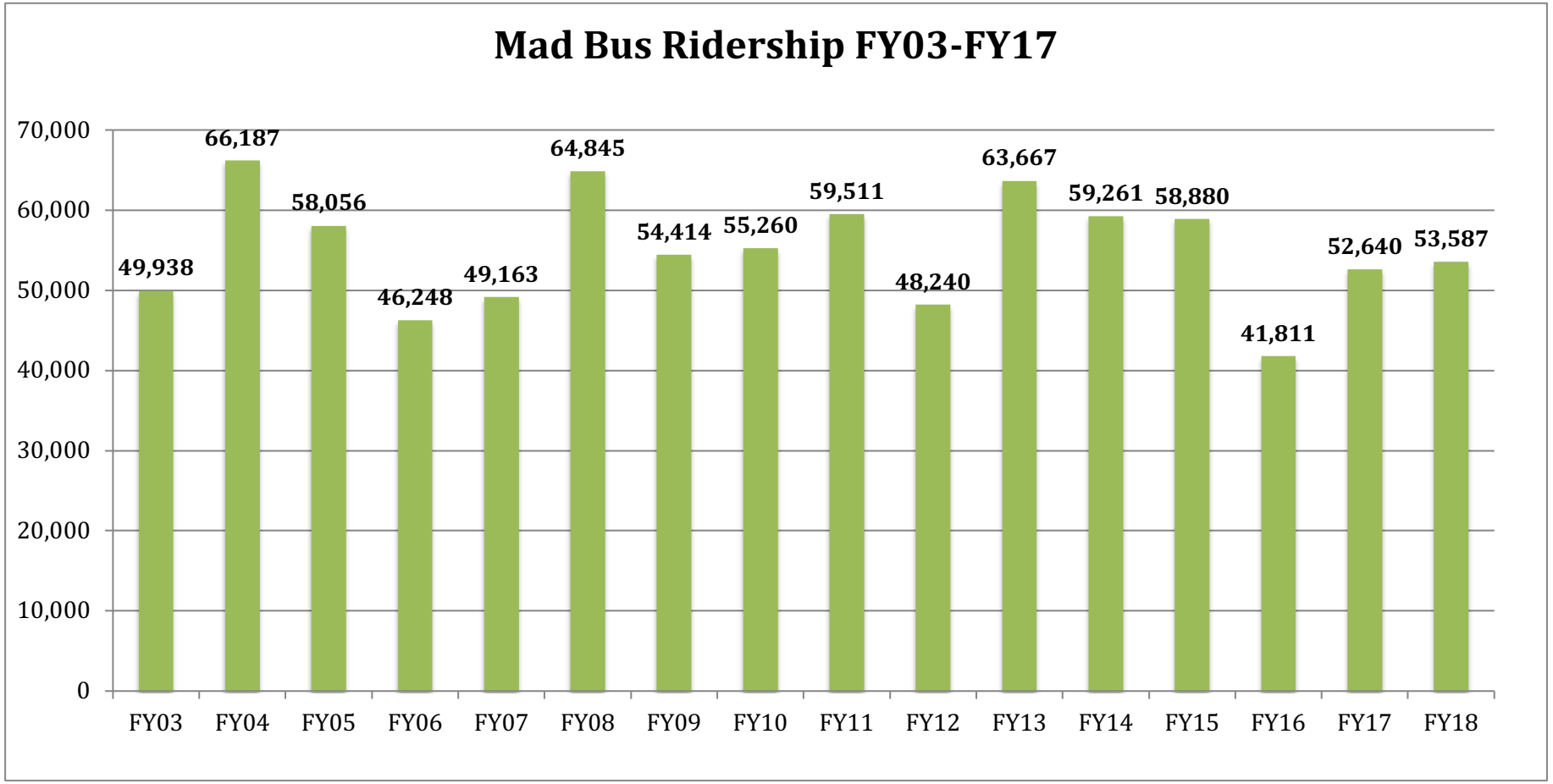



**FIGURE 57-SOURCE: GREEN MOUNTAIN TRANSIT (GMT)**

# SECTION V: TOWN INFRASTRUCTURE

*Includes Items #27 & 35 from the Memorandum of Understanding*

## EMERGENCY SERVICES

Emergency call activity depicted in **Figure 58** shows an increase in the number of calls in Waitsfield and Fayston for 2017 (97 in 2017 vs. 88 in 2016) and an increase in Warren over the previous year (80 in 2017 vs. 72 in 2016).

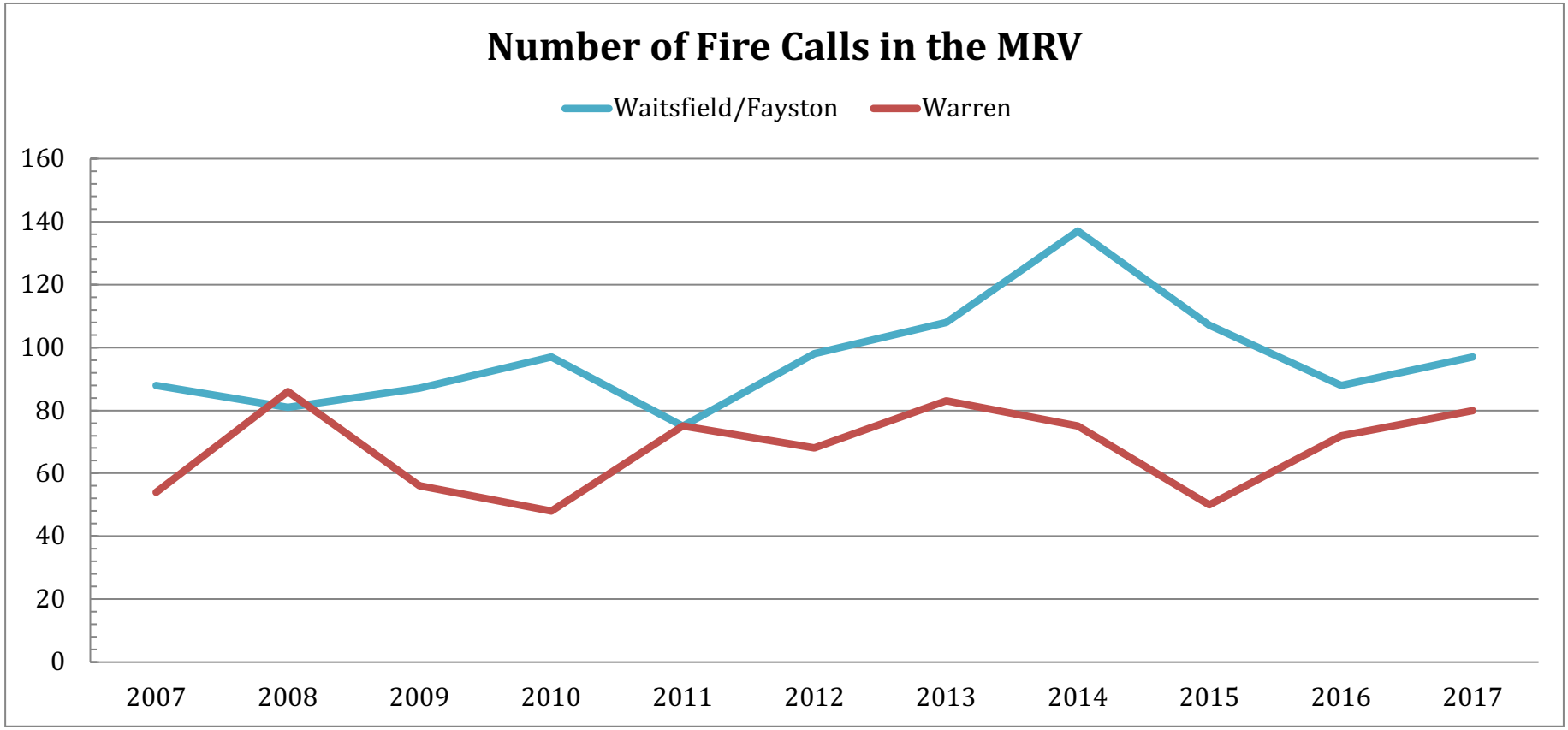



**FIGURE 58-SOURCE: ANNUAL MRV TOWN REPORTS, WAITSFIELD-FAYSTON, WARREN FIRE DEPARTMENTS**

The Mad River Valley Ambulance Service (MRVAS) provides data on the total MRV calls it responds to. In 2017 MRVAS responded to 438 calls, a decrease from 502 calls in 2016 (**Figure 59**).

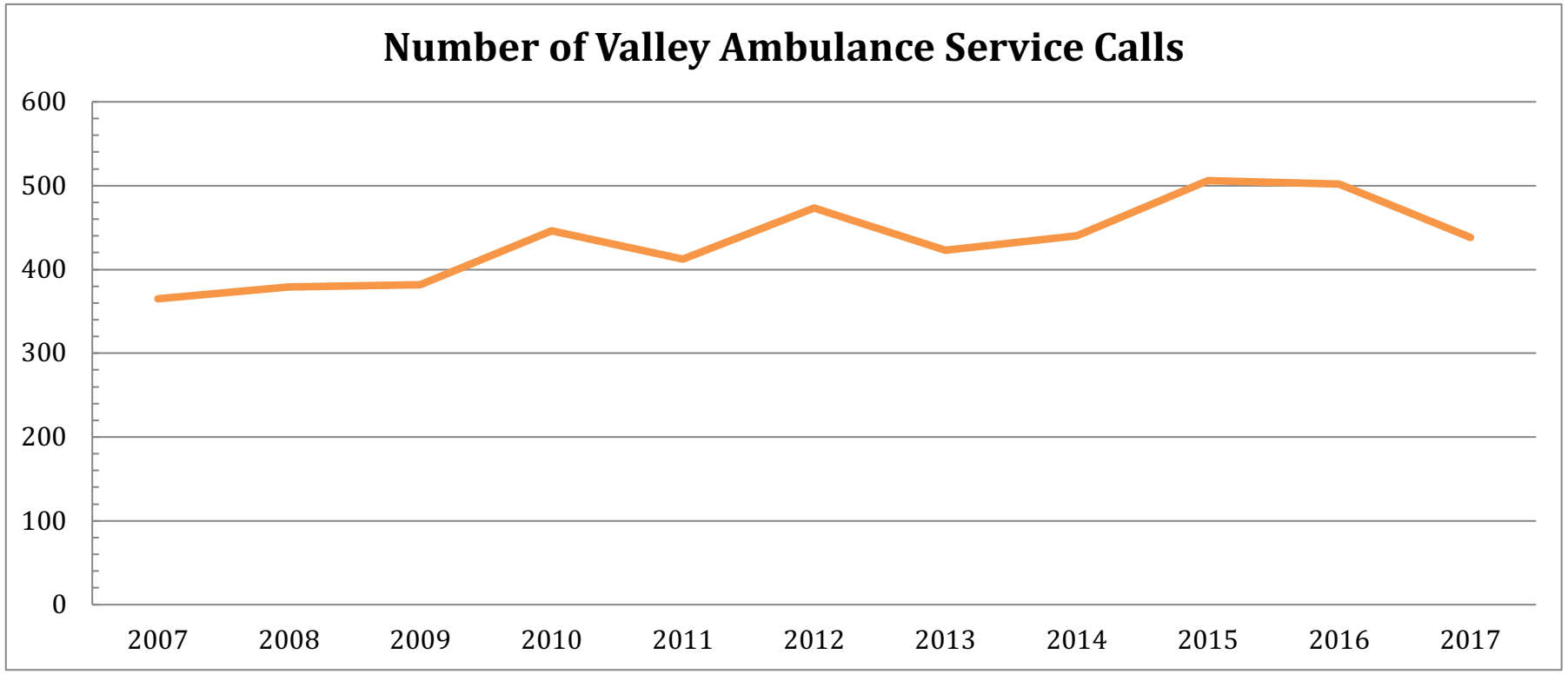



**FIGURE 59- SOURCE: ANNUAL MRV TOWN REPORTS, MAD RIVER VALLEY AMBULANCE SERVICE (MRVAS)**

## CRIME

**Figure 60** shows that the number of crimes over the last decade steadily fell and then began to slightly increase across all three towns, as reported by the Vermont Crime Information Center and Vermont State Police (VSP)[26]. Crimes in the MRV overall are down 26% from 2007 to 2017. **Figure 61** on the next page shows crime data by town.[27]

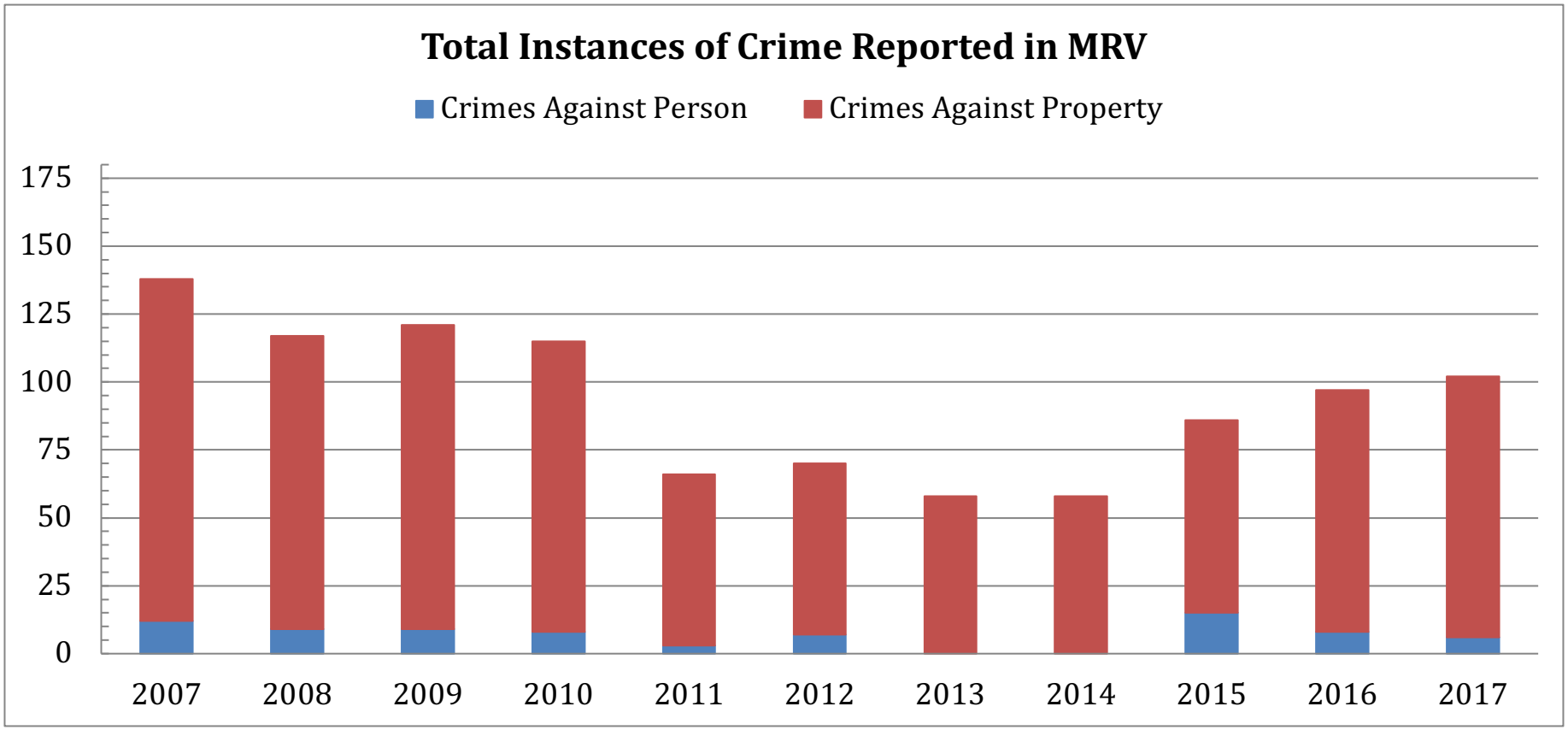
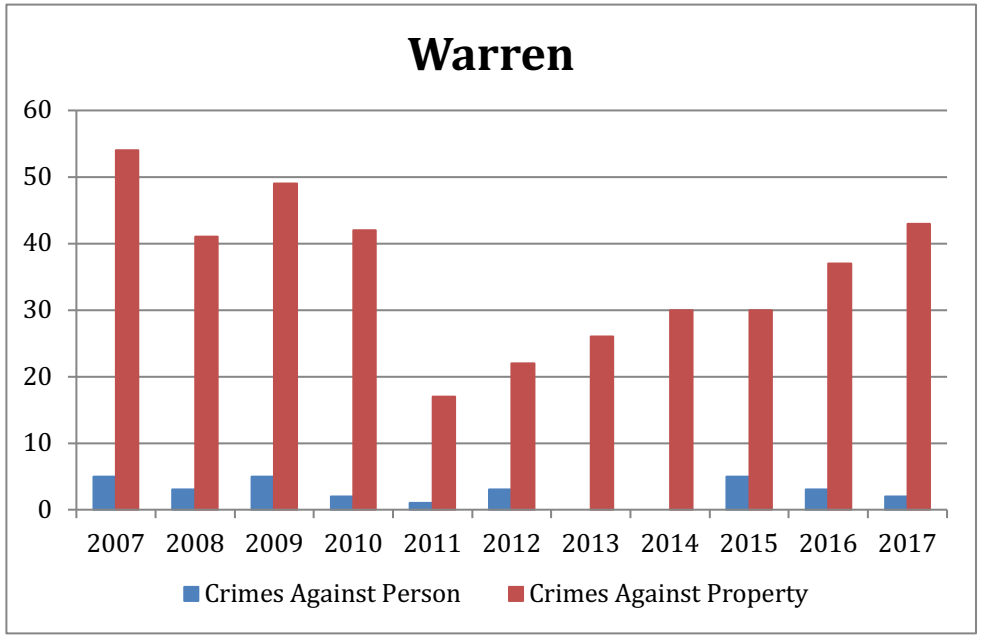


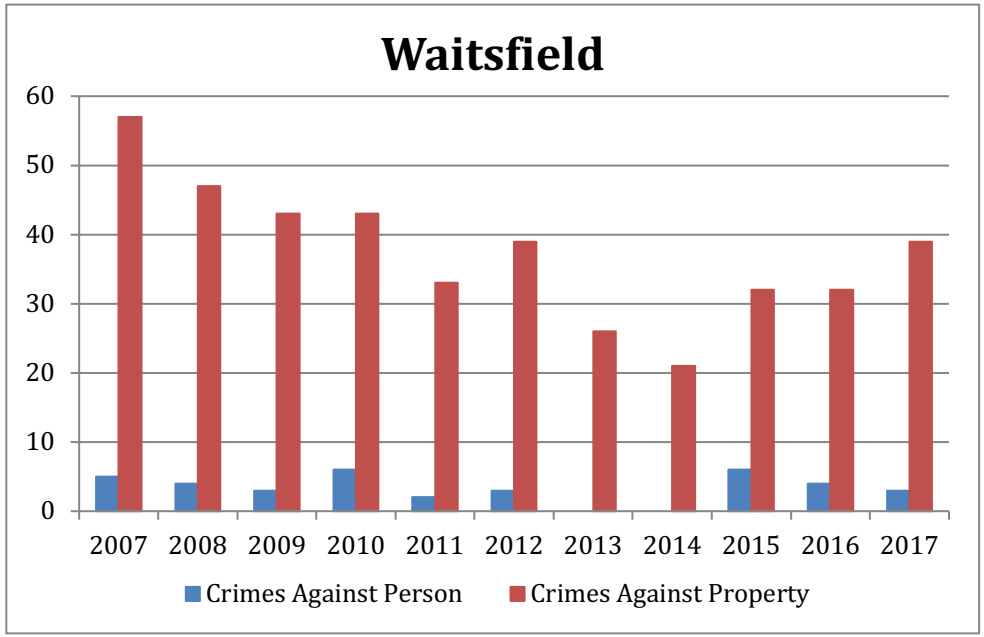

**FIGURE 60-SOURCE: VT DEPT OF PUBLIC SAFETY, VERMONT CRIME INFORMATION CENTER, VT STATE POLICE**

[26] In 2014 Crime Reporting methodology changed and the VT Crime Information Center no longer geolocated criminal activity to specific MRV towns. Data after 2014 was provided by the Vermont State Police, whose data captures the vast majority of incidents in the MRV.

[27] Crimes against property include arson, bribery, burglary, embezzlement, vandalism, theft, and drug violations. Crimes against person include murder, kidnapping, robbery, rape, and assault.

**FIGURE 61-SOURCE: VT DEPT. OF PUBLIC SAFETY, VT CRIME INFORMATION CENTER, VT STATE POLICE**



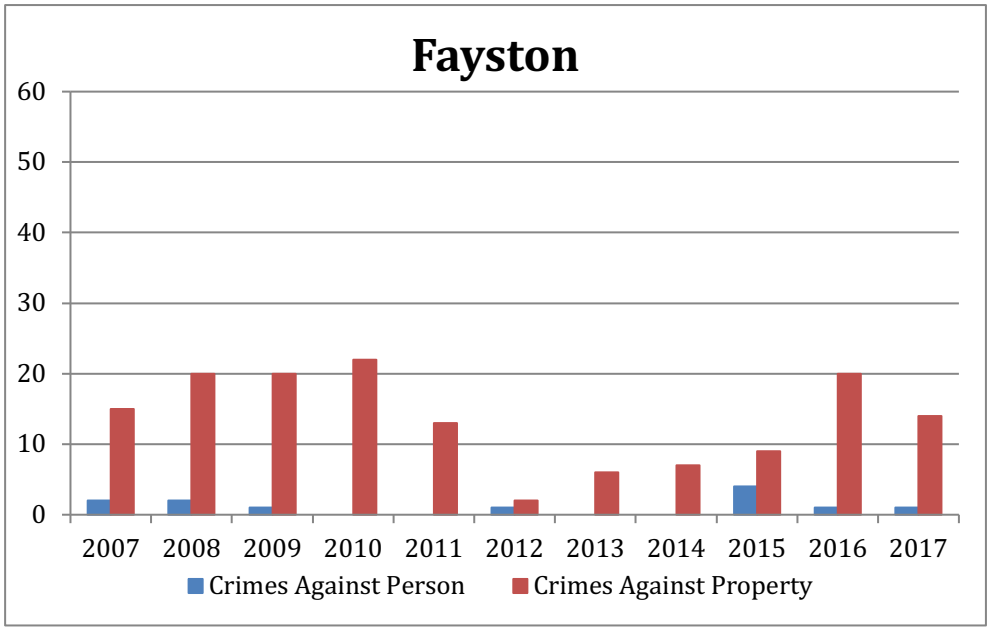



**Figure 62** shows the Grand Lists for the Towns of Fayston, Waitsfield, Warren. There were only slight changes between 2017 and 2018—Waitsfield and Warren saw increases of 0.5% and 0.6% respectively, while Fayston experienced a 1% increase.

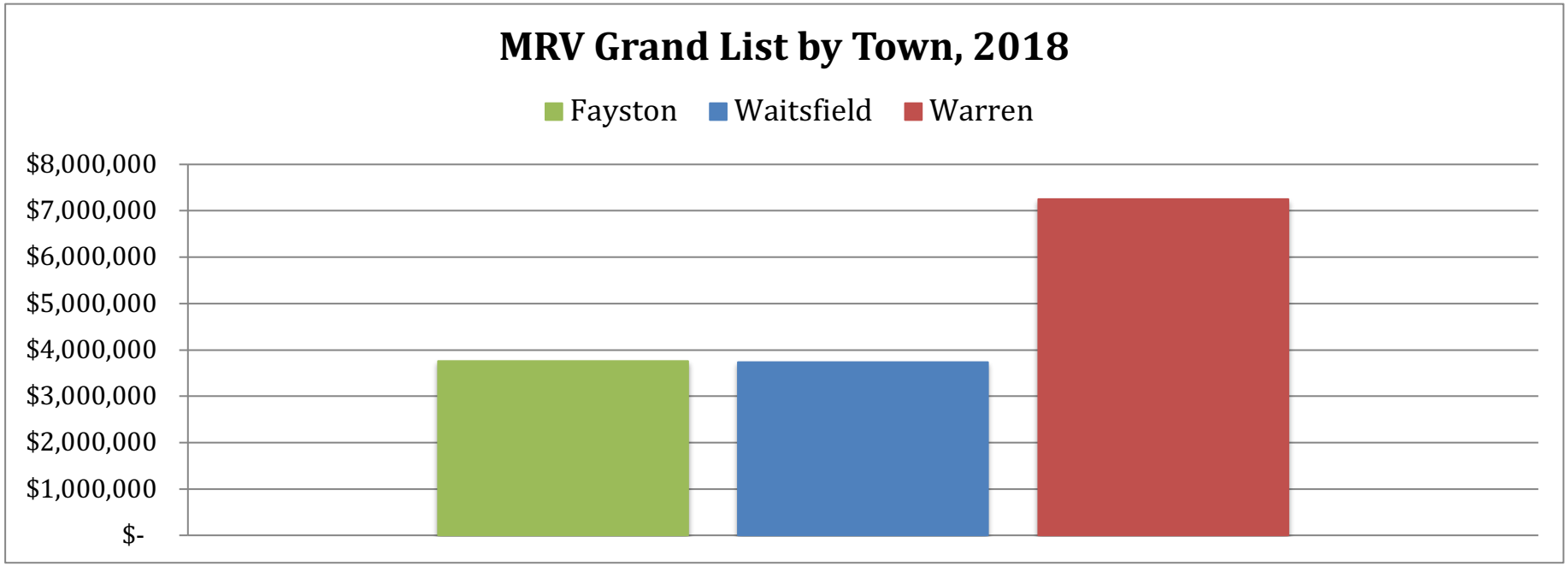



**FIGURE 62-SOURCE: TOWNS OF FAYSTON, WAITSFIELD, & WARREN**

| 2018 Tax Rates | | | | |
|---|---|---|---|---|
| | **Homestead Tax Rate** | **Municipal Tax Rate** | **Non-Residential Tax Rate** | **Common Level of Appraisal** |
| **Fayston** | 1.5882 | 0.245 | 1.5715 | 100.54% |
| **Waitsfield** | 1.5846 | 0.4146 | 1.5679 | 100.77% |
| **Warren** | 1.6327 | 0.42 | 1.6155 | 97.80% |
| **Moretown** | 1.6433 | 0.43 | 1.626 | 97.17% |

**TABLE 3-SOURCE: TOWNS OF FAYSTON, WAITSFIELD, WARREN, MORETOWN & VT DEPT. OF TAXES**

# SECTION VI: ENVIRONMENT

*Includes items #26, 31, 33 & 34 from the Memorandum of Understanding*

## ENERGY

The table below identifies MRV energy consumption in 2017 in terms of electricity use.[28]

**Table 4** details the breakdown between residential electrical versus commercial & industrial consumption by town. The MRV's total annual consumption by residential (53.7%) and commercial/industrial (46.3%) customers is nearly equal. Of the three towns, Warren's usage is the highest at almost twice that of Waitsfield in both categories, representing 55% of the MRV's total consumption.

| MRV Electrical Consumption (2017) | | | | | | |
|---|---|---|---|---|---|---|
| | Residential (MWh) | | Commercial & Industrial (C&I) (MWh) | | Total (MWh) | % of Total |
| Fayston | 5,750 | 22% | 1,804 | 8% | 7,554 | 15% |
| Waitsfield | 7,191 | 27% | 7,792 | 34% | 14,983 | 30% |
| Warren | 13,684 | 51% | 13,324 | 58% | 27,007 | 55% |
| **Total MRV** | **26,625** | **100%** | **22,920** | **100%** | **49,544** | **100%** |

**TABLE 4-SOURCE: EFFICIENCY VERMONT, VT ENERGY INVESTMENT CORP.**

Waitsfield and Warren have similar splits between residential and commercial customers, whereas Fayston is primarily residential (76% of usage). Overall electrical energy consumption, depicted in **Figures 63 & 64** on the following page, shows a downward trend since 2008. Energy consumption for the MRV was down 9% from 2016 to 2017, a bulk of that coming from a 14% reduction in Warren. Some of this savings can be attributed to technological advancements employed in snowmaking and other facility upgrades at Sugarbush Resort that have increased energy efficiency.

According to Efficiency Vermont, managed by the Vermont Energy Investment Corporation (VEIC), the energy savings in the MRV from 2016 to 2017 amounts to a customer cost savings of $409,574, and from 2015 to 2017 a total savings of $993,335.

[28] Electrical consumption data was provided directly by Vermont Energy Investment Corporation & Efficiency Vermont.

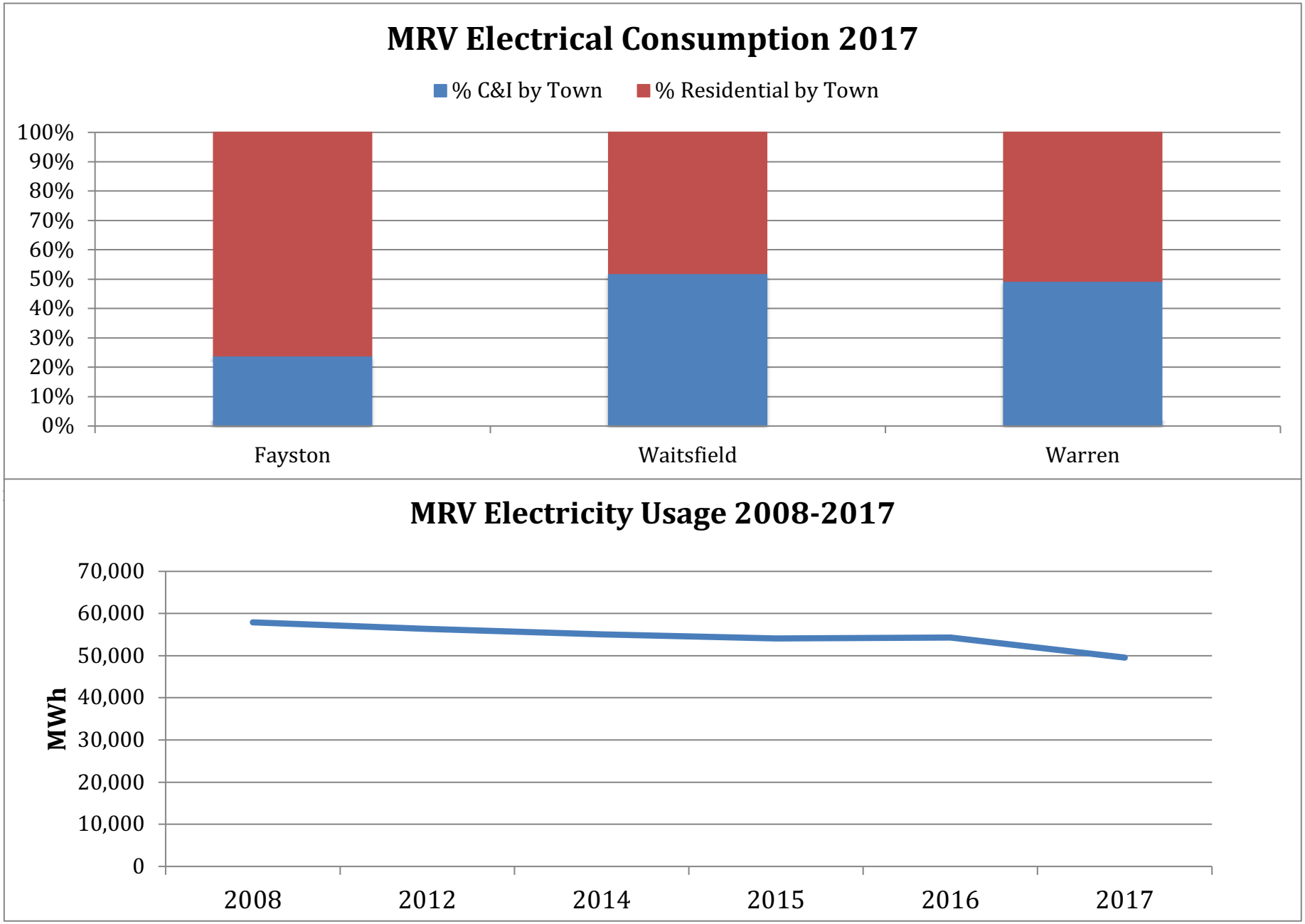



**FIGURE 63 & 64- SOURCE: EFFICIENCY VERMONT, VT ENERGY INVESTMENT CORP.**

Sugarbush Resort's monthly peak energy demand for the 2017-2018 season (**Figure 65**) indicates the initiation of snowmaking in November as it did during the previous season, but with decreased overall energy usage. Peak demand was lower for nearly every month compared to the previous year. The peak use figures continue to reflect energy savings resulting from snowmaking infrastructure efficiency upgrades as well as updated building and site lighting and motor/pump upgrades.

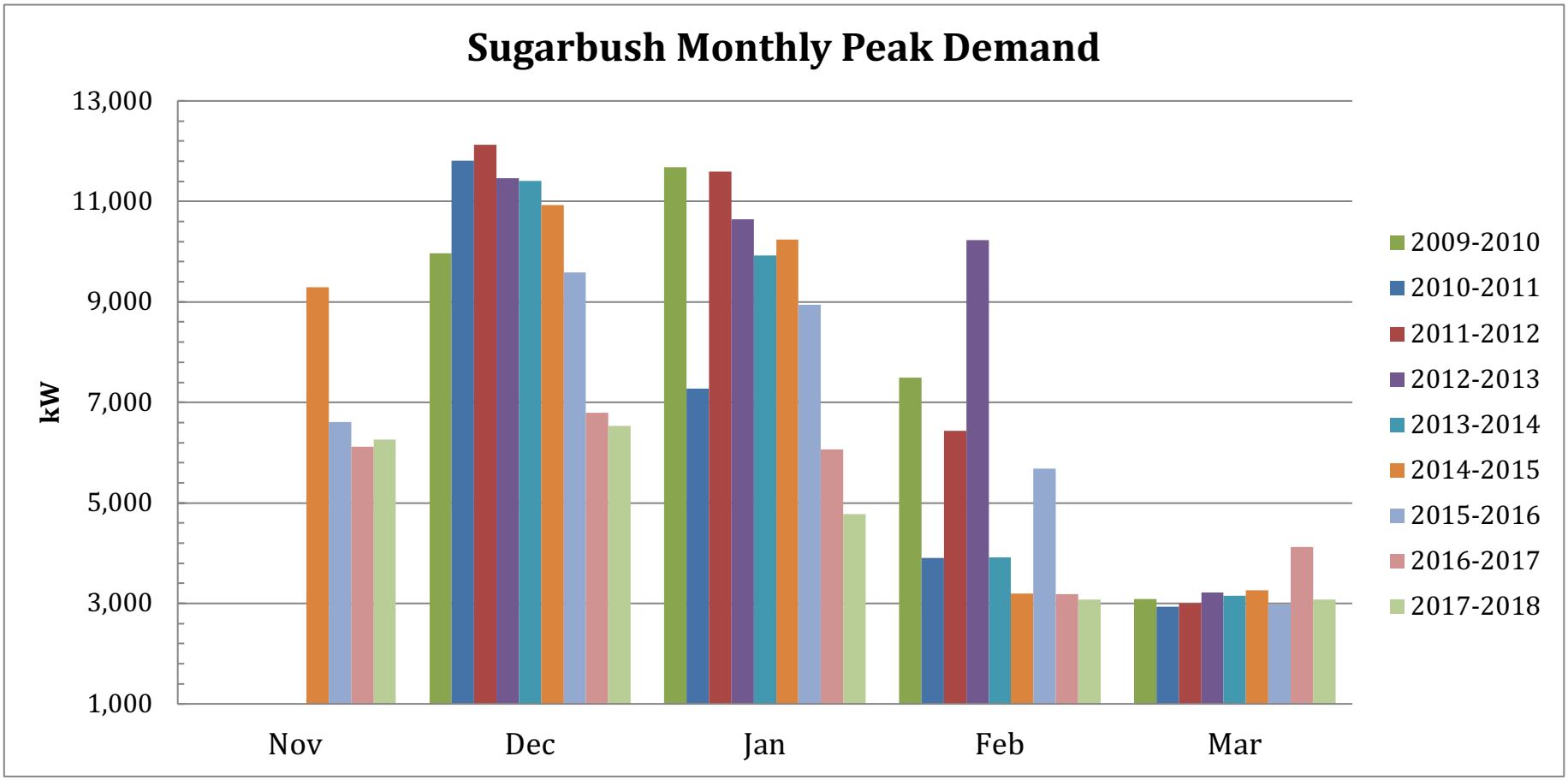



**FIGURE 65-SOURCE: SUGARBUSH RESORT**

## WATER QUALITY

Since 1985, Friends of the Mad River has been monitoring *E. coli* bacteria levels at approximately 30 sites along the main stem and major tributaries throughout the watershed, as part of its Mad River Watch program. *E. coli* is an indicator of pollution from fecal matter (livestock, wildlife, human); a high level of *E. coli* indicates the likelihood of a high level of disease-causing pathogens that can sicken swimmers, paddlers, and anglers. *E. coli* is a valuable indicator of the health and safety of surface waters, especially in areas highly prized for recreational uses. The state health protective level for recreational waters for *E. coli* is 235 colonies of *E. coli* per 100 mL water. It is estimated that at this level, approximately 8 out of every 1,000 swimmers are likely to contract a waterborne illness.

In 2015 & 2016, Friends of the Mad River engaged a research scientist to analyze historical data, identify persistent water quality problems, and make recommendations for the Mad River Watch program moving forward. Based on that analysis, Friends redesigned the 2016 Mad River Watch program to gradually transition away from monitoring water quality equally across the watershed, and target areas to better identify and resolve problematic land uses.

**Figure 66** shows that *E. coli* counts over the last nine years generally increased consistently from upstream to downstream areas (shown left to right in **Figure 66**). The impact of severe rainfall events is evident in 2010. Of the 12 sites that were tested in 2017, 5 saw increases in bacteria levels compared to the previous year, the largest being at Meadow Road Bridge in Waitsfield and Blueberry

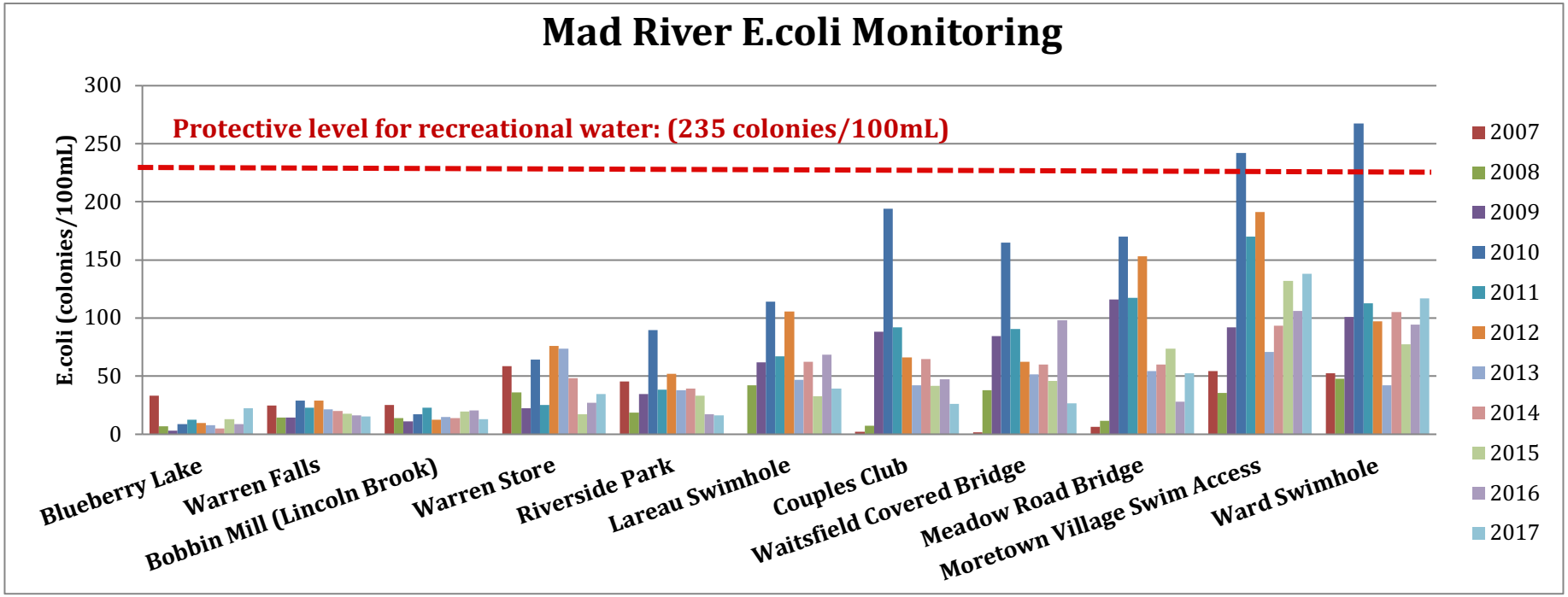



**FIGURE 66-SOURCE: FRIENDS OF THE MAD RIVER**

Lake. The positive relationship between *E. coli* and stream flow at many of these sites suggested that the source(s) of the *E. coli* may be related to surface and stormwater runoff, especially from areas contaminated by manure or leakage/overflows of septic systems.

## Land Conservation

The Mad River Valley has a long history of participating in land conservation efforts. Beginning in the 1980's with the inception of the Mad River Valley Planning District and the creation of the Rural Resource Protection Plan, the conservation of agricultural, scenic, historic, ecological, and riparian resources was identified as an important planning goal. As a result, there is an exceptional portfolio of public lands and conserved private lands in the MRV. This collaborative effort has involved non-profit organizations and entities such as the Vermont Land Trust, Mad River Watershed Conservation Partnership, Trust for Public Land, local municipalities, state agencies, and recreational organizations such as the Catamount Trail Association, Mad River Path Association, Mad River Riders, and Mad River Valley Recreation District (MRVRD).

This portfolio of national and state lands, town forests, family farms, productive forestlands, and riparian lands contribute to the quality of life and economic vitality in the MRV. These protected private and public lands also help sustain key economic sectors identified in the 2014 MRV Economic Study, including Agriculture and Food Production, Dining and Lodging, and Health Care & Wellness.

The Mad River Valley towns represented by the Mad River Valley Planning District encompass 68,544 acres. Approximately 4,379 acres (6% of the total land area in the three towns) of privately-owned land is protected by conservation easements. An additional 11,565 acres (17% of land area in three towns) are in public ownership by municipalities, the State of Vermont, or the U.S. Forest Service. Collectively, these conserved lands and public resources comprise 15,944 acres, or 23% of the landscape in MRV.

In 2017, two new properties were acquired by MRV municipalities for community recreation and open space protection. The Town of Waitsfield purchased 110 acres of forestland adjoining the Scrag Mountain Town Forest. Town ownership of this land will expand protection of forestland, wildlife habitat, and upland streams, as well as improve public recreational access. Additionally, the MRV Recreation District purchased Mad River Park, a 10-acre site in Waitsfield with recreational fields vital to youth sports programs and recreation.

**TABLE 5- SOURCE: VT LAND TRUST**

| **2017** | Total Acres | State/Federal Land | Municipal Conserved or "Open Space" | Privately-owned Conserved | Total Conserved or State/Federal Ownership | % of Town Conserved or State/Federal Ownership |
|---|---|---|---|---|---|---|
| Fayston | 24,192 | 2,998 | 73 | 1,914 | 4,985 | 20% |
| Waitsfield | 16,960 | 550 | 816 | 1,212 | 2,578 | 15% |
| Warren | 27,392 | 6,995 | 133* | 1,253 | 8,381 | 31% |
| Three Town Total | 68,544 | 10,543 | 1,022 | 4,379 | 15,944 | 23% |

**Warren parcels include Eaton Parcel (78 acres), Riverside Park (5 acres) and former Jacobs Parcel (50 acres). These parcels are not subject to a conservation easement, although they are managed for public use and natural resource protection goals.*