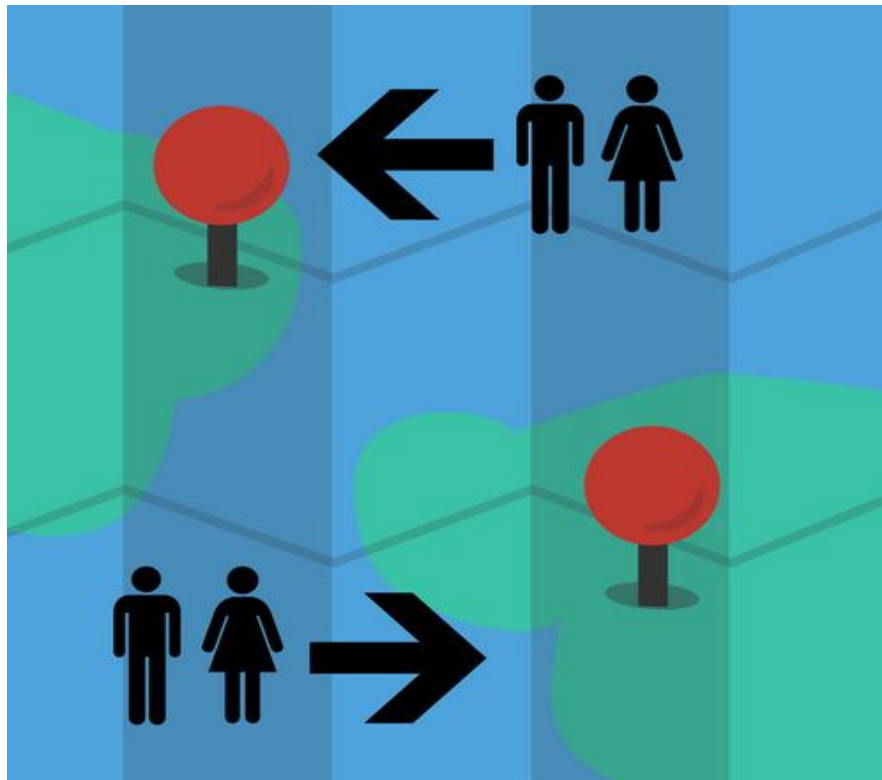


Connecticut's Population and Migration Trends: A Multi-Data Source Dive



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Primary Author:

Manisha Srivastava, CT Office of Policy and Management

Contributor:

Michelle Riordan-Nold, CT Data Collaborative

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For questions, please contact Manisha at (860) 418.6317 or Michelle at (860) 571.6214

Please note that on August 16, 2017, Graph 2.3-5 and Table 2.3.3 were revised. This version of the report includes the revisions. The number of In and Out returns was understated so the totals were adjusted. However, overall there was still a net decrease in total returns from 2011 to 2014 in households with incomes between \$50,000 and \$100,000.

Executive Summary

Migration tracks the flow of people into and out of a region, flows that are always much larger than the resulting net migration. In reality, net migration is a small percent of the population. Historically, Connecticut experienced population losses to other regions of the U.S. This is also true of New England in general. However, the recent declines in Connecticut's total population are primarily driven by increasing rates of net domestic out-migration and to a smaller degree a declining birth rate. But there are positive trends. The state gains prime working age adults and children. Connecticut also attracts well-educated international migrants, and loses the smallest percent of graduate degree holders. By income, the largest flows are at the lowest income levels (though largely due to out migration of young adults), though the state is experiencing a slight loss of its highest income earners (incomes of \$5 million or more). However, when talking about migration and income, it is important to realize not all income leaves with a person (if someone leaves a job, the job stays and a new person earns the income in Connecticut).

Introduction

In the fall of 2016, the Connecticut Data Collaborative hosted two CTData Forums focused on the topic of migration in Connecticut led by Thomas Cooke, Professor in the Department of Geography at the University of Connecticut, also with a presentation by Michael Howser, Connecticut State Data Center Director. The discussions arose out of a desire to confirm or reject the prevailing narrative, as echoed through the media, of a mass exodus from Connecticut.

After the forums, several attendees convened and determined that a deeper analysis of the publicly available data was necessary to understand the overall trends in migration. The story is confusing because anecdotes are often stated as facts, and there are multiple sources of migration data available, each with its own strengths and weaknesses.

This report looks underneath the topline numbers to understand if the steady drumbeat that “young people” and the “wealthy” are leaving Connecticut is substantiated by the data. Specifically, this study delves into a variety of publicly available data sources to ascertain statewide migration trends and answer the following questions:

1. What is driving Connecticut’s recent population declines?
2. Is Connecticut unique in these declines?
3. Who is migrating in and out from Connecticut on three dimensions - age, educational attainment, and income?

This study *does not* make any assertions towards *why* people are migrating in and out of Connecticut. We do know that nationally, according to the Census Population Survey, the top reasons for moving (inter and intra-state) are: housing (48%), family (30%), employment (20%), and other (2%). We can only make the assumption that the same reasons apply for Connecticut, but this report does not address the question.

The report includes the following sections:

- Key Findings;
- Background on data sources and migration concepts;
- Overview of Connecticut’s population and migration trends; and
- Analysis of migration trends by educational attainment, age, and income.

Key Findings

Following is a summary of the key findings in this report regarding Connecticut trends and trends relative to the region. In addition, key findings regarding migration based on educational attainment, age, and income are also evaluated. Finally, additional critical factors impacting migration data are presented.

Connecticut Trends:

- Connecticut's population has declined for the last three years (2014 through 2016). Declining births and increasing deaths have played a factor, a trend which is occurring throughout the region.
- If births and deaths were currently closer to their mid-2000 averages, Connecticut's total population change would have been positive in 2014 and close to zero in 2015.
- By far the largest driver of Connecticut's declining population is an increase in the number of people leaving Connecticut for other states on net, an increase of 55% (or about 9,200 individuals) over the current period (2013-2016) compared to the mid-2000's.
- Conversely, international migration has helped boost Connecticut's population, as there has been about a 30% increase (or about 3,700 people) in the average number of net migrants per year post-recession compared to pre-recession.
- Based on the Internal Revenue Service tax return data, more households move in to Connecticut from New York and New Jersey than leave Connecticut for those states. On the other hand, more people leave Connecticut for Massachusetts and Florida than move in from those states.

Compared to the Region:

- Since 2004 Connecticut's population has grown 2.3%, compared to about 3.5% for New England and our neighboring states.
- It is important to remember that in addition to New England, many regions across the US tend to experience net domestic out-migration (in order from most net domestic out-migration to least: Mid-Atlantic, East North Central, New England, Pacific, and West North Central).
- When looking at domestic migration trends in the region, many states have shown improvement compared to pre-recession, or returned to the same rate as pre-recession. Connecticut and Vermont are the two exceptions with increased rates of domestic out-migration.
- Connecticut's net domestic out-migration is currently in line with New York and New Jersey. However, net domestic out-migration in Connecticut has nearly doubled from pre-recession rates. New York's current rate of domestic out-migration is still less than it was pre-recession, and New Jersey's current rate of domestic out-migration has now simply returned to their rate pre-recession.
- Our neighboring states of Massachusetts, New York, and Rhode Island are experiencing substantially more growth in total returns filed compared to Connecticut.

Migration by Educational Attainment:

- Data on migration by educational attainment level show that in terms of gross numbers, Connecticut loses and gains a near equal number of people by all educational attainment levels.
- Trends post-recession compared to pre-recession show Connecticut is now losing a greater share of bachelor degree and associate degree holders, as well as those with less than a high school education.

- On the other hand, Connecticut is losing less graduate degree holders post-recession compared to pre-recession.

Migration by Age:

- Data on migration by age show that younger cohorts move at a higher rate than the rest of the population.
- On net, Connecticut loses the most in the 18-21 year old age group - both in total numbers as well as a proportion of this age group's total population in Connecticut.
- On the other hand, on net, Connecticut gains the most in the 30-39 year old age groups, and presumably their children ages 0 to 17.
- Post-recession, Connecticut is losing on net a higher number of 22-29 year olds and those aged 65 or older compared to pre-recession. Conversely, post-recession Connecticut is gaining on net a higher number of domestic in-migrants aged 30-64 years, especially those aged 30 to 49, and presumably their children ages 0 to 17.

Migration by Income:

- DRS data show the lowest income make up the largest share of Connecticut's taxpayers, but over time the number of filers with AGI between \$15,000-\$50,000 has fallen the most, by 2.2% since 2010. Comparatively, the number of filers with AGI above \$100,000 have grown in the state.
- DRS data also show the lower-income tend to out-migrate from Connecticut at greater rates than the high-income, data which is confirmed by IRS data.
- Though not related to migration, DRS data also provides information on how filers AGI shifts year to year. The data shows there is a lot of "churn" of filers between AGI groups, most notably for the highest income earners - almost 40% grow into the \$5,000,000 and above AGI group, and almost 35% fall out of the same AGI group annually.
- Since 2007 there has been an increase of filers out-migrating from Connecticut across all income groups, most noticeably those earning between \$50,000-\$100,000 and those earning \$5,000,000 and above.
- In addition, since 2007 there has been an increase in in-migration rates for those earning between \$50,000-\$200,000 but a decline in those earning \$5,000,000 and above.
- As the data on "churn" of income suggests, the number of high-income filers in a state is not only dependent on the in and out-migration of these individuals, but also on how many and by how much residents' incomes grow. IRS data show that regardless of the various ebbs and flows documented by DRS data, Connecticut lags behind its neighbors in overall growth of high-income filers. Despite the slow growth, however, Connecticut has maintained a large share of high income filers in terms of the national total.
- Consistent with the migration by age results, IRS data also find positive in-migration of returns for those aged 26-45 with AGI of \$200,000 and above.

Additional important points regarding migration data:

- Migration flows (i.e. in-migration and out-migration) is much larger than the resulting net-migration. Though focus is given to net-migration, or sometimes only on the negative or outflow component of migration, it is important to remember the large flows of people both into and out of a state add to the net.
- It is critical to understand the difference between data sources because the end result is vastly different depending on the source. As an example, according to Census American Community Survey (ACS) data, Connecticut has experienced positive net migration in years 2012, 2013, and 2014. According to Census Population Estimates (PE) data, Connecticut has experienced negative net migration in the same years, with almost a doubling in negative net migration between 2013 to 2014. For purposes of this report, we use Census PE data to analyze net migration, and net international/domestic migration. We use Census ACS data to understand migration by age and education, and Internal Revenue Service (IRS) and Connecticut Department of Revenue Service (DRS) data to understand migration by income.
- An important note about the IRS data - the amount of Adjusted Gross Income (AGI), or simply income, leaving and coming into the state cannot be determined from this data.
 - Most people cannot take their income with them - when people move due to change in employment generally their job (and associated wages) remain in the state and just the person moves.
 - In cases when a business leaves, some income may transfer to others in the state - if a small business owner leaves, another small business owner may gain those customers keeping the income in the state.
 - Though, it is possible some income leaves with the person leaving the state in cases where a person works from home, and continues working in that job remotely from their new place of residence. In addition, income would leave the state in cases where an entire business, along with its employees, moves out of Connecticut. Finally, the nonwage component of income would also leave with an individual migrating out-of-state.

Background on Data Sources and Migration Concepts

This section highlights the data sources used in this report, along with an explanation of the migration concepts that will be used throughout the report.

Data Sources

We gathered data from four publicly available sources: Census American Community Survey, Census Population Estimates, Internal Revenue Service data, and CT Department of Revenue Services data. Each source has strengths and weaknesses, highlighted below:

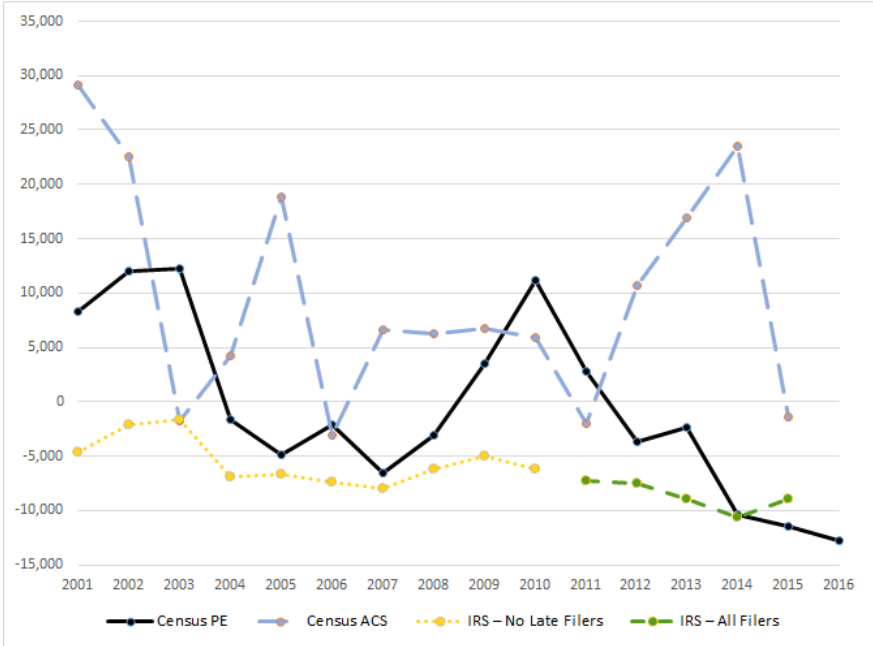
- **Census American Community Survey - 1 year estimates (ACS):** The Census ACS is a survey of 1% of the population each year, which amounts to about 36,000 Connecticut residents. Given it is a survey, there are margins of error associated with any data produced from this program. However, survey questions include questions on education, income, and age. The ACS is therefore a valuable data source to dive beneath the topline population numbers to understand migration on various dimensions.
- **Census Population Estimates (PE):** The Census PE program is based on the decennial census, which is then forecast forward based on the number of births and deaths within a state, along with an estimate of domestic and international migration. Births and deaths data is administratively available. Census PE estimates domestic and international migration using a variety of sources.
- **Internal Revenue Services (IRS):** There are two files that provide migration data: state-to-state flows and gross migration files. The gross migration files provide data for filers based on age and income (federal adjusted gross income), while the state-to-state flows represent total migration for a state. A weakness with the IRS data is that information on non-filers, of course, is not available, underrepresenting low income and elderly households.

The state-to-state migration data are based on address data provided on Forms 1040 for the primary filer. These datasets compare the primary filer's mailing address from one year to the next to see if there is a change. And if there is not a match, beginning in 2011/2012 files, the secondary filer and dependent information is used to find a match. As an example, when the years 2011/2012 are displayed on a chart, it represents returns the IRS received in calendar years 2011 and 2012 filed for tax years 2010 and 2011, respectively. Exemptions are based on the second tax year; in this example, tax year 2011 but calendar year 2012. IRS enhanced its methodology for matching returns with the 2011/2012 data. They now have a higher rate of matches, getting closer to capturing all returns but it's not 100%. Because of the change in the methodology current IRS data is not comparable to pre-2011 data. Since the migration files do not represent 100% of all returns, we used the IRS Historical Tables for data on total returns by state.

- Connecticut Department of Revenue Services (DRS):** Similar to the IRS, DRS houses tax return data in Connecticut at the filer level. DRS is able to track filers over time by Connecticut Adjusted Gross Income (AGI), proving to be a valuable source for analyzing Connecticut migration trends by income. DRS data is based on identifying information for the primary filer; the data does not track secondary filers on returns. A weakness with this data source is in instances when two single filers get married and file a joint return, since it will appear the secondary filer is no longer filing taxes in Connecticut (out-migration). Conversely, when a couple gets divorced and moves from filing joint returns to single returns, it will appear as though Connecticut gained the secondary filer (in-migration). Finally, we are unable to tell if an individual ceased filing tax returns in Connecticut because they moved out of state, passed away, or for some other reasons.

It is critical to understand the difference between data sources because the end result is vastly different depending on the source. As shown in Graph 1, according to Census ACS data, Connecticut has experienced positive net migration in years 2012, 2013, and 2014. According to Census PE data, Connecticut has experienced negative net migration in the same years, with almost a doubling in negative net migration between 2013 to 2014. And net migration according to IRS data is consistently below Census PE and Census ACS because not all individuals file returns. For purposes of this report, we use Census PE data to analyze net migration, and net international/domestic migration. We use Census ACS data to understand migration by age and education, and Internal Revenue Service (IRS) and Connecticut Department of Revenue Service (DRS) data to understand migration by income.

Graph 1: Connecticut Net Migration (International + Domestic) according to the Various Sources



Source: Census Population Estimates (downloaded from IHS), ACS, IRS

Additional information and graphs comparing and contrasting these data sources are provided in Appendix A.

Migration Concepts

Migration includes movement into a region (in-migration) and out of a region (out-migration), which together add to the net-migration for the region - which could either be positive or negative. Domestic migration refers to state-to-state migration within the US. International migration includes movement into the U.S. (and into a particular state). It is nearly impossible to track international out-migration; once a person leaves the U.S. generally all records cease, and data on out-migration cannot be assessed. Therefore, when international migration is reported, it is referring to international in-migration only.

Here are the common migration terms:

- Domestic in-migration = people moving into a state from another US state
- Domestic out-migration = people moving out of a state to another US state
- Net Domestic Migration = Domestic in-migration + Domestic out-migration
- Net International Migration = International in-migration = International migration = people moving into the US from abroad
- Net Migration = Net Domestic Migration + Net International Migration

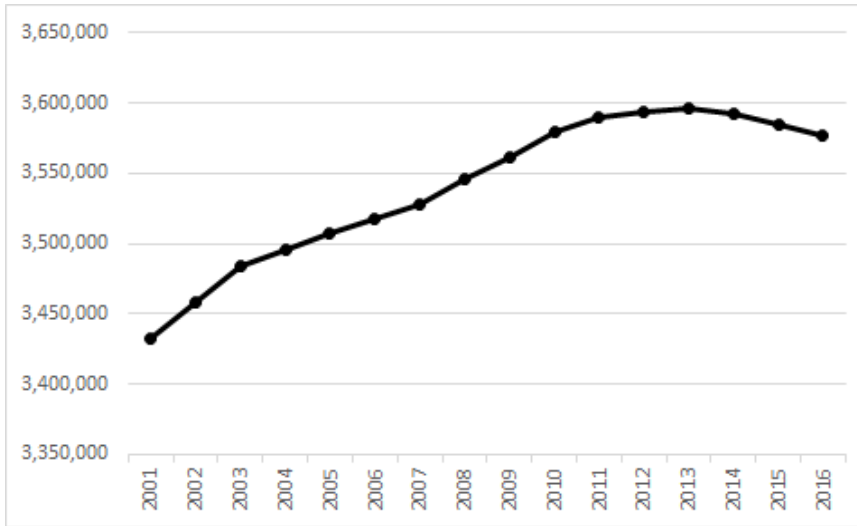
As you will note throughout this paper, migration flows (i.e. in-migration and out-migration) is much larger than the resulting net-migration. Though focus is given to net-migration, or sometimes only on the negative or outflow component of migration, it is important to remember the large flows of people both into and out of a state add to the net.

Part I: Breaking Down Recent Population Declines and Migration Trends

Using Census PE Data, this section of the report examines recent statewide population growth and declines. It also explores the dynamics of net migration to answer what are the leading drivers for Connecticut's net migration trends and where are people coming from and going to. Finally, in this section Connecticut is analyzed against the region to see how we compare on the components of population change.

Section 1.1 Recent declines in population after years of steady growth

Graph 1.1-1 Connecticut Total Population



Connecticut's total population steadily increased each year from 2001 to 2009. However, as the graph displays, the rate of increase slowed in 2010 and then started declining after 2013. Connecticut's population in 2016 is below its 2010 level.

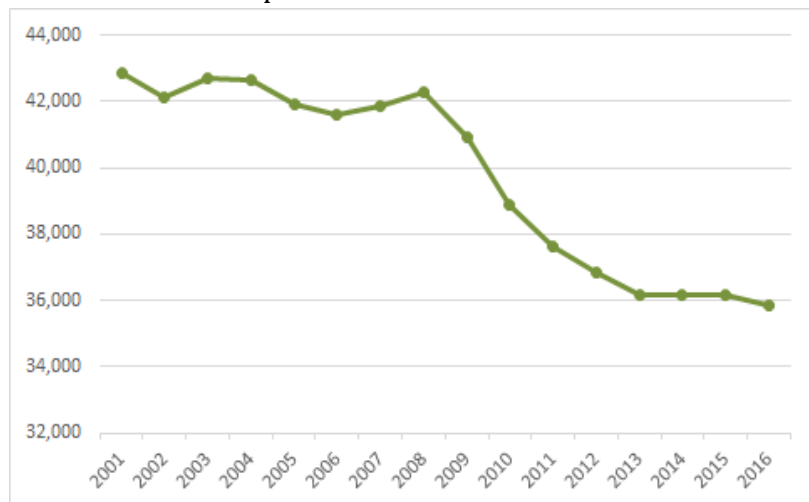
Source: Census Population Estimates (downloaded from IHS)

Section 1.2 What is causing Connecticut's population decline?

Births:

One of the primary drivers for population decline, though not the largest one, is declining birth rates, especially after the recent recession.

Graph 1.2-1 Connecticut Births

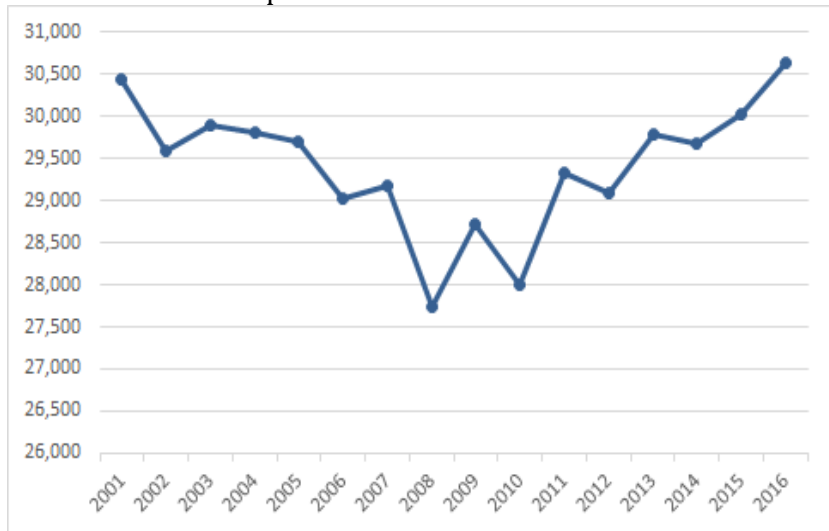


Source: Census Population Estimates (downloaded from IHS)

Deaths:

Another reason is an increasing number of deaths since 2010. Yet the death rate is now about the same as it was pre-recession.

Graph 1.2-2 Connecticut Deaths

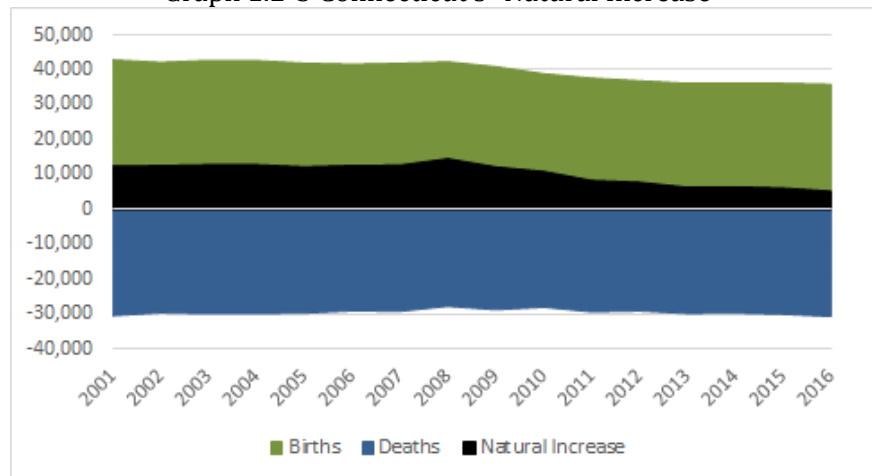


Source: Census Population Estimates (downloaded from IHS)

Natural Increase:

Births and deaths added together are referred to as “natural increase” when looking at population trends. Connecticut is still experiencing a “natural increase”, but the rate of increase has declined over time mostly due to declining births.

Graph 1.2-3 Connecticut’s “Natural Increase”

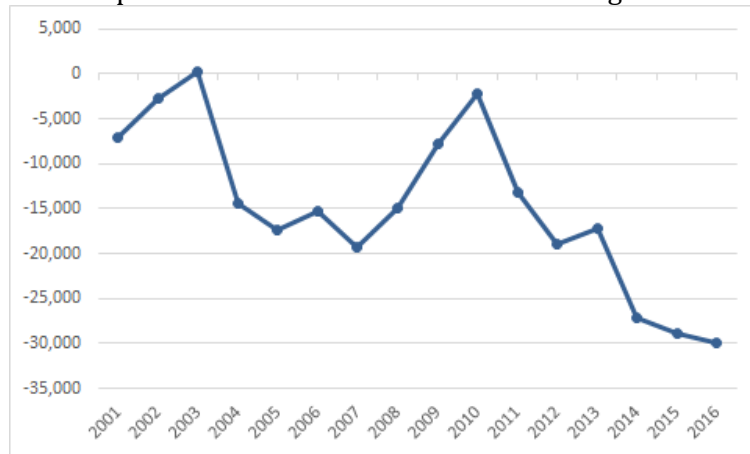


Source: Census Population Estimates (downloaded from IHS)

Net Domestic Migration:

The main driver of Connecticut's population decline is an increase in net domestic out-migration. Net domestic out-migration is not a recent phenomenon in Connecticut, but what is new is the increase in the magnitude post-recession.

Graph 1.2-4 Connecticut's Net Domestic Migration



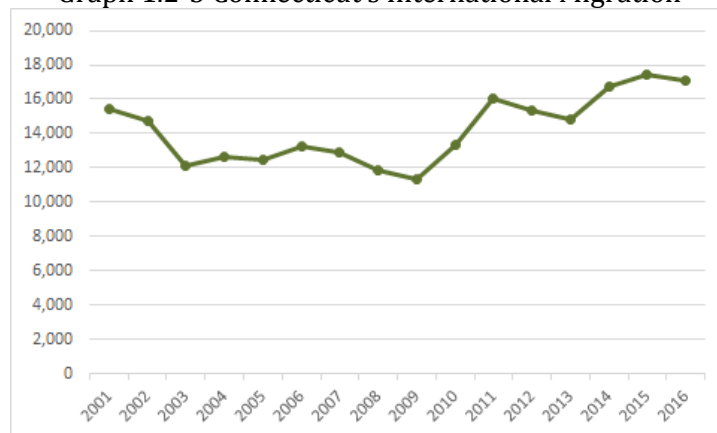
Source: Census Population Estimates (downloaded from IHS)

The average annual loss of people pre-recession was about 17,000. Net domestic out-migration increased in 2014 from about a loss of 17,000 people to 26,000 people, and has continued to slightly increase. Over the past three years, Connecticut's population loss due to net domestic out-migration is almost 30,000 per year.

International Migration:

International migration has helped slow Connecticut's population decline. Since 2001, international migration has remained fairly constant, even increasing in more recent years, but not enough to offset Connecticut's net domestic out-migration.

Graph 1.2-5 Connecticut's International Migration

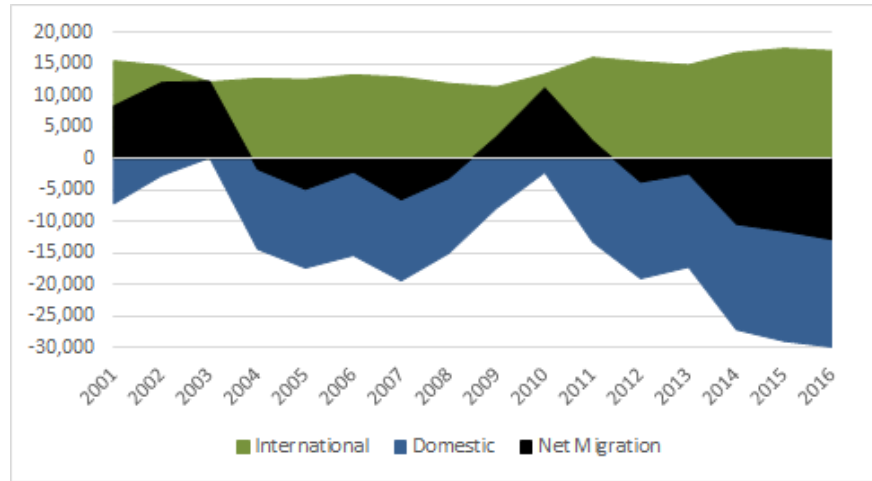


Source: Census Population Estimates (downloaded from IHS)

Net Migration:

As a result, post-recession there is overall net out-migration. The chart to the right displays years in which we have seen positive net migration (black shaded areas above the horizontal axis) and years in which the state has experienced negative net migration (black shaded areas below the horizontal axis).

Graph 1.2-6 International, Domestic, and Net Migration



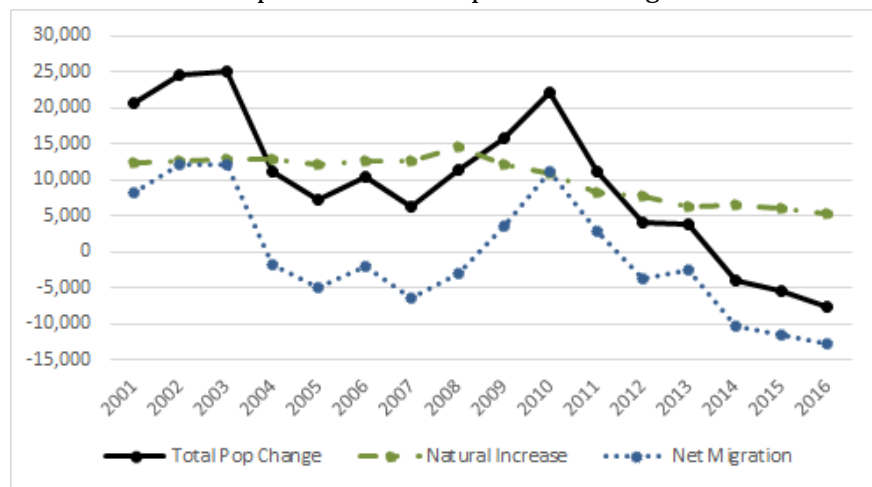
Source: Census Population Estimates (downloaded from IHS)

From these data we see that during recessions the domestic movement of people slows. As a result, Connecticut experienced net positive migration during those years. During non-recession years Connecticut has generally had net negative migration.

From Graph 1.2-6 we see that Connecticut’s net migration is primarily influenced by changes in domestic migration (as international migration tends to be steady in comparison). Between 2013 to 2014, Connecticut experienced a steep increase in net domestic out-migration and as a result net out-migration has been increasing.

In summary, declining “natural increase” has contributed to Connecticut’s declining population for the past three years. However, the primary cause for Connecticut’s recent population declines is an increase in net out-migration, which in turn is primarily driven by an increase in net domestic out-migration.

Graph 1.2-7 Total Population Change



Source: Census Population Estimates (downloaded from IHS)

Table 1.2-1 quantifies the components of population change pre- and post-recession. These data show the two primary drivers leading to recent population declines are net domestic out-migration and a decrease in births.

Table 1.2-1 Components of Population Change

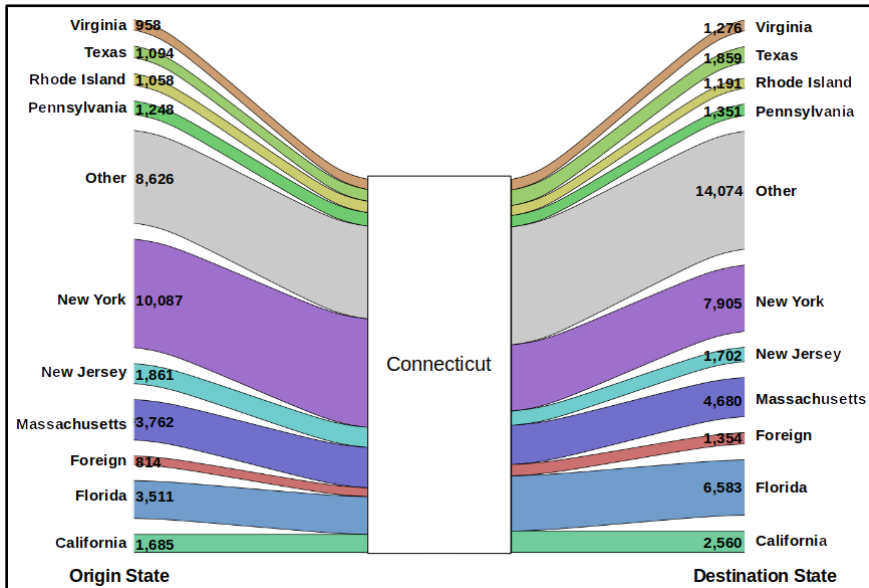
	2004 - 2007 Average	2013-2016 Average	Change	Percent
Births	42,003	36,073	-5,930	-14%
Deaths	29,431	30,033	602	2%
Net International Migration	12,820	16,510	3,690	29%
Net Domestic Migration	-16,606	-25,787	-9,181	55%

Other than the increase in international migration, all other factors contribute to Connecticut’s recent population declines. If births and deaths were currently closer to their mid-2000 averages, Connecticut’s total population change would have been positive in 2014 and close to zero in 2015. Net domestic migration, however, is by far the largest component in Connecticut’s recent population declines (55% growth post-recession compared to pre-recession, or an increase of about 9,200 net out-migrants each year).

Section 1.3 Where are people coming from and going to?

This section explores which states people are coming from and which states they are migrating to when choosing to leave Connecticut. We chose to focus on IRS data in this section. We did review Census ACS data which also provides data on which states people migrate from and to, but after looking at the margins of error (in some cases they were quite large) we decided to limit our analysis to the administrative IRS data. In this analysis returns are a proxy for a count of total households and exemptions are a proxy for people.

Graph 1.3-1 Top Geographies of In and Out Migration in Connecticut
(Total Inflow and Outflow of Returns)



Source: IRS State-to-State In and Outflow Files

Note: Top domestic geographies and returns are averaged for tax years 2011 to 2014.

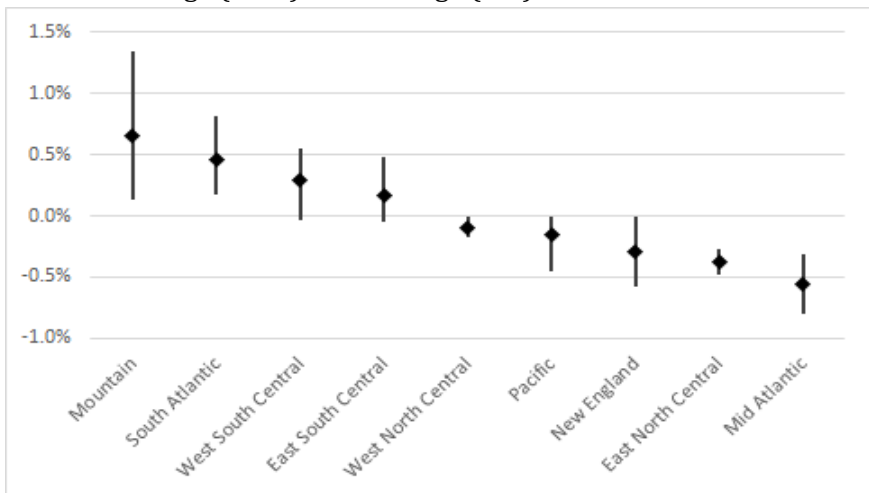
Graph 1.3-1 displays the top 10 geographies from which people migrated into Connecticut, and the top ten geographies people left Connecticut for. IRS data tracks foreign migration, as well as migration from/to Washington D.C.

The IRS data shows there is more inflow into Connecticut than outflow to New York and New Jersey, but Connecticut loses more returns (households) on net than it gains from Massachusetts and Florida.

Section 1.4 National and Regional Migration Trends

Are these population and migration trends unique to Connecticut or unique to the region? This section compares regions of the U.S., as well as Connecticut compared to New England and neighboring states, to understand how Connecticut stacks up on these components of population and migration trends.

Graph 1.4-1 Net Domestic Migration by Census Division
Range (lines) and Average (dot) over 2001-2016



Source: Census Population Estimates (downloaded from IHS)

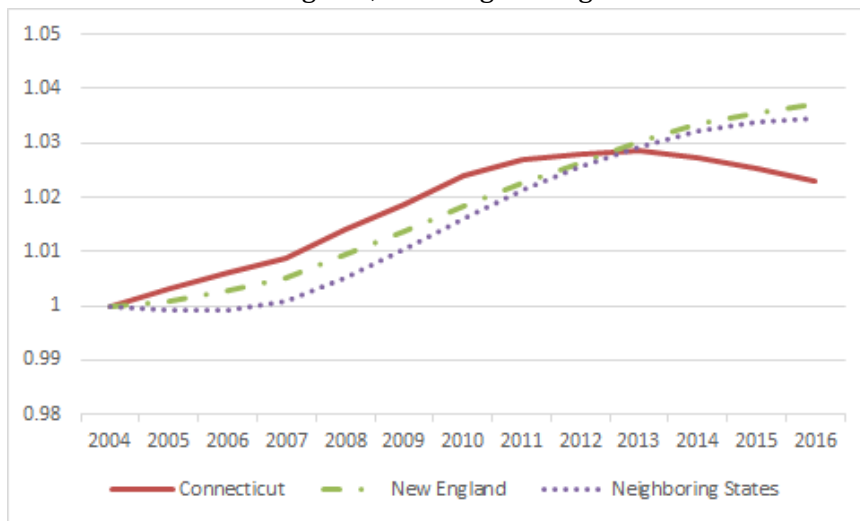
In Graph 1.4-1, the black dot shows the average and the line shows the range of net domestic migration over the time period examined, 2001-2016.

Not only does New England generally experience net out-migration, but so do many other regions of the U.S. In fact over the past 15 years, the Mid-Atlantic and East North Central have on average seen greater net domestic out-migration than the New England region. Conversely, areas in the west and south of the country have experienced migration gains. Note, however, that the Pacific division which includes California, Oregon, and Washington also has net domestic out-migration on average.

Despite the differences in net domestic migration between the regions in Graph 1.4-1, all regions vary in a relatively narrow band of about -1% to 1%.

Even though New England in general does experience net out-migration, how does Connecticut compare to the region on the components of population change? We now dig deeper into regional trends. Note that in this section, New England states include Maine, New Hampshire, Vermont, Massachusetts, Rhode Island, and Connecticut. Neighboring States includes Massachusetts, Rhode Island, New York, New Jersey, and Connecticut.

Graph 1.4-2 Total Population (Indexed to 2004) for Connecticut, New England, and Neighboring States



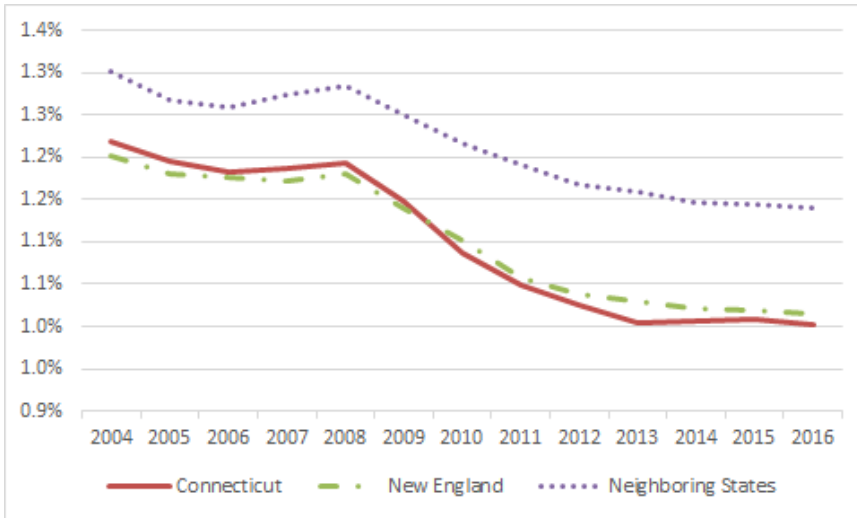
Graph 1.4-2 shows how Connecticut’s population growth compares to New England and to Neighboring States. Given that migration slows during recessions, total population is indexed to 2004, the start of the prior expansion period.

Source: Census Population Estimates (downloaded from IHS)

Indexing total population to 2004 for Connecticut, New England, and Neighboring States shows population growth in Connecticut initially outpaced the region. However, in 2012 Connecticut’s population growth started slowing and fell below the region by 2013 onwards. Since 2013, population growth has been falling in Connecticut as it continues to rise for the region.

Population growth in Connecticut is currently at 2.3% above 2004, compared to about 3.5% for New England and Neighboring States.

Graph 1.4-3 Birth Rate for CT, New England, and Neighboring States

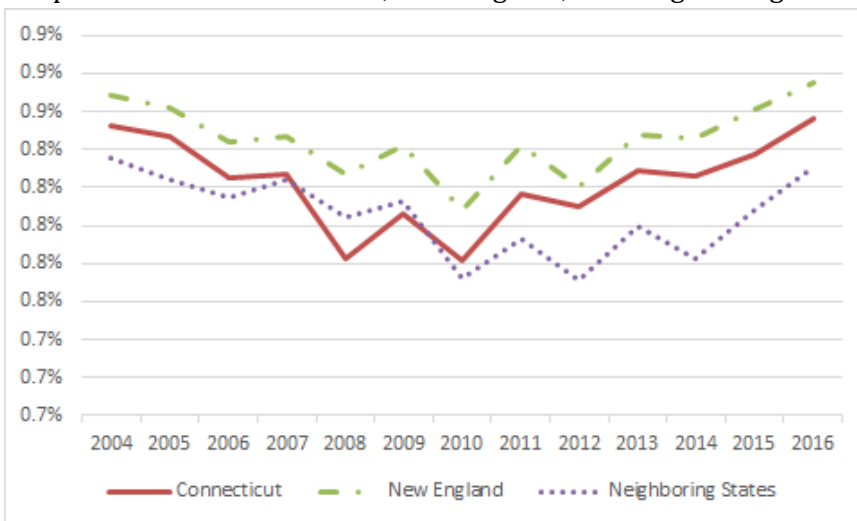


Source: Census Population Estimates (downloaded from IHS)
 Note: rates each year calculated as a percent of total population

Declining births is not unique to Connecticut. In fact, it is a trend that is shared by all other states in New England and Neighboring States.

However, births in Connecticut were slightly above New England, but have fallen below since the recession.

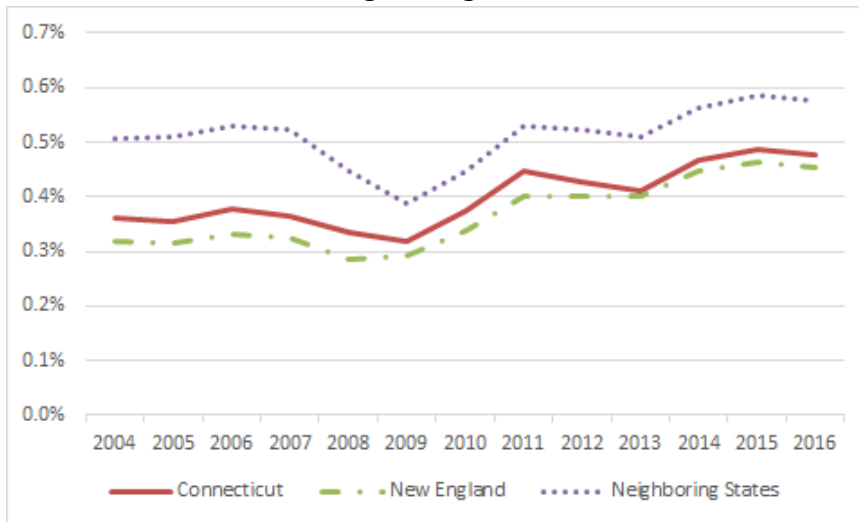
Graph 1.4-4 Death Rate for CT, New England, and Neighboring States



Source: Census Population Estimates (downloaded from IHS)
 Note: rates each year calculated as a percent of total population

Compared to New England and Neighboring States, deaths in Connecticut remain relatively steady - below New England but above Neighboring States.

Graph 1.4-5 Net International Migration for CT, New England, and Neighboring States



Source: Census Population Estimates (downloaded from IHS)
 Note: rates each year calculated as a percent of total population

In terms of net international migration, Connecticut has consistently had higher rates compared to New England, but more recently has been on par with New England.

Graph 1.4-6 Net Domestic Migration for CT, New England, and Neighboring States



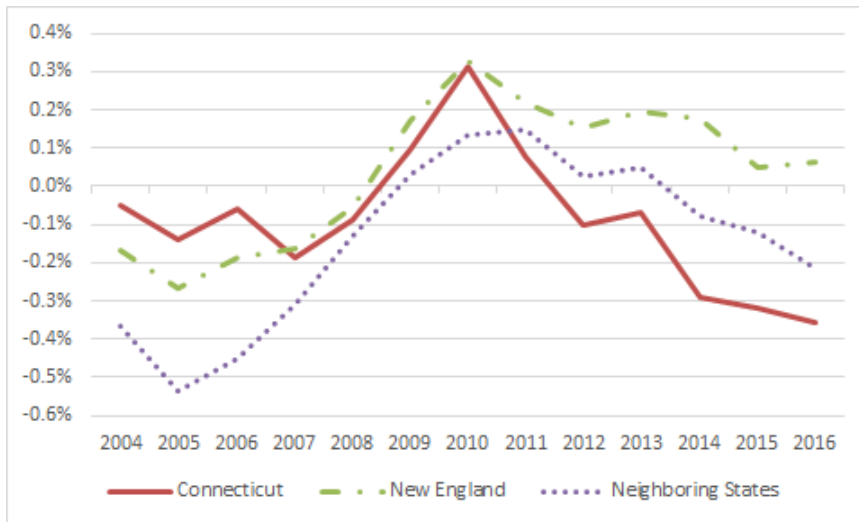
Source: Census Population Estimates (downloaded from IHS)
 Note: rates each year calculated as a percent of total population

Connecticut and both the regional areas analyzed experienced net domestic out-migration over the entire period.

However, prior to the recession Connecticut's domestic out-migration was similar to New England overall. Since then New England has returned approximately to its pre-recession rate, but Connecticut has fallen further.

Comparatively, Connecticut's domestic out-migration is now similar to Neighboring States, however Neighboring States started at a lower rate of out-migration pre-recession. Total domestic out-migration for Neighboring States is now less than before the recession.

Graph 1.4-7 Net Migration for CT, New England, and Neighboring States

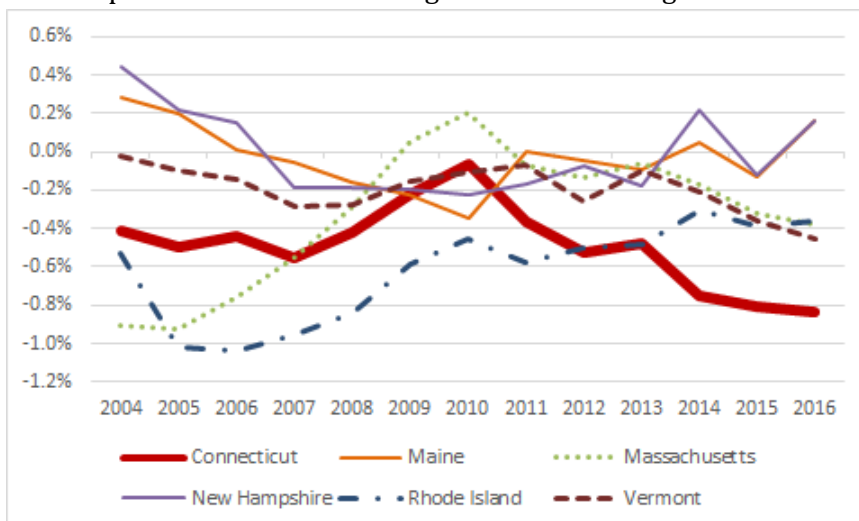


Putting it all together, the rate of domestic out-migration drives the net migration results. Although the graph looks dramatic, **it's important to notice the scale - the percent loss of the total population each year is less than one percent.**

Source: Census Population Estimates (downloaded from IHS)
 Note: rates each year calculated as a percent of total population

Given net domestic migration is a driver for how net migration overall performs, and the differences between Connecticut and New England and Neighboring States, we next analyze all the individual states in our region to better understand the similarities and differences in trends.

Graph 1.4-8 Net Domestic Migration for New England States

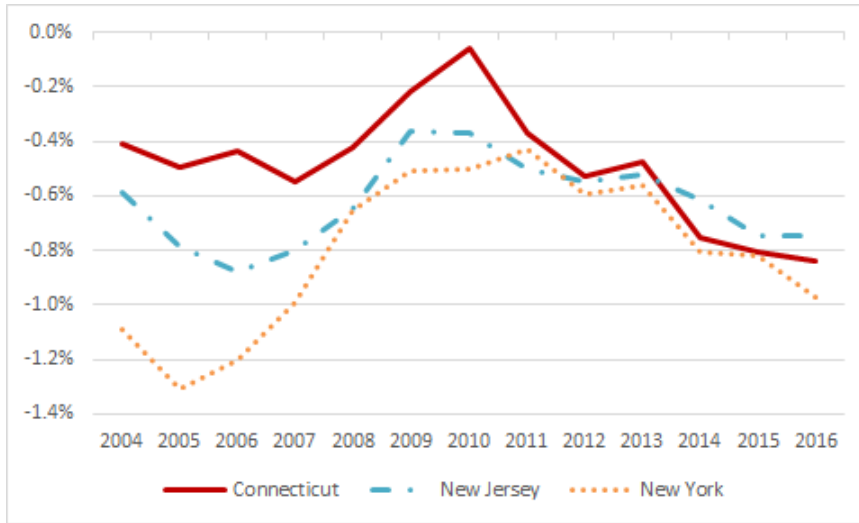


In New England, Maine and New Hampshire have returned to pre-recession levels of net domestic migration. Vermont is slightly lower than pre-recession.

Rhode Island and Massachusetts have markedly improved, in fact increasing from even the pre-recession period.

Source: Census Population Estimates (downloaded from IHS)
 Note: rates each year calculated as a percent of total population

Graph 1.4-9 Net Domestic Migration for Connecticut, New York, and New Jersey



Source: Census Population Estimates (downloaded from IHS)
 Note: rates each year calculated as a percent of total population

Throughout the period displayed, New York has had greater net domestic out-migration than Connecticut. Currently the rate of net domestic out-migration is similar for Connecticut and New York, pre-recession however New York was losing net domestic migrants at a significantly higher rate.

New Jersey has essentially returned to their pre-recession level, which is in-line with Connecticut’s current rate of net domestic out-migration.

In summary, births, deaths, and international migration trends are similar within the region. On domestic migration, however, many states have shown improvement compared to pre-recession, or at minimum returned to the same rate as pre-recession. Connecticut and Vermont are the two exceptions with increased rates of domestic out-migration. Connecticut’s net domestic out-migration is currently in line with New York and New Jersey. However, net domestic out-migration in Connecticut has nearly doubled from pre-recession rates.

Section 1.5 What the IRS data tells us (and what it cannot tell us)

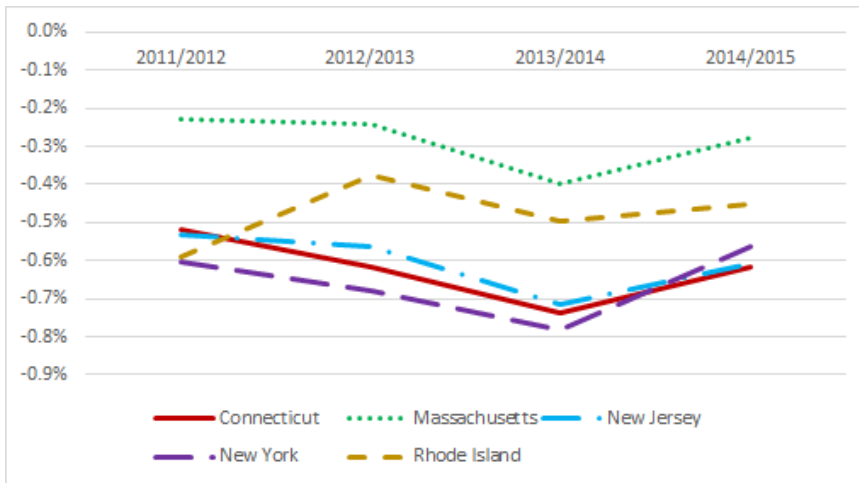
In this section we analyze IRS data on both returns (proxy for households) and exemptions (proxy for total people). However, there are a few caveats with these data (more technical details in Appendix A). The State-to-State files provide number of returns, number of exemptions, and total Adjusted Gross Income (AGI). It is often assumed, since the data are provided, that the amount of AGI leaving and coming into the state can be determined from these data. There are many flaws with that assumption:

- Most people cannot take their income with them - when people move due to change in employment generally their job (and associated wages) remain in the state and just the person moves.
- In cases when a business leaves, some income may transfer to others in the state - if a small business owner leaves, another small business owner may gain those customers keeping the income in the state.

It is possible some AGI leaves with the person leaving the state in cases where a person works from home, and continues working in that job remotely from their new place of residence. AGI would also leave the state in cases where an entire business, along with its employees, moves out of Connecticut. Finally, there

are some types of income that will leave with the person(s) leaving - social security, investment earnings, and pensions - but that cannot be estimated from the AGI provided in the IRS State-to-State In and Out Flows data.

Graph 1.5-1 Net Migration as a Percent of Total Returns, Neighboring States



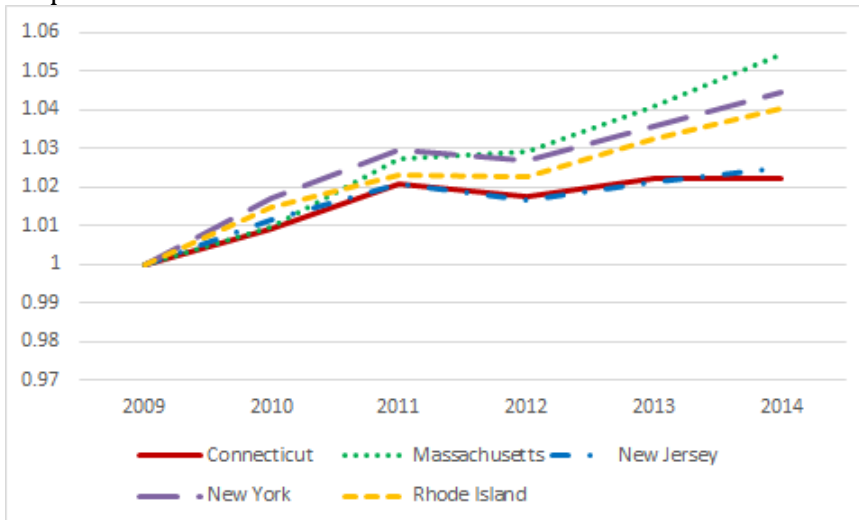
Source: IRS - State to State Migration files

Note: Only showing data post 2011/2012 files since methodology changed

IRS data show that the rate of out-migration (based on tax returns) is relatively constant for Connecticut. This finding is different from the results from Census PE data which shows increasing net domestic out-migration, especially since 2014.

Moreover, Connecticut's trends are similar to the trends in Neighboring States (Rhode Island does slightly differ). Also note, the net number leaving is a small percentage of all returns filed.

Graph 1.5-2 Total Returns Indexed to Number Filed in 2009



Source: IRS Historical tables

This graph starts with total returns filed by state in 2009 and looks at the growth over time in number of returns filed. 2009 was chosen because it was the year where the lowest number of returns were filed for each state; so in essence Graph 1.5-2 looks at the pace of recovery for each state (in terms of tax filers).

What is concerning for Connecticut is that the rate of growth in the number of returns filed in the state is one of the lowest.

Part I: Connecticut's Recent Population Declines and Migration Trends - Key Takeaways

In summary, there are numerous factors behind why Connecticut's population has fallen for the past three years. Declining births and increasing deaths have played a factor, a trend which is occurring throughout the region. But by far the biggest cause is an increase in the number of people leaving Connecticut for other states, an increase of 55% in the current period compared to the mid-2000's. International migration has helped boost population, as there has been about a 30% increase in the average number per year post-recession compared to pre-recession (going from about 13,000 people each year to 16,500 people each year). It is interesting to note, if births and deaths were currently closer to their mid-2000 averages, Connecticut's total population change would have been positive in 2014 and close to zero in 2015.

It is important to remember that in addition to Connecticut, many regions across the US tend to experience net domestic out-migration. The current rate of domestic out-migration from Connecticut is now similar to that of New Jersey and New York. However, Connecticut is dissimilar to New Jersey and New York in that New York's current rate of domestic out-migration is still less than it was pre-recession. And New Jersey's current rate of domestic out-migration has now simply returned to their rate pre-recession. Whereas in Connecticut, the rate of domestic out-migration is almost double of what it was pre-recession.

IRS tax return data show net out-migration each year since 2011, however the percent loss of total returns is fairly constant each year. This is different from what Census PE data shows (increasing domestic out-migration since 2014). However, our neighboring states of Massachusetts, New York, and Rhode Island are experiencing substantially more growth in total returns filed compared to Connecticut (and New Jersey).

Part II: Who is Migrating to and from Connecticut

Though domestic out-migration is increasing in Connecticut, even compared to our region, from the previous data we do not know who is out-migrating. Connecticut is an older state on average, is the out-migration mostly due to the elderly choosing to retire elsewhere? Or has there been an increase in out-migration of young people and/or working age people? Similarly, what are out-migration trends by education and by income. To answer these questions, we turn to the other data sources of migration.

A variety of public data sources provide disaggregated data on the various dimensions, as outlined in Table 2. All of the following data sources are analyzed in Part II of this report, except for Census ACS data of income, for which we instead focus on the administrative data available from the IRS and DRS.

Table 2: Dimensions of Migration by Data Source

Migration By:	Data Source:			
	Census PE	Census ACS	IRS	DRS
Age	X	X	X	-
Education	-	X	-	-
Income	-	X	X	X

Section 2.1 Migration by Educational Attainment

This section seeks to understand migration trends by educational attainment using Census ACS data. Given the volatility of the data, the following results depict the average of Census ACS data over a period of years (here pre-recession from 2004-2007 and post-recession from 2012-2015).

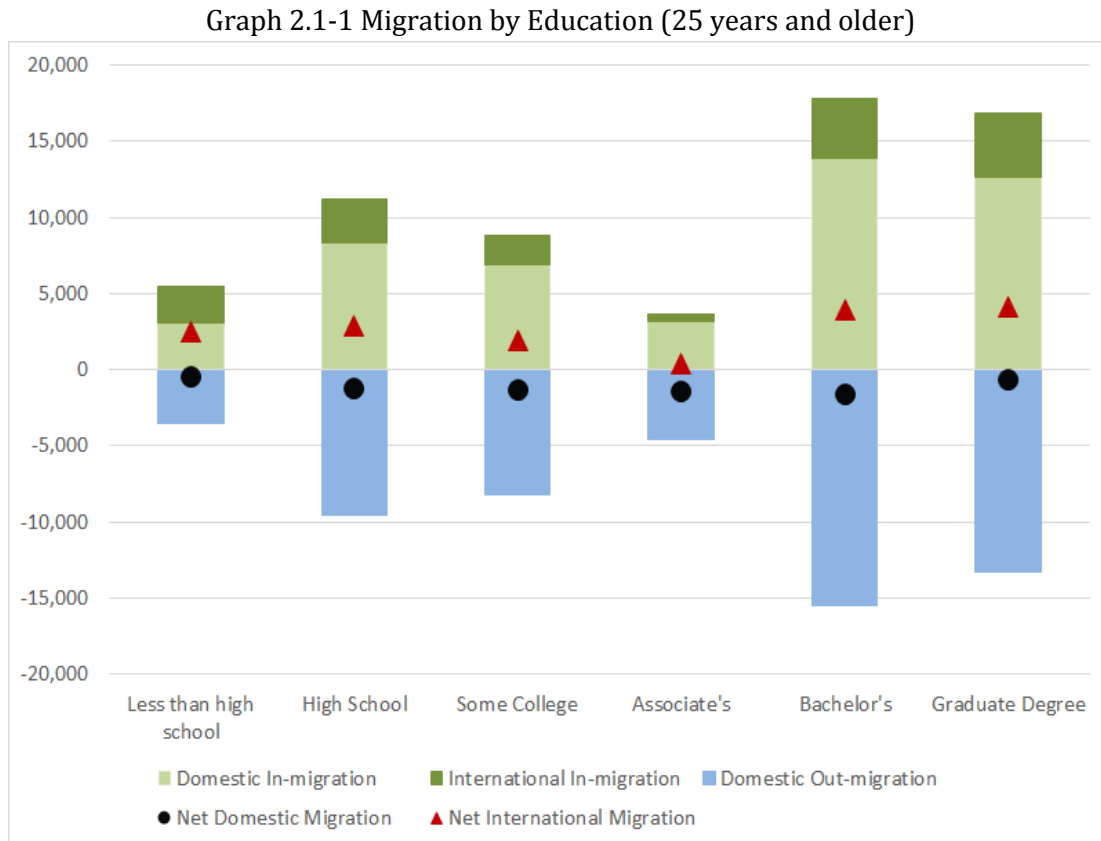
In particular, this section answers what is:

- 1) gross and net migration by educational attainment,
- 2) Connecticut's population and net migration by education, and
- 3) a comparison of pre- and post-recession migration by education.

Migration by Educational Attainment - Gross and Net Numbers

This figure shows that the flows are much larger than the net, i.e. the movement of people in and out of the state by all categories of educational attainment are much larger than the resulting net migration.

Though the size of the bars (the flow of people) is different by educational category, note that domestic net migration is essentially the same for each educational attainment level.



Source: Census ACS

Note: Date represents average over 2012-2015

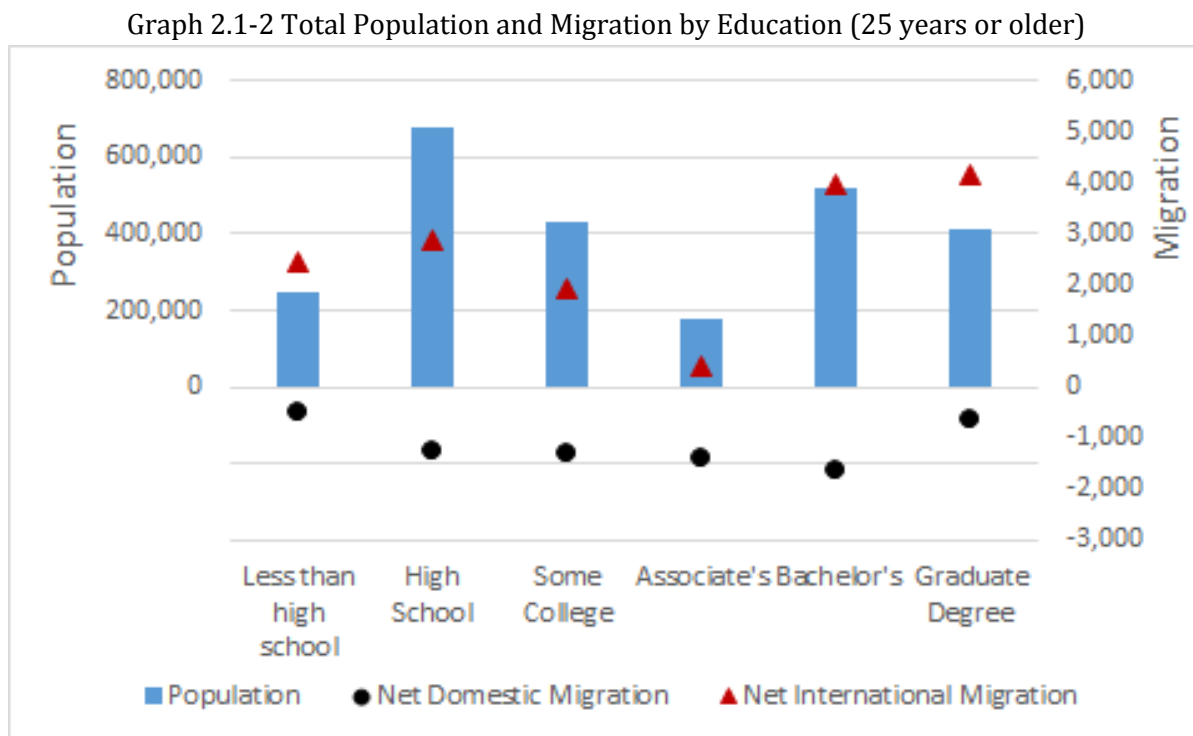
The near equal flows by educational attainment can be understood in that if someone moves for another job, the person filling that position most likely has a similar educational background - resulting in net migration close to zero.

Migration by Educational Attainment - Compared to Population

If a cohort is large, one would expect a larger number of flows in and out. The next graph compares the size of each cohort (Connecticut's population by education) to net domestic and international migration by education.

This graph shows, by educational attainment, Connecticut's population (left axis) and net domestic/international migration (right axis). Over 930,000 (38%) of Connecticut residents 25 years or older hold a bachelor's degree or higher, and over 678,000 (27%) of residents hold a high school degree.

Compared to Connecticut's population distribution by education, international migration pulls in most people at either the highest (graduate degree) or lowest (less than high school) education levels. These data are displayed as triangles on the chart.



Source: Census ACS

Note: Population and migration averaged over 2012-2015, then the percent of total calculated

Again, based on numbers of migrants, Connecticut's net domestic (out) migration is essentially the same by educational attainment level. Compared to the size of its population, Connecticut loses the smallest share of graduate degree holders and the most of associate degree holders (also see Graph 2.1-3).

Migration by Educational Attainment - Proportion of the Population, Pre- and Post-Recession

Finally, this section compares post-recession migration by educational attainment to pre-recession in proportion to the overall population. The most educated tend to migrate (in and out) at a higher rate than the rest of the population. However, the flows in and out are largely equal.

As a result, again we see net domestic (out) migration is essentially equal across educational groups at about -0.2% to -0.3%. The exception is those holding an associate’s degree, which have a higher rate of net domestic out-migration of -0.8% (over 2012-2015).

Graph 2.1-3: Migration by Education (25 years or older) – Proportion of Population, Pre- and Post-Recession



Source: Census ACS

Note: Date represents average over pre-recession (2004-2007) and post-recession (2012-2015) years, then the percent of the total for each category was calculated.

For bachelor’s degree holders, compared to the pre-recession period, there has been a slight increase in domestic out-migration and a slight decrease in domestic in-migration, resulting in an increase in negative or net domestic out migration of bachelor degree holders.

There is also a slight increase in the net domestic out-migration of those holding an associate’s degree or less than high school.

Compared to pre-recession, there has been a slight decrease in the rate of domestic out-migration of high school, some college, and graduate degree holders. In fact, post-recession Connecticut loses the smallest share on net of graduate degree holders.

Section 2.1 Migration by Educational Attainment - Key Takeaways

In summary, data on migration by educational attainment show that in terms of gross numbers, Connecticut loses a near equal number of people by all categories of education. Compared to the size of Connecticut's population by each educational category, however, Connecticut loses the most associate degree holders and the smallest share of graduate degree holders. Trends post-recession compared to pre-recession show Connecticut is now losing a greater share of bachelor degree and associate degree holders, as well as those with less than a high school education. On the other hand, Connecticut is losing less graduate degree holders post-recession compared to pre-recession.

Section 2.2 Migration by Age

This section seeks to understand migration trends by age using Census ACS and IRS data, in particular:

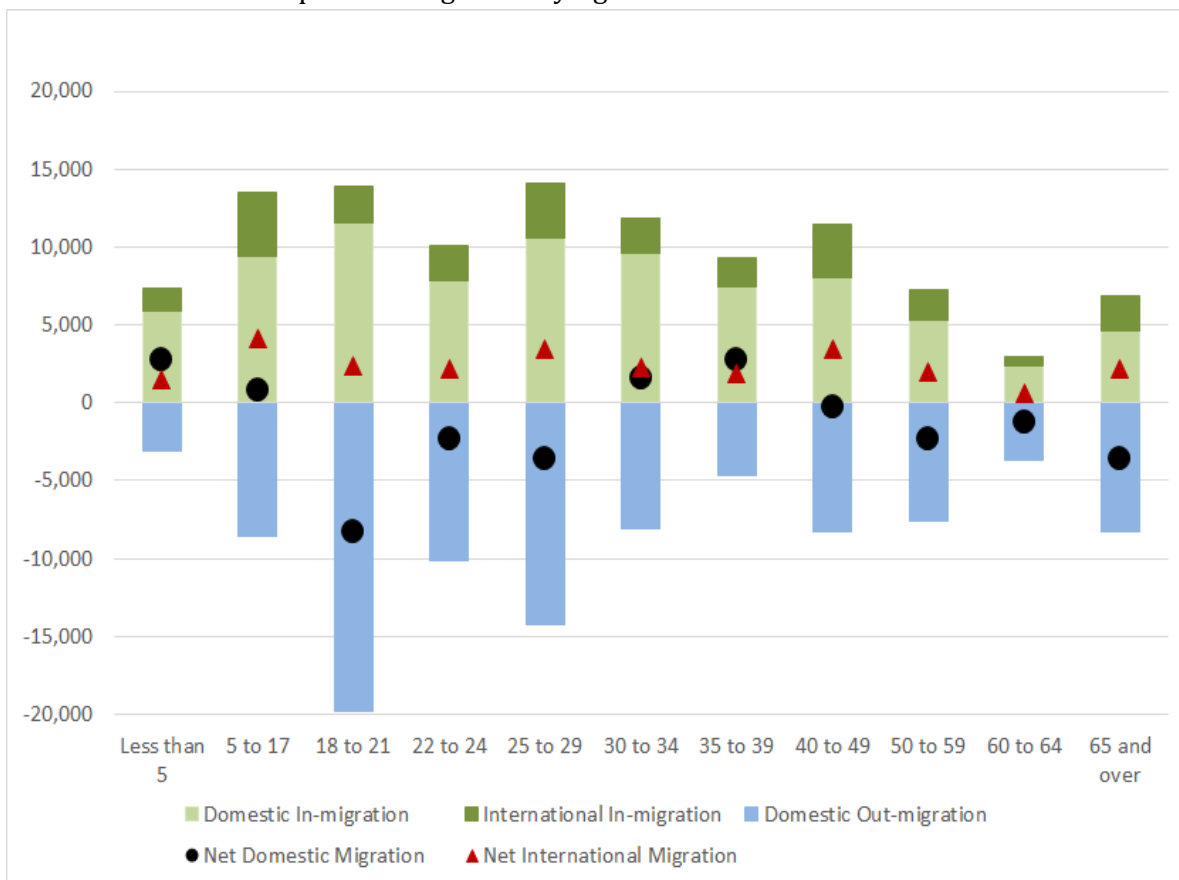
- 1) gross and net migration by age, and
- 2) a comparison of pre- and post-recession migration by age.

Migration by Age - Census ACS results

The below graph again shows that the flows are much larger than the net, i.e. the movement of people in and out of the state by all categories of age are much larger than the resulting net migration.

Post-recession Connecticut gained net in-migrants for ages 30 to 49 year olds and children, ages 0 to 17.

Graph 2.2-1 Migration by Age - Gross and Net Numbers



Source: Census ACS

Note: Date represents average over 2012-2015

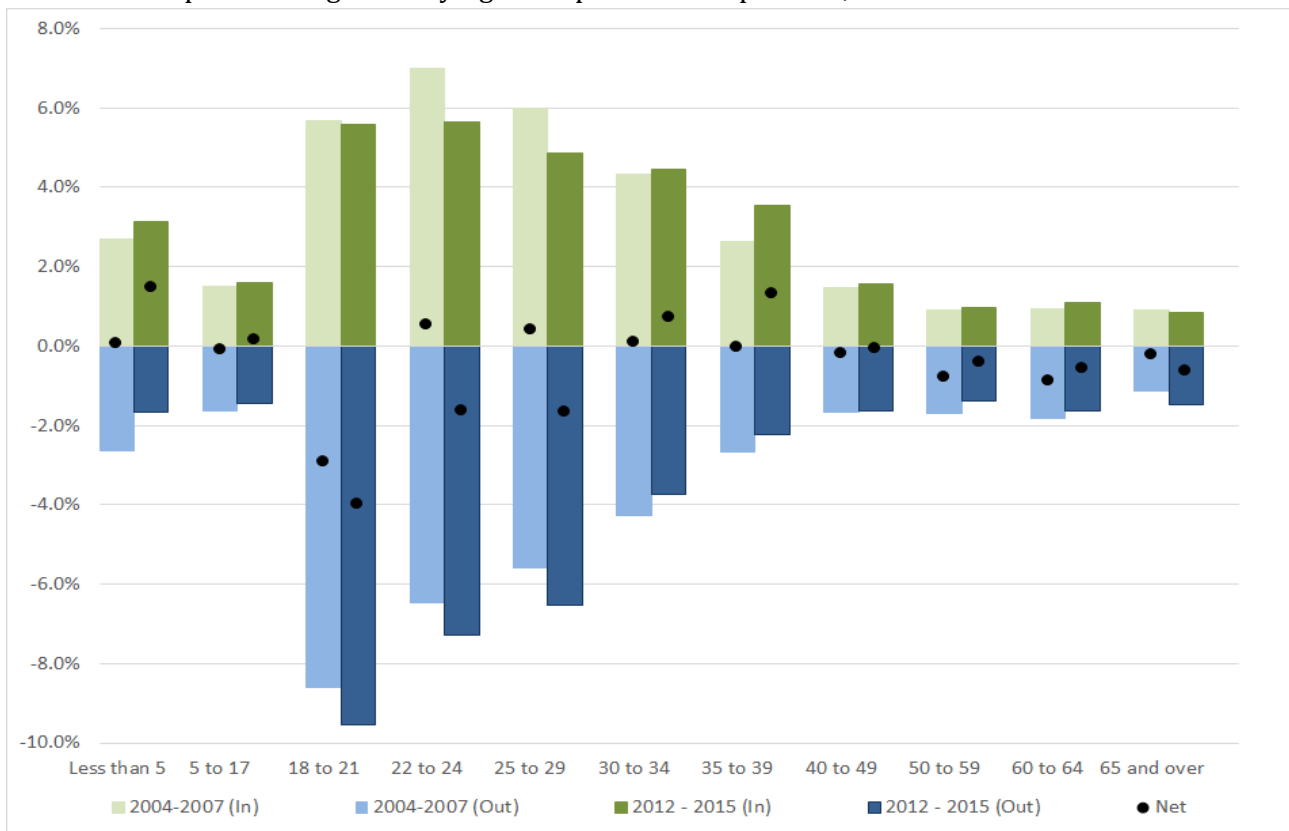
The largest total number of net domestic out-migrants by age include:

- 18 to 21 year olds with a net outflow of over 8,000, which is at least double compared to any other age category. Note, however, the in- and out-migration flows for this group is also the largest. Migration within this age group may potentially be related to college attendance.
- Connecticut also loses 22-29 years olds on net to domestic migration.
- Finally, CT loses people of retirement age, those aged 65 and over. This is likely due to people choosing to retire elsewhere.

When looking at the migration flows by age (equalized as a percent of the total population in that age category), it is apparent that as a group, younger people tend to move at a higher rate than the rest of the population. This trend held pre-recession and continues to hold post-recession.

Moreover, as a proportion of the population, Connecticut loses the most on net to domestic migration within the 18-21 year age group. Pre-recession Connecticut lost on average 3% of all 18-21 year olds in the state each year, post-recession that figure has increased to an average of 4% each year.

Graph 2.2-2 Migration by Age - Proportion of Population, Pre- and Post-Recession



Source: Census ACS

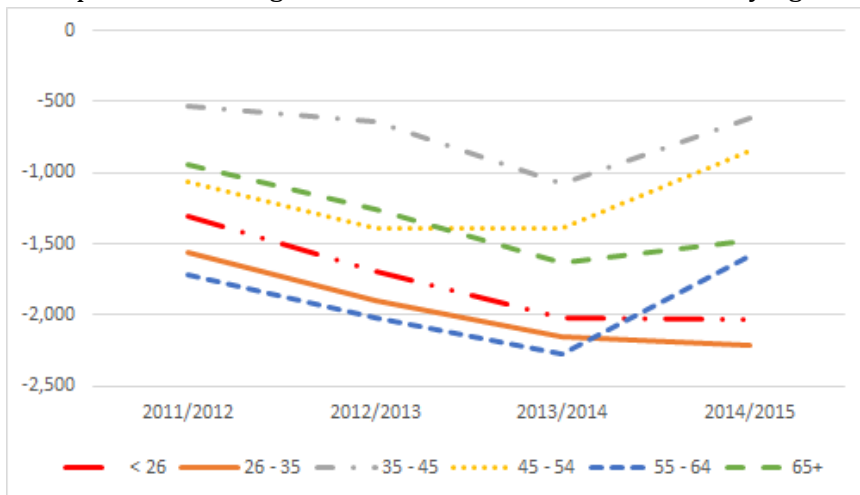
Note: Data represents average over pre-recession (2004-2007) and post-recession (2012-2015) years, then the percent of the total for each category was calculated.

Similarly, the number of domestic out-migrants in the 22-29 year old age group has increased compared to pre-recession levels, as has the rate of out-migrants of retirement age.

On the other hand, for 30-64 year olds the flows of domestic in-migration has increased and the flows of domestic out-migration has decreased post-recession, compared to pre-recession. This change is most apparent for 35 to 39 year olds (and the less than 5 age cohort may follow as a result).

Migration by Age - IRS results

Graph 2.2-3 Net Migration as a Percent of Total Returns by Age



Source: IRS - Gross Migration files

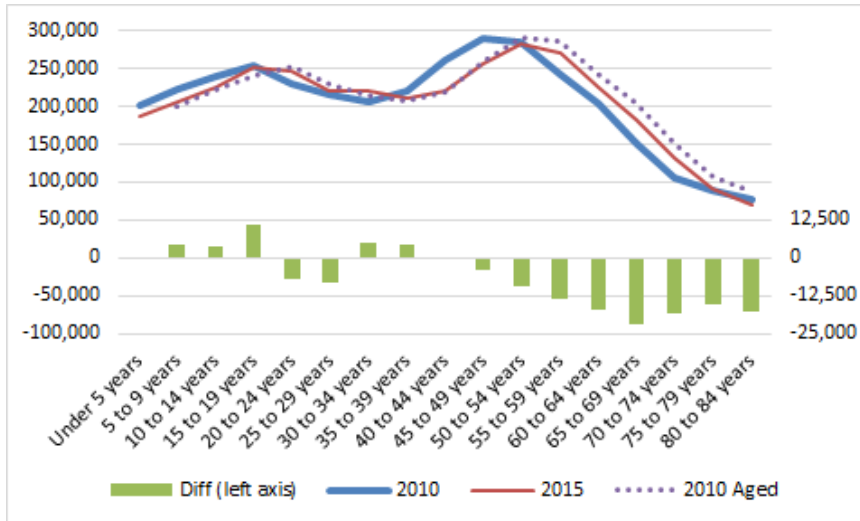
The IRS reports the age of the primary filer, which would be an accurate reflection for single returns, but not for head of household or joint returns. Therefore, given limitations in the IRS data of only representing a subset of the population, it is difficult to understand overall migration trends by age from this data.

For illustrative purposes, however, in terms of percent of households (returns) leaving by age of the primary filer, over the past four years Connecticut has lost a higher percentage of younger households, less than 34 years of age, as well as ages 55 to 64. Confirming the analysis done above using Census ACS data, according to the IRS data Connecticut loses the lowest rate of 35 to 54 year old primary filers.

Migration by Age - Census PE results

The Census PE program does not provide migration data by age, however it does provide population stock in five-year age groups. Graph 2.2-4 uses this data to infer migration by age. In this graph, the starting population for each age cohort is shown in blue, the population for each cohort five years later is shown in red. This is data directly out of the Census PE program. The dotted line shows what Connecticut’s population would have looked like five years later if everyone who was here before (blue line) stayed in Connecticut and simply aged five years. The green bars at the bottom show the difference between the actual data (red line) and the aged data (dotted line). In summary, if the green bar is above zero we can infer in-migration, and if the green bar is negative than we can infer out-migration of that age cohort.

Graph 2.2-4 Inferred Migration by Age, 2010 Aged versus 2015



Using Census PE data to infer migration by age shows similar results to migration by age using IRS or Census ACS data - namely there is positive in-migration of those aged 30 or more, and in the lowest age brackets which could be reflective of children migrating in with their parents. Conversely, Connecticut loses a higher share of people in their 20's and those of retirement age.

Source: Census PE

Annual Estimates of the Resident Population for Selected Age Groups by Sex for the United States, States, Counties and Puerto Rico Commonwealth and Municipios: April 1, 2010 to July 1, 2015. Release Date: June 2016

Additional analysis using this method is provided in Appendix B.

Section 2.2 Migration by Age - Key Takeaways

In summary, data on migration by age show that younger cohorts move at a higher rate than the rest of the population. Regardless of the large flows, on net Connecticut loses the most in the 18-21 year old age group - both in total numbers as well as a proportion of this age group's total population in Connecticut. On the other hand, on net Connecticut gains the most in the 30-39 year old age groups, and presumably their children ages 0 to 17.

Post-recession, Connecticut is losing on net a higher number of 22-29 year olds and those aged 65 or more compared to pre-recession. Conversely, post-recession Connecticut is gaining on net a higher number of domestic in-migrants aged 30-64 years, especially those aged 30 to 49, and presumably their children ages 0 to 17. IRS data confirms that Connecticut loses a larger percentage of younger filers (less than 34) but a lower percentage of filers between ages 35 and 54, with similar findings from Census PE data.

Section 2.3 Migration by Income

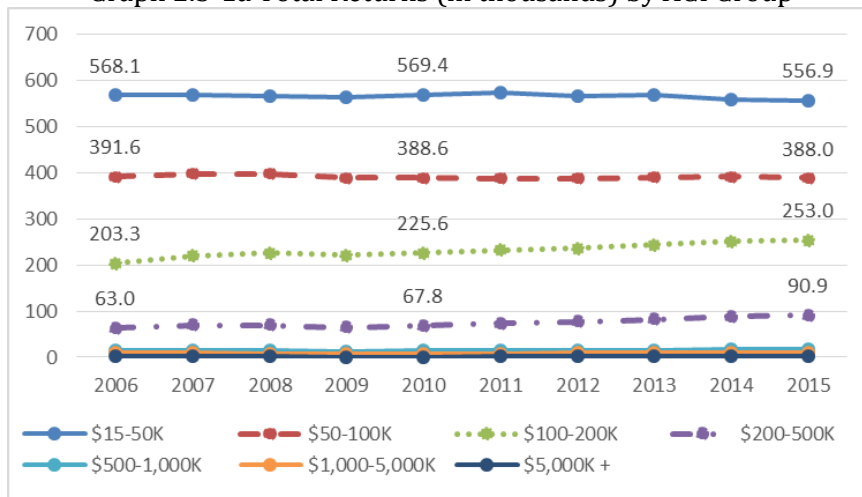
This section seeks to understand migration trends by income using Connecticut DRS data (state tax returns) and IRS data (federal tax returns). In particular this section analyzes:

- 1) the total returns and share of returns by AGI groups, and how have those numbers changed over time,
- 2) the rate of migration in and out of Connecticut by AGI (DRS data),
- 3) migration flows and net by AGI (IRS data),
- 4) change in net returns by age for those earning \$200,000 and above, and
- 5) “churn” or rate at which filer’s incomes rise and fall by AGI levels.

Connecticut Department of Revenue Services (DRS) Data

The following graphs track the total number of filers, associated AGI, and Connecticut’s out-migration and in-migration trends over time using Connecticut DRS data. As previously discussed, a weakness with this data is that tax returns are tracked by the primary filer only. Moreover, if a filer stops filing Connecticut returns we are unable to tell why - if the filer left Connecticut, passed away, or stopped filing for some other reason. Because these weaknesses are consistent over the time period analyzed, DRS data remains useful for understanding trends in migration by income.

Graph 2.3-1a Total Returns (in thousands) by AGI Group

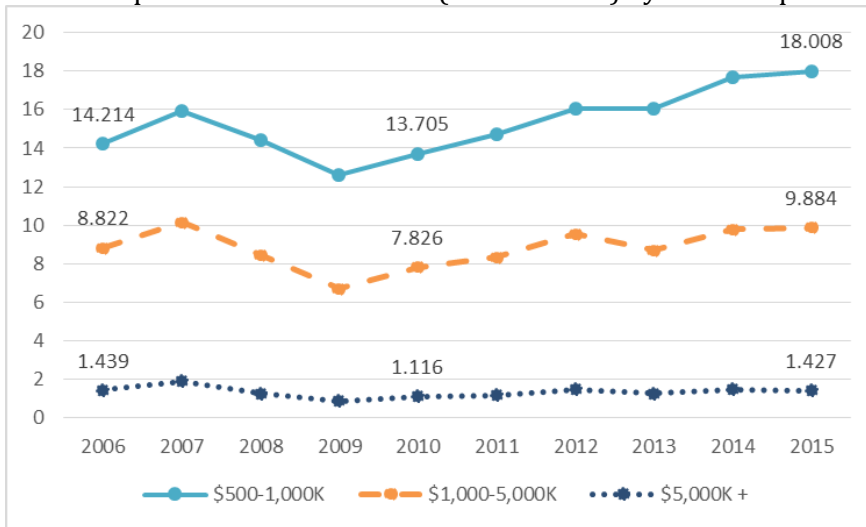


Source: CT DRS

Graph 2.3-1a shows the number of tax returns filed each year in Connecticut by AGI groups. This data excludes filers below \$15,000 in AGI.

The largest group of filers by far are those between \$15,000 and \$50,000 in AGI, at over 550,000 filers. The next highest AGI group (\$50,000 to \$100,000) makes up the next largest group of filers (about 388,000) and so on.

Graph 2.3-1b Total Returns (in thousands) by AGI Group



Source: CT DRS

Graph 2.3-1b expands on Graph 2.3-1a by showing total number of returns filed for those with AGI of \$500,000 or more.

Table 2.3-1, below, shows how the number of filers within each AGI group changed over the entire history of DRS data (2006 to 2015) and over the post-recession period (2010 to 2015).

Table 2.3-1 Growth in Filers by AGI Group

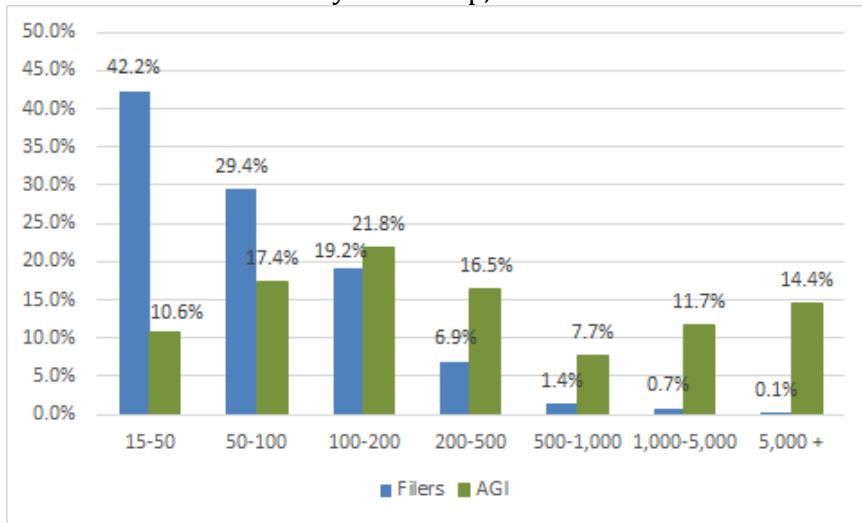
	Growth	
	2006-2015	2010-2015
\$15,000-\$50,000	-2.0%	-2.2%
\$50,000-\$100,000	-0.9%	-0.2%
\$100,000-\$200,000	24.4%	12.1%
\$200,000-\$500,000	44.2%	33.9%
\$500,000-\$1,000,000	26.7%	31.4%
\$1,000,000-\$5,000,000	12.0%	26.3%
\$5,000,000 or more	-0.8%	27.9%

Source: CT DRS

According to Table 2.3-1, the lowest AGI categories declined while the other income groups increased. The highest income category, \$5 million or more, has returned to the levels seen before the recession, but grew by 27.9% in the post-recession period.

It is important to note the change in filers over time is driven by a combination of migration flows in and out, but also by growth in Connecticut resident's income and the general aging of youth into adulthood (and into filing of taxes).

Graph 2.3-2 Connecticut Filers and AGI as Percent of Total, by AGI Group, 2015

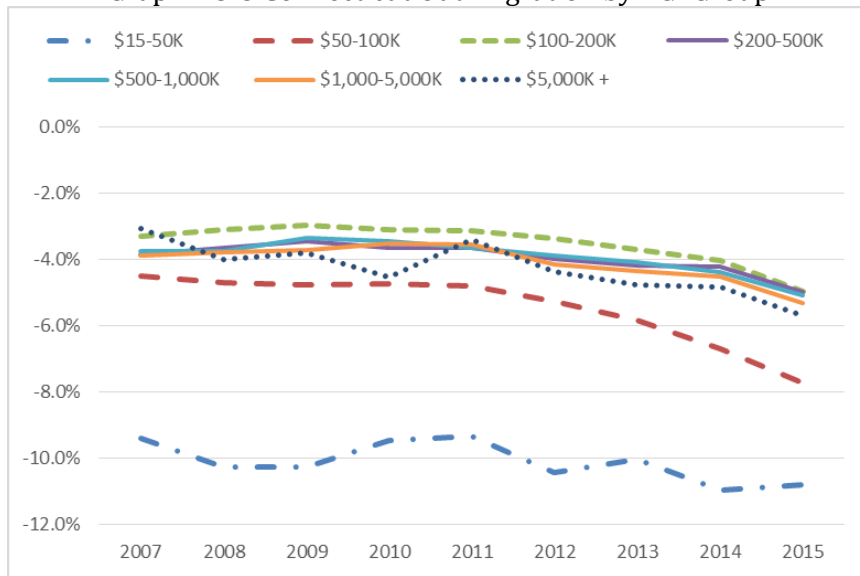


Source: CT DRS

Note: Data on DRS for those with AGI of \$15,000 or less was excluded from this analysis, to assist with data retrieval and processing speed.

Graph 2.3-2 shows the distribution of filers and total AGI by income group. The lowest income group, those with AGI of between \$15,000 and \$50,000, accounted for 42.2% of filers in 2015 but 10.6% of all AGI reported in the state. On the other end, filers with AGI of \$5,000,000 or more accounted for 0.1% of filers in 2015 but 14.4% of AGI in the state.

Graph 2.3-3 Connecticut Out-Migration by AGI Group



Source: Connecticut Department of Revenue Services

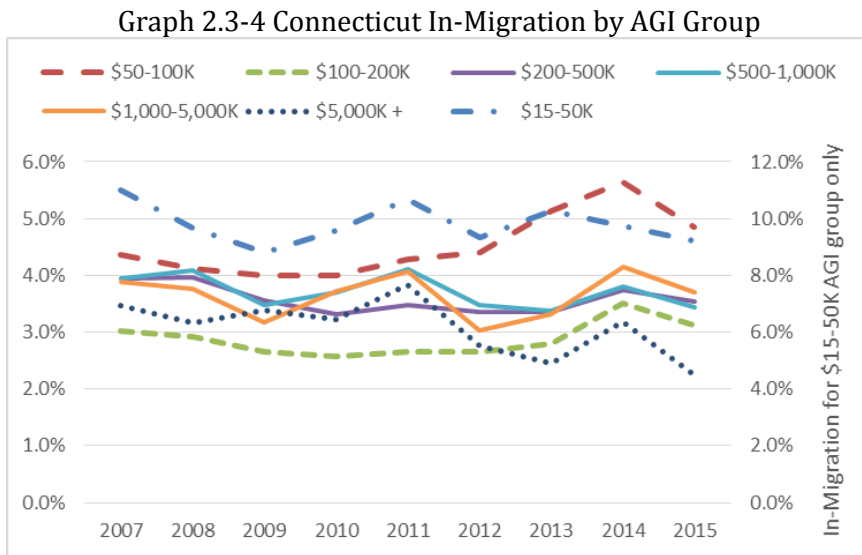
Note: Out-migration rate for each year calculated as percent of filers no longer filing resident returns, compared to the prior year.

From Graph 2.3-3 it is immediately clear that the lower income tend to out-migrate at a greater rate than the higher income. Out-migration rates for filers with AGI of \$15,000-\$50,000 are close to -10%, the next highest group with AGI of \$50,000-\$100,000 out-migrated at a rate of -4.5% in 2007, up to almost -8% by 2015.

The remaining AGI groups are clustered together between -3.5% to -4.0% in 2007. We see the general slowing in overall migration during the recession years, and then a gradual increase in out-migration for all AGI groups, especially in 2015.

Out-migration rates for the highest income group, those with AGI of \$5,000,000 or more, is more volatile than the other AGI groups, but displays a similar downward trend or increase in out-migration.

Some portion of out-migration for the lowest income group (those with AGI between \$15,000 to \$50,000 AGI) may not be related to actual out-migration but instead falling incomes, removing the need to file tax returns. Given this analysis is based on whether a tax return is filed or not, such individuals would be counted as out-migrants.



Graph 2.3-4 uses DRS data to track in-migration rates by AGI, to understand if there has been a slowing of entrants to our state. (Note: to aid with the visual display, the \$15,000-\$50,000 AGI group was plotted against the right axis.)

Source: Connecticut Department of Revenue Services

Note: In-migration rate for each year calculated as percent of filers that did file a resident return in the prior year.

In-migration by income is more volatile but generally has remained relatively steady over the time period analyzed. Though, there is an uptick in in-migration for AGI groups \$50,000-\$100,000 and \$100,000-\$200,000. There is also a downward trend in in-migration for those with AGI of \$5,000,000 or more.

Though not related to migration, DRS data provides how filer's AGI compares in prior and subsequent years. In essence, it provides on a yearly basis how many filer's income increased into a particular AGI group and how many filer's income decreased pushing them into a lower AGI group. Table 2.3-2 displays the results.

	<u>Gained into</u>	<u>Lost from</u>
	<u>AGI Group</u>	
\$15,000-\$50,000	12.2%	8.5%
\$50,000-\$100,000	15.6%	10.7%
\$100,000-\$200,000	18.6%	13.0%
\$200,000-\$500,000	24.3%	17.0%
\$500,000-\$1,000,000	34.0%	25.9%
\$1,000,000-\$5,000,000	31.4%	26.4%
\$5,000,000 or more	38.5%	34.3%

Source: CT DRS
Note: Average of 2010 through 2015

Note the high level of "churn" or movement of filers into and out of AGI groups, especially at higher income levels (almost 40% grow into the \$5,000,000 and above AGI group, and almost 35% fall out of the same AGI group). Moreover, note across the AGI groups more filers tend to grow into higher AGI groups than fall out.

Internal Revenue Service (IRS) Data

Again we can see from Graph 2.3-5 that the flow of returns (households) in and out of the state is larger than the resulting net migration of returns.

Graph 2.3-5 In, Out, and Net Migration of Returns by Income



Confirming the in and out-migration flows noted from DRS data, the largest movement of households occurs for AGI of less than \$50,000. From 2011 to 2014, over 100,000 returns flowed out while about 84,000 flowed in within this AGI group, resulting in a net of about -17,000. The flows for the other AGI groups is much smaller, and correspondingly net migration for those with AGI of greater than \$50,000 totals a net loss of approximately 18,000 returns (see Table 2.3-3 below).

Source: IRS - Gross Migration files

Note: Sum of total returns flowing into and out of Connecticut, 2011-2014.

Table 2.3-3 In, Out, and Net Returns by Income

Income (AGI)	In	Out	Net
\$1 to 50K	83,687	(100,635)	(16,957)
\$50-\$100K	31,109	(40,235)	(9,126)
\$100-\$200K	15,286	(21,384)	(6,098)
\$200K+	9,827	(12,954)	(3,127)

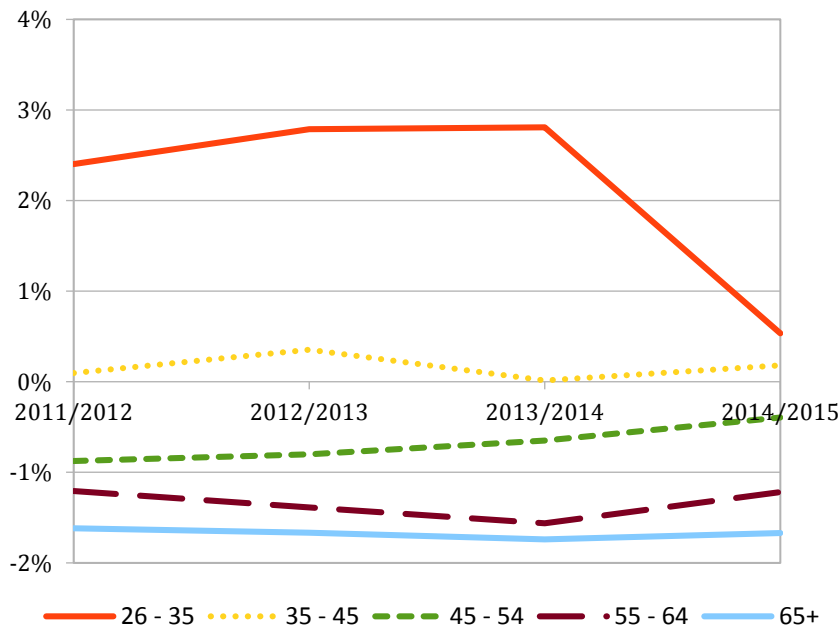
Source: IRS - Gross Migration files

Note: Sum of total returns flowing into and out of Connecticut, 2011-2014.

Table 2.3-3 provides the numbers that support the flows and net displayed in Graph 2.3-5.

Although not shown in the table or graph, these data can be disaggregated by age and income. When looking at the disaggregated data by age, approximately 40% of the flows (both in and out from 2011-2014) for AGI less than \$50,000 are for filers less than 35 years of age and another 20% are for filers over the age of 65.

Graph 2.3-6 Net Migration as Percent of Total Returns by Income (\$200,000 or more) and Age



Source: IRS - Gross Migration files

Looking at disaggregated data for higher income filers by age, Graph 2.3-6 shows there has been a positive net migration gain in households (returns) earning more than \$200,000 for ages 26 to 45 over the past four years; with the total number of returns growing each year.

The total number of returns reporting income of \$200,000 or more increased from 97,039 in 2011/12 to 115,040 in 2014/15.

Though it appears there was a dramatic decrease (though still positive) for the in-migration rate of 26-35 year olds in 2014/2015, it only went from 119 to 24 net returns, respectively. However, there is a net outflow of returns for ages over 45.

DRS data show that since 2010, high-income filers have grown in the state while low-income filers have fallen (Graphs 2.3-1a and b). DRS data also show increased out-migration and decreased in-migration of the highest income group, those with AGI of \$5,000,000 or more. These opposing results can be explained by considering the number of high-income filers in a state is not only dependent on the in and out-migration of these individuals, but also how many and by how much current residents' incomes grow. Moreover, as noted in Table 2.3-2 above, there is a lot of "churn" in income which affects the number of filers within an AGI group, especially at the highest income levels.

To better understand growth in high-income filers, Table 2.3-4 compares Connecticut to its neighbors on growth in returns at the highest income levels (growth from 2011 to 2014 using IRS data). Like DRS data, IRS data show growth in the number of high-income returns filed in Connecticut.

Table 2.3-4 Growth in Total Returns Filed for Specific AGI, 2011-2014

	AGI of \$200,000 to \$500,000	AGI of \$500,000 to \$1,000,000	AGI of \$1,000,000 or more
Connecticut	21%	18%	15%
Massachusetts	31%	34%	33%
New Jersey	23%	27%	26%
New York	26%	25%	24%
Rhode Island	29%	27%	31%
United States	32%	34%	35%

Source: IRS Historical tables

Regardless of this growth, Table 2.3-4 shows Connecticut lags its neighbors in overall growth of high-income filers. However, despite the slow growth, Connecticut has maintained a large share of high income filers in terms of the national total, as displayed in Table 2.3-5.

Table 2.3-5 National Share of Filers, 2014

	Total Filers	Filers with AGI of \$1,000,000 or more
Connecticut	1%	3%
Massachusetts	2%	4%
New Jersey	3%	4%
New York	6%	12%
Rhode Island	0.4%	0.2%

Source: IRS Historical tables

Section 2.3 Migration by Income – Key Takeaways

In summary, DRS data show the lowest income make up the largest share of Connecticut’s taxpayers, but over time the number of filers with AGI between \$15,000-\$50,000 has fallen the most, by 2.2% since 2010. Comparatively, the number of filers with AGI above \$200,000 has grown in the state.

DRS data also show the lower-income tend to out-migrate from Connecticut at greater rates than the high-income, data which is confirmed by IRS data. However, since 2007 there has been an increase of filers out-migrating from Connecticut across all income groups, most noticeably those earning between \$50,000-\$100,000 and those earning \$5,000,000 and above. In addition, since 2007 there has been an increase in in-migration rates for those earning between \$50,000-\$200,000 but a decline in those earning \$5,000,000 and above.

Finally, DRS data also provides information on how filers AGI shifts year to year. The data shows there is a lot of “churn” of filers between AGI groups, most notably for the highest income earners - almost 40% grow into the \$5,000,000 and above AGI group, and almost 35% fall out of the same AGI group annually.

As the data on “churn” of income suggests, the number of high-income filers in a state is not only dependent on the in and out-migration of these individuals, but also on how many and by how much residents’ incomes grow. IRS data show that regardless of the various ebbs and flows documented by DRS data, Connecticut lags behind its neighbors in overall growth of high-income filers. Despite the slow growth, however, Connecticut has maintained a large share of high income filers in terms of the national total.

Confirming the migration by age results, IRS data also find positive in-migration of returns for those aged 26-45 with AGI of \$200,000 and above.

Conclusion and Future Research

This report examined overall statewide trends in population and migration. Areas for future research could include understanding regional differences in population and migration patterns, specifically between counties and towns. Another critical area of research is trying to understand the more fundamental question of why people are moving out of Connecticut on net: is it related to changing living preferences, job opportunities, family choices, the policy making process, or perhaps the fiscal uncertainty in the state. Moreover, how have these factors affected businesses and the decisions they make on opening or expanding in the state versus elsewhere. Resources permitting a deeper look into Connecticut’s labor market, specifically focusing on Job-to-Job flows and Business Employment Dynamics data, would be useful to understanding the interplay between migration and employment.

Appendix A: Data Sources and Migration Concepts

The following four different datasets were used to analyze population and migration trends: Census Population Estimates (PE), Census American Community Survey (ACS), Internal Revenue Service (IRS) data, and CT Department of Revenue Services (DRS) data. Table A.1 summarizes the various data sources used in this report along with the methodology behind data production, and the strengths/weaknesses associated with each source.

Table A.1 Data Sources

	<u>Census PE</u>	<u>Census ACS (1 year estimates)</u>	<u>IRS</u>
Methodology	PE is based on the decennial census, which is then forecast forward based on the number of births and deaths within a state, along with an estimate of domestic and international migration. Census retrieves births and deaths data from administrative data, whereas migration is estimated. Each year Census puts out new PE data not only for the current year but an update for all prior years up to the last decennial census.	ACS is a survey of about 1% of the population per year, so about 36,000 in CT. Additional details available on Census: https://www.census.gov/programs-surveys/acs/methodology.html	Two datasets used for this analysis: the Gross Migration Files and the State-to-State Migration Out and Inflow Files. <u>Changes to methodology:</u> Beginning with the 2011-2012 file, the migration data will be based on individual income tax returns filed and received by the IRS from January 1 to December 31. Previous versions of migration data were based on individual income tax returns the IRS received through late September. Due to this change in methodology, we do not compare the data prior to 2011/2012 on the same graph as it is not comparable. It is important to note that many high-wealth individuals file extensions and their final return by October.

	<u>Census PE</u>	<u>Census ACS</u>	<u>IRS</u>
Caveats	Does not include out-migration to other countries in its net international migration figure.	The ACS provides in-migration to Connecticut (or any state for that matter) from other states, from territories, and from abroad. The ACS survey is not conducted in U.S. territories (or abroad), so out-migration to U.S. territories and abroad is not available.	Data do not represent the full U.S. population because many individuals are not required to file an individual income tax return. (data under-represent the poor and the elderly)
Strengths		The benefit of the ACS is that many detailed questions are asked. This allows us to take a deeper dive into the data – such as on educational attainment, income, and age.	
Weaknesses	Census PE only provides data on births, deaths, net domestic migration, net international migration, and population by age. Census PE does not provide data the migration flows (in or out), nor detailed data by education or income.	Given it is a survey, there are margins of error associated with the data. Graph A.1 shows how volatile Census ACS is compared to Census PE data. Given the volatility in the data it's helpful to look at longer term trends in the ACS rather than concentrating on the results for one single year.	The 'Gross Migration Files' do not include returns that have a negative AGI. Because these returns are omitted, the state totals do not match the inflow and outflow totals in the state-to-state files. It is advised that the Gross Migration Files are only used for examining age and income migration flows and the state-to-state files are used for reporting overall migration patterns of tax filers.

Finally, **Connecticut Department of Revenue Services (DRS)** houses tax return data in Connecticut at the filer level. DRS is able to track filers over time by Connecticut Adjusted Gross Income (AGI). DRS data is based on identifying information for the primary filer; the data does not track secondary filers on returns. A weakness with this data source is in instances when two single filers get married and file a joint return, since it will appear the secondary filer is no longer filing taxes in Connecticut (out-migration). Conversely, when a couple gets divorced and moves from filing joint returns to single returns, it will appear as though Connecticut gained the secondary filer (in-migration). Finally, we are unable to tell if an individual ceased filing tax returns in Connecticut because they moved out of state, passed away, or for some other reasons.

Important Additional Information about IRS Data

There are two datasets from the IRS that were used for this report. The datasets include: the Gross Migration Files and the State-to-State Migration Out and Inflow Files.

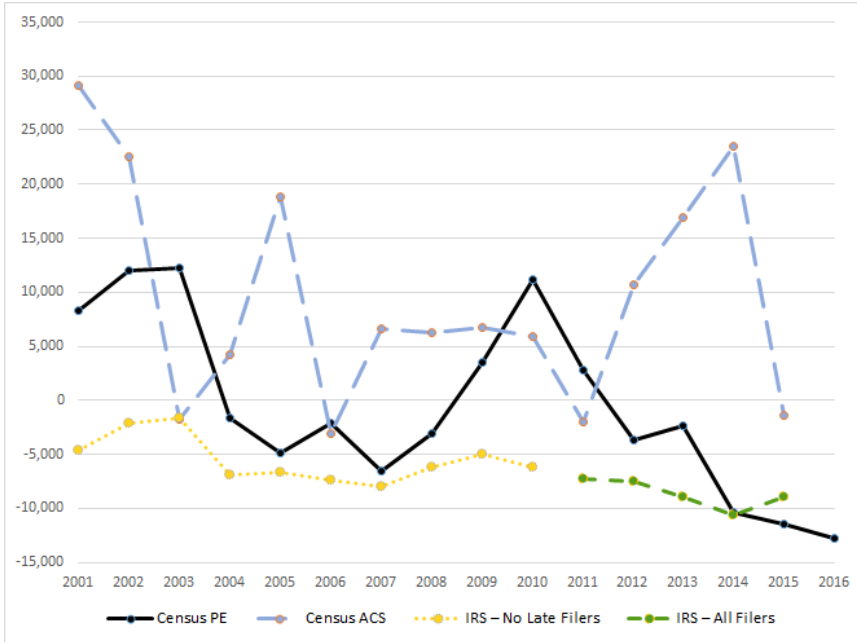
The 'Gross Migration Files' do not include returns that have a negative AGI. Because these returns are omitted, the state totals do not match the inflow and outflow totals in the state-to-state files. It is advised that the Gross Migration Files are only used for examining age and income migration flows and the state-to-state files are used for reporting overall migration patterns of tax filers.

How the migration patterns are computed.

- Non-migrant returns – these are individual returns where the state and county in year 1 matches the state and county in year 2. A non-migrant return does not necessarily mean that a taxpayer did not move. If a taxpayer moved, but stayed in the same county and state, they would be considered a non-migrant.
- Migrant return, different state – these are individual returns where the state and county in one year does not match the state and county in another year.
- Migrant return, foreign – these are individual returns where the mailing address is in the United States in one year and foreign (APO/FPO, Puerto Rico, U.S. Virgin Islands, overseas, or other) in another year.
- Migration data are based on the population of Forms 1040 that were filed and processed by the IRS during calendar years identified in the charts. For example, when the years 2011/2012 are displayed on a chart, it represents the bulk of returns the IRS received in 2012 represent income that was earned in 2011 and the migration data correspond to returns filed for Tax Year 2011
- Returns represent the household whereas exemptions are the number of people claimed on the form.
- Data **do not represent the full U.S. population** because many individuals are not required to file an individual income tax return. Those who are not required to file United States Federal income tax returns are not included in this file, and so the data under-represent the poor and the elderly.
- Beginning with the 2011-2012 file, the migration data will be based on individual income tax returns filed and received by the IRS from January 1 to December 31. Previous versions of migration data were based on individual income tax returns the IRS received through late

September. Due to this change in methodology, we do not compare the data prior to 2011/2012 on the same graph as it is not comparable.

Graph A.1 Connecticut Net Migration (International + Domestic) according to the Various Sources



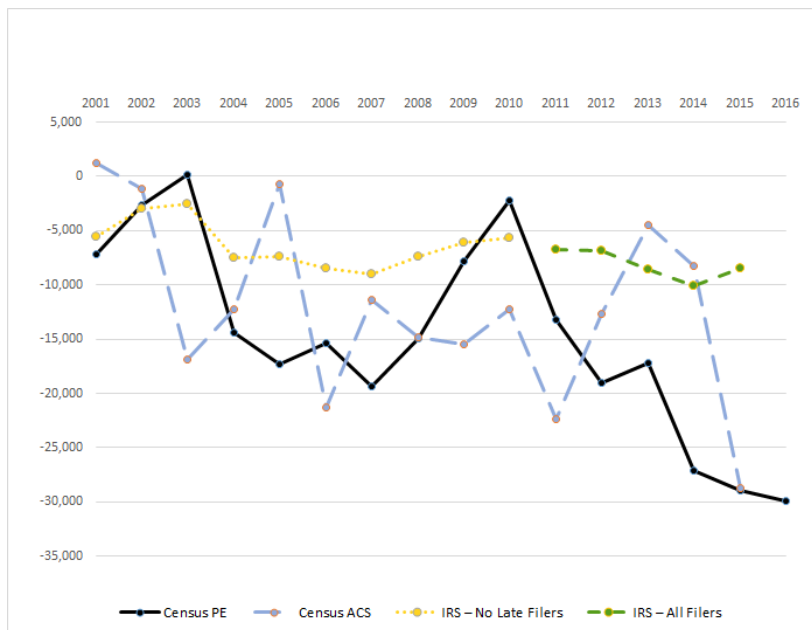
Source: Census Population Estimates (downloaded from IHS), ACS, IRS

As shown in the graph, statewide migration trends can differ depending on the source. Note Census PE and ACS sometimes move in the same direction, and other times in opposite directions. More recently (2012-2014) Census PE shows net out-migration whereas Census ACS shows net in-migration.

Since ACS data is more volatile year-to-year, we look at longer term averages in this report as opposed to single year changes.

IRS data is less volatile and shows steady net out-migration.

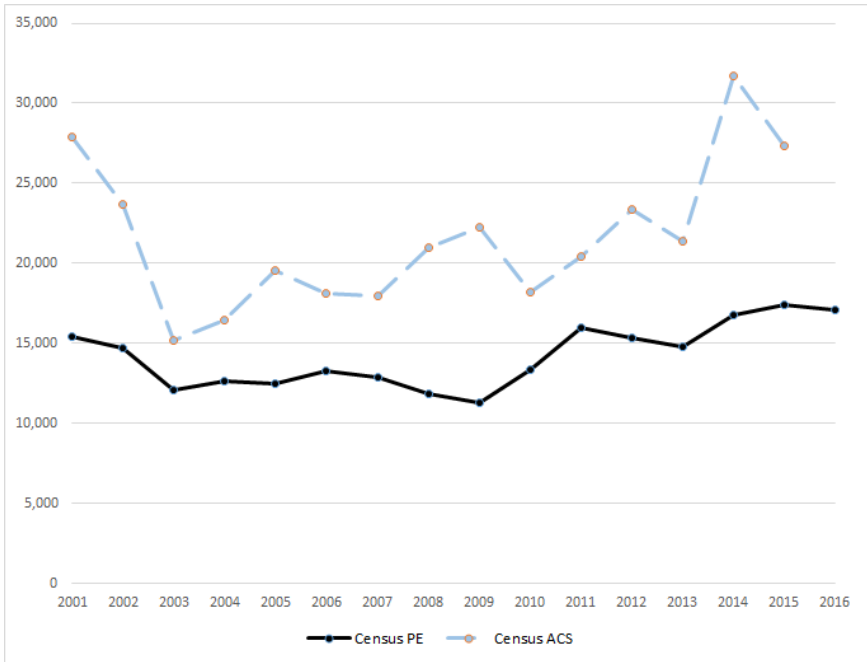
Graph A.2 Connecticut Net Domestic Migration according to Various Sources



Source: Census Population Estimates (downloaded from IHS), ACS, IRS

Breaking it down into the components, Net Domestic migration has been negative over the entire time period examined by all sources. More recently, ACS data is slightly diverging from the Census PE data.

Graph A.3 Connecticut International Migration according to Various Sources



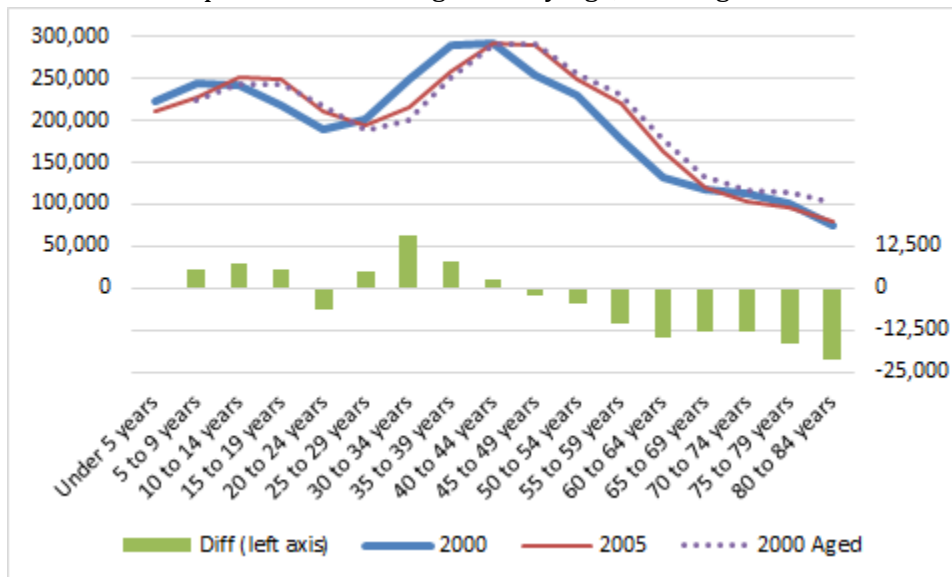
Source: Census Population Estimates (downloaded from IHS), Census ACS

International migration has remained fairly consistent. But as the graph shows, the levels are different between the sources. The direction of change from year-to-year are fairly consistent, though there are some exceptions (2007 to 2008 and between 2011 and 2013).

Appendix B: Migration by Age, using Census Population Estimates data

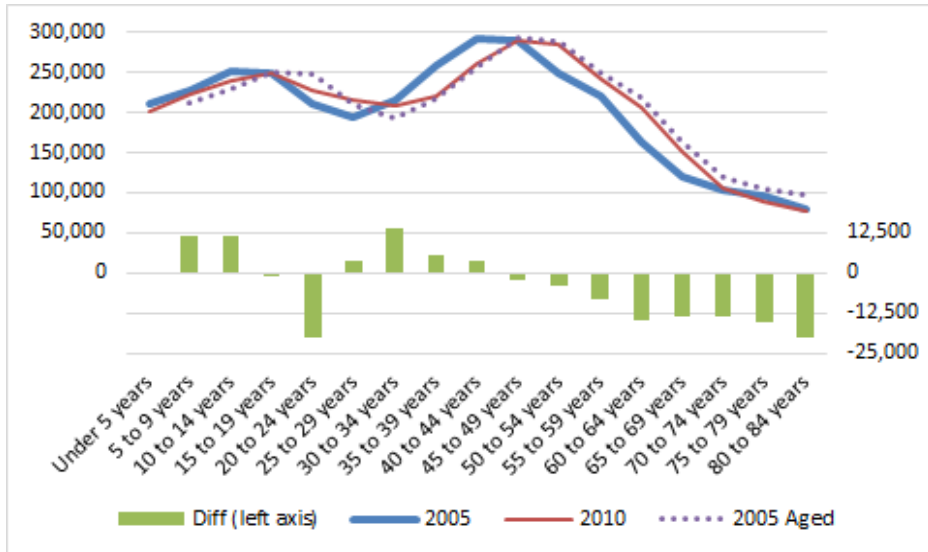
The Census PE program does not provide migration data by age, however it does provide population stock in five year age groups. The following graphs use this data to infer migration by age. In these graphs, the starting population for each age cohort is shown in blue, the population for each cohort five years later is shown in red. This is data directly out of the Census PE program. The dotted line shows what Connecticut's population would have looked like five years later if everyone who was here before (blue line) stayed in CT and simply aged five years. The green bars at the bottom show the difference between the actual data (red line) and the aged data (dotted line). In summary, if the green bar is above zero we can infer in-migration, and if the green bar is negative than we can infer out-migration of that age cohort, or death.

Graph B.1 Inferred Migration by Age, 2000 Aged versus 2005



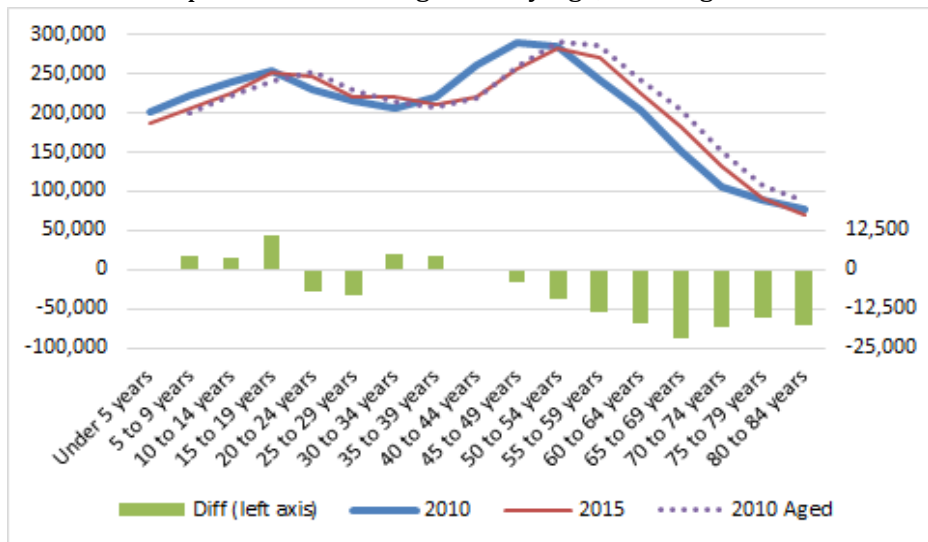
Source: Census PE - Table 2. Intercensal Estimates of the Resident Population by Sex and Age for Connecticut: April 1, 2000 to July 1, 2010. Release Date: October 2012

Graph B.2 Inferred Migration by Age, 2005 Aged versus 2010



Source: Census PE - Table 2. Intercensal Estimates of the Resident Population by Sex and Age for Connecticut: April 1, 2000 to July 1, 2010. Release Date: October 2012

Graph B.3 Inferred Migration by Age, 2010 Aged versus 2015



Source: Census PE - Annual Estimates of the Resident Population for Selected Age Groups by Sex for the United States, States, Counties and Puerto Rico Commonwealth and Municipios: April 1, 2010 to July 1, 2015. Release Date: June 2016

Visually from Graphs B.1 to B.3 we see that Connecticut’s population follows the natural demographic curves in society. Using Census PE data to infer migration by age shows similar results to migration by age using IRS or Census ACS data - namely there is positive in-migration of those aged 30 or above, and in the lowest age brackets which could be reflective of children migrating in with their parents. Conversely, Connecticut loses a higher share of people in their 20’s and those of retirement age.