# Variable: Gasoline and Diesel Consumption [ID #401]

***Transportation***

**Description**: % Change in gasoline and diesel consumption over time.

**Source\_Name**: US Department of Transportation; Office of Highway Policy Information; Highway Statistics Series

**Source\_Date**: Last Updated June 25, 2012

**Source\_URL**: <http://www.google.com/publicdata/explore?ds=gb66jodhlsaab_>

**Geography**: Statewide dataset

**Methodology***:*

Year and Gallons of Gasoline and Gallons of Diesel were gathered from the listed website and recorded in the attached spreadsheet.

% change in gasoline was calculated by 1 year, by 5 years, and by 10 years.

% change in Diesel was calculated by 1 year, by 5 years, and by 10 years.

$$\% Change over Time= \left(\frac{New Year Data-Old Year Data}{Old Year Data}\right)×100$$

 **Documentation Author**: Amy Kizak, SNHPC

|  |  |  |
| --- | --- | --- |
|  | **% Change of Gasoline over time** | **% Change of Diesel over time** |
| Year | Gallons of Gas | % Change By Year | % Change by 5 years | % Change by 10 years | Gallons of Diesel | % Change By Year | % Change by 5 years | % Change by 10 years |
| 1950 | 128,140,000 | 3.74% |   |   | 460,000 |  |   |   |
| 1951 | 132,929,000 | 4.29% |   |   | 582,000 | 26.5% |   |   |
| 1952 | 138,632,000 | 7.00% |   |   | 608,000 | 4.5% |   |   |
| 1953 | 148,341,000 | 5.14% |   |   | 624,000 | 2.6% |   |   |
| 1954 | 155,965,000 | 6.68% |   |   | 618,000 | -1.0% |   |   |
| 1955 | 166,387,000 | 5.91% | 29.85% |   | 1,257,000 | 103.4% | 173.26% |   |
| 1956 | 176,213,000 | 5.07% |   |   | 942,000 | -25.1% |   |   |
| 1957 | 185,139,000 | 0.22% |   |   | 1,236,000 | 31.2% |   |   |
| 1958 | 185,539,000 | 3.57% |   |   | 1,473,000 | 19.2% |   |   |
| 1959 | 192,156,000 | 1.99% |   |   | 1,889,000 | 28.2% |   |   |
| 1960 | 195,980,000 | 0.00% | 17.79% | 52.94% | 2,333,000 | 23.5% | 85.60% | 407.17% |
| 1961 | 195,980,000 | 4.52% |   |   | 2,793,000 | 19.7% |   |   |
| 1962 | 204,833,000 | 5.16% |   |   | 3,314,000 | 18.7% |   |   |
| 1963 | 215,404,000 | 5.62% |   |   | 4,036,000 | 21.8% |   |   |
| 1964 | 227,518,000 | 4.68% |   |   | 4,668,000 | 15.7% |   |   |
| 1965 | 238,163,000 | 6.87% | 21.52% |   | 5,541,000 | 18.7% | 137.51% |   |
| 1966 | 254,524,000 | 5.43% |   |   | 7,401,000 | 33.6% |   |   |
| 1967 | 268,352,000 | 9.40% |   |   | 7,873,000 | 6.4% |   |   |
| 1968 | 293,581,000 | 6.93% |   |   | 10,088,000 | 28.1% |   |   |
| 1969 | 313,931,000 | 7.72% |   |   | 11,515,000 | 14.1% |   |   |
| 1970 | 338,173,000 | 6.59% | 41.99% | 72.55% | 12,546,000 | 9.0% | 126.42% | 437.76% |
| 1971 | 360,455,000 | 5.91% |   |   | 15,028,000 | 19.8% |   |   |
| 1972 | 381,755,000 | 3.03% |   |   | 16,373,000 | 8.9% |   |   |
| 1973 | 393,313,000 | -3.40% |   |   | 18,195,000 | 11.1% |   |   |
| 1974 | 379,948,000 | 2.53% |   |   | 19,035,000 | 4.6% |   |   |
| 1975 | 389,555,000 | 6.55% | 15.19% |   | 17,937,000 | -5.8% | 42.97% |   |
| 1976 | 415,056,000 | 4.17% |   |   | 20,467,000 | 14.1% |   |   |
| 1977 | 432,351,000 | 2.65% |   |   | 21,019,000 | 2.7% |   |   |
| 1978 | 443,789,000 | -5.69% |   |   | 24,152,000 | 14.9% |   |   |
| 1979 | 418,547,000 | -4.90% |   |   | 26,386,000 | 9.2% |   |   |
| 1980 | 398,030,000 | -2.47% | 2.18% | 17.70% | 27,956,000 | 6.0% | 55.86% | 122.83% |
| 1981 | 388,192,000 | -1.59% |   |   | 29,826,000 | 6.7% |   |   |
| 1982 | 382,003,000 | 3.15% |   |   | 32,078,000 | 7.6% |   |   |
| 1983 | 394,044,000 | 7.78% |   |   | 34,468,000 | 7.5% |   |   |
| 1984 | 424,697,000 | 2.61% |   |   | 41,718,000 | 21.0% |   |   |
| 1985 | 435,779,000 | 7.60% | 9.48% |   | 43,101,000 | 3.3% | 54.17% |   |
| 1986 | 468,902,000 | 5.84% |   |   | 51,936,000 | 20.5% |   |   |
| 1987 | 496,305,000 | 3.02% |   |   | 55,666,000 | 7.2% |   |   |
| 1988 | 511,270,000 | 0.61% |   |   | 58,798,000 | 5.6% |   |   |
| 1989 | 514,367,000 | -4.06% |   |   | 60,266,000 | 2.5% |   |   |
| 1990 | 493,509,000 | 2.26% | 13.25% | 23.99% | 51,759,000 | -14.1% | 20.09% | 85.14% |
| 1991 | 504,641,000 | 1.22% |   |   | 48,895,000 | -5.5% |   |   |
| 1992 | 510,788,000 | 1.95% |   |   | 51,273,000 | 4.9% |   |   |
| 1993 | 520,732,000 | 2.65% |   |   | 53,913,000 | 5.1% |   |   |
| 1994 | 534,520,000 | 3.95% |   |   | 56,564,000 | 4.9% |   |   |
| 1995 | 555,636,000 | 5.03% | 12.59% |   | 63,584,000 | 12.4% | 22.85% |   |
| 1996 | 583,610,000 | 5.28% |   |   | 61,335,000 | -3.5% |   |   |
| 1997 | 614,432,000 | 0.68% |   |   | 116,402,000 | 89.8% |   |   |
| 1998 | 618,629,000 | 6.88% |   |   | 103,848,000 | -10.8% |   |   |
| 1999 | 661,203,000 | 1.27% |   |   | 103,763,000 | -0.1% |   |   |
| 2000 | 669,578,600 | 1.20% | 20.51% | 35.68% | 99,492,000 | -4.1% | 56.47% | 92.22% |
| 2001 | 677,593,900 | 3.80% |   |   | 100,115,000 | 0.6% |   |   |
| 2002 | 703,327,000 | 1.37% |   |   | 105,418,000 | 5.3% |   |   |
| 2003 | 712,935,000 | 0.49% |   |   | 102,119,000 | -3.1% |   |   |
| 2004 | 716,396,000 | -2.26% |   |   | 112,131,000 | 9.8% |   |   |
| 2005 | 700,221,000 | 1.03% | 4.58% |   | 111,356,000 | -0.7% | 11.92% |   |
| 2006 | 707,403,000 | 2.07% |   |   | 102,259,000 | -8.2% |   |   |
| 2007 | 722,024,000 | -1.80% |   |   | 102,878,000 | 0.6% |   |   |
| 2008 | 709,052,000 | -0.18% |   |   | 98,975,000 | -3.8% |   |   |
| 2009 | 707,791,000 | 0.09% |   |   | 93,697,000 | -5.3% |   |   |
| 2010 | 708,430,000 |   | 1.17% | 5.80% | 94,210,000 | 0.5% | -15.40% | -5.31% |

# Variable: Greenhouse Gas (GHG) emissions attributed to transportation [ID #402]

***Transportation***

**Description**: Percentage of GHG emissions attributed to transportation.

**Source\_Name**: EPA US GHG Inventory

**Source\_Date**: 2012

**Source\_URL**:

http://www.epa.gov/climatechange/Downloads/ghgemissions/US-GHG-Inventory-2012-Main-Text.pdf

**Geography**: National Statistic. No geographic component.

**Methodology***:*

In the 2012 US EPA GHG Inventory report, a calculation (performed in 2010), reports the transportation sector contributed 1,834 teragrams (1 million metric tons) of GHG emissions accounting for 26.9 percent out of the major contributing sectors, Table 2-12.

Statistic reported annually.

**Documentation Author**: Derek Serach, SNHPC

# Variable: Rail Lines Capable of 40 mph speed [ID #403]

***Transportation***

**Description**: Miles of rail lines capable of 40 mph speeds.

**Source\_Name**: NH DOT 2011 Scorecard

**Source\_Date**: 2011

**Source\_URL**: http://www.nh.gov/dot/org/commissioner/balanced-scorecard/department/documents/bs\_performance\_rail\_lines\_40mph.pdf

**Source\_Name**: GRANIT Railroads - Selection

**Source\_Date:** January 1, 1993

**Source\_URL**: http://www.granit.unh.edu/data/search?dset=rr

**Geography**: Statewide data layer – report at RPC level.

**Methodology***:*

This category is classified as what is known as Class 3 Rail Line (operation of freight at 40 mph and passenger at 60 mph).

From NH DOT Scorecard Report 2011:

“In recent years, improvements in the condition of railroad lines have been attributable to upgrades in track funded by a variety of sources. For example, prior to initiation of the Downeaster Amtrak service in 2001, the Freight Main Line owned and operated by Guilford Rail System (now Pan Am Railways) was upgraded with new ties, ballast and continuous welded rail funded by the FRA. This line, with 35 miles in New Hampshire, has been primarily maintained at Class 3 since that time. The New England Central’s Connecticut River line has been recently upgraded to Class 3 in part with a grant from the FRA, to allow the Amtrak Vermonter to travel at higher speeds and improve the performance of the line for freight as well. Portions of two other lines, the St. Lawrence & Atlantic and the New Hampshire Northcoast, have been upgraded to Class 3 with railroad funds and state and federal loan and grant funds.”

Download Railroads shapefile from GRANIT UNH.

Select out specific rail lines:

The New England Central Connecticut River Line: Starts at SW most point of NH and runs to White River Junction. Map reference: <http://www.railamerica.com/Files/NECR/NECR_2012Feb26_NN.pdf>

Downeaster Amtrak: The most SE line running through Exeter and Dover, NH. <http://www.amtrakdowneaster.com/>

Portions of St. Lawrence & Atlantic: Running through northern NH (Berlin). <http://www.gwrr.com/operations/railroads/north_america/st_lawrence_atlantic_railroad.be>

Portions of New Hampshire Northcoast: Eastern rail line starting Somersworth & Rochester area.

<http://www.trainweb.org/nhrra/History/RR-Map.htm>

Note: the 2011 scorecard references 103 miles of rail line capable of 40 mph speed, Contact Fay Rubin for up to date data layer. ***Additional information from DOT as to what portions of the rail lines for the New Hampshire Northcoast and St. Lawrence & Atlantic lines is unavailable and the whole rail line was selected for packaging.***

<http://www.nh.gov/dot/org/commissioner/documents/2011bsc_executivesummarylr.pdf>

Note: DOT has mentioned they will be working on a new database soon that will include rail line speeds as an attribute.

**Documentation Author**: Derek Serach, SNHPC

# Variable: Red Listed Bridges [ID #404]

***Transportation***

**Description**: # of Red Listed Bridges.

**Source\_Name**: NH DOT 2011 Scorecard

**Source\_Date**: 2011

**Source\_URL**: http://www.nh.gov/dot/org/commissioner/documents/bsc\_booklet\_weblr.pdf

**Source\_Name**: NH DOT Ten Year Plan: NH Bridges

**Source\_Date:** 2011

**Source\_URL**: http://www.nh.gov/dot/org/projectdevelopment/planning/typ/documents/03\_Br\_State\_All\_11-20.pdf

**Geography**: Municipality and Region

**Methodology***:*

In 2011 NH DOT Scorecard reported 149 red listed bridges. <http://www.nh.gov/dot/org/projectdevelopment/bridgedesign/documents.htm>

The website above is an index for all the bridge related materials NH DOT has available. Including corresponding pdfs as well as a continually revised Google Earth Mapping Application. Request shapefile from NHDOT, select out red listed bridges if required.

Note: 140 listed bridges as of April 2012 <http://www.nh.gov/dot/org/projectdevelopment/bridgedesign/documents/nhdot_redlist2012-04-23.pdf>

Refer to documents.htm for the latest updates.

Received Red Listed Bridges Point shapefile from NHDOT. Queried Red List= State Redlist and clipped to region for packaging.

**Documentation Author**: Derek Serach, SNHPC

# Variable: Pavement Condition [ID #405]

***Transportation***

**Description**: Miles of road by pavement condition.

**Source\_Name**: NH DOT 2011 Scorecard

**Source\_Date**: 2011

**Source\_URL**: http://www.nh.gov/dot/org/commissioner/documents/2011bsc\_executivesummarylr.pdf

**Source\_Name**: NH DOT Report

**Source\_Date:** 2011

**Source\_URL**: http://www.nh.gov/dot/org/commissioner/balanced-scorecard/department/documents/bs\_performance\_pavecond.pdf

**Source\_Name**: NH DOT 10 year report

**Source\_Date:** Map based on 2008 data

**Source\_URL**: http://www.nh.gov/dot/org/projectdevelopment/planning/typ/documents/02\_PaveCond\_All\_11-20.pdf

**Geography**: Region

**Methodology***:*

2,695 miles of state maintained roads were reported in the 2011 scorecard as pavement that was in good or fair condition.

The second source tracks how NH DOT performed this calculation that is reported every 2 years. NHDOT’s metric of Ride Comfort Index (RCI) establishes limits to categorize NHDOT maintained roads, where “Good” is the equivalent of a score greater than 3.5, “Fair” being between 3.5 and 2.5, and “Poor” defined as less than 2.5 in the effort to measure the “roughness” of a road traveled by a motorist.

NH DOT maintained road segments with the Ride Comfort Index (RCI) attribute would have to be requested from DOT and would then be queried for the “Good”, “Fair”, and “Poor” rating intervals and selected out for each region.

Received Road Condition Line shapfile from NHDOT. Created new attribute field “Condition” and calculated “Good” as > 3.5, “Fair” as <3.5 and >2.5, and “Poor” as <2.5. Clipped to region for packaging.

**Documentation Author**: Derek Serach, SNHPC

# Variable: Tons of freight shipped via all modes [ID # 406]

***Transportation***

**Description**: Number in tons

**Source\_Name**: NH DOT 2011 Scorecard

**Source\_Date**: 2011

**Source\_URL**: http://www.nh.gov/dot/org/commissioner/documents/bsc\_booklet\_weblr.pdf

**Source\_Name**: NH DOT 2011 Reporting

**Source\_Date:** 2011

**Source\_URL**: http://www.nh.gov/dot/org/commissioner/balanced-scorecard/department/documents/bs\_performance\_totalcargoshipped.pdf

**Geography**: Statewide statistic based off of four different categories from a number of sources that include air, railway, waterway, and motor carrier transportation. Not available by region and lacks uniformity.

**Methodology***:*

In the 2011 NH DOT Scorecard report, NH DOT states a number of tons freight shipped via all modes (including air, railway, waterway, and motor carrier) is 68,677,213. Note this number is only updated every 5 years and was calculated last in 2009, even though it is reported for the year 2011. The second source includes the number breakout for each mode as well as the number of sources DOT used to get to this calculation. In addition they report this indicator may not be a good current estimation given that the calculation was performed before the current recession.

**Documentation Author**: Derek Serach, SNHPC

# Variable: Public Transit Utilization [ID #407]

***Transportation***

**Description**: Annual # of public transit passengers, # of miles served by transit.

**Source\_Name**: NH DOT 2011 Scorecard

**Source\_Date**: 2011

**Source\_URL**: <http://www.nh.gov/dot/org/commissioner/documents/2011bsc_executivesummarylr.pdf> and <http://www.nh.gov/dot/org/commissioner/documents/bsc_booklet_weblr.pdf>

Pages 29 & 30

**Source\_Name**: Regional Transit Shapefiles, if available.

**Source\_Date:**

**Source\_URL**:

**Geography**: Regional

**Methodology***:*

**Part 1: Annual # of public transit passengers -**

NH DOT Scorecard reported transit ridership of 3,415,291 for the year 2011.

From DOT Scorecard report 2011, describing how the data was received:

“Ridership measures one-way trips, i.e. boardings on transit vehicles. Transit systems report ridership, among other measures, to the Federal Transit Administration through the National Transit Database.”

Statistic reported annually.

**Part 2: # of miles served by transit -**

Calculation based on best estimation with existing or created shapefiles of local transit providers.

<http://www.nh.gov/dot/programs/rideshare/transit.htm> NHDOT list of local transit providers. RPC’s may have access to shapefiles for the organizations within their particular region, calculate out the total miles.

Received local transit shapefiles from RPC’s. Merged together if multiple files. Dissolved FID. Created new attribute field MilesServe and calculated for length in miles. Clipped to region for packaging.

**Documentation Author**: Derek Serach, SNHPC

# Variable: Travel Mode Share [ID #408]

***Transportation***

**Description**: Total percentage of workers commuting via walking, biking, transit, and carpooling.

**Source\_Name**: American Community Survey: Table B08301. Means of Transportation to Work for Workers 16 and Over.

**Source\_Date**: 2010

**Source\_URL**:

<http://factfinder2.census.gov>

**Geography**: Regional.

**Methodology:** Taken from HUD OSHC Guidance on Performance Measurement/Flagship Sustainability Indicators:

**“Data Elements:** All required data elements can be sourced from a single table in the ACS (or Census). In the ACS, data are found in *Table B08301. Means of Transportation to Work for Workers 16 and Over.* Data elements required are:

* Number of workers commuting by carpool
* Number of workers commuting by public transportation (excluding taxicab)
* Number of workers commuting by bicycle
* Number of workers commuting by foot (walking)
* Total number of workers
* **Step-by-step Guidance on Obtaining Data:**

1. Go to http://factfinder2.census.gov

2. In the left-hand sidebar, click on “Topics.”

3. Under “Select Topics to add to ‘Your Selections,’” click on the plus sign next to “People.”

4. In the expanded list of topics that appears under “People,” click on the plus sign next to “Employment.”

5. In the expanded list of topics that appears under “Employment,” click on “Commuting (Journey to Work)”

6. In the left-hand sidebar, click on “Geographies.”

7. Select a geographic type from the drop-down menu. The geographic type will depend upon the scope of grant projects. In general:

c. Community Challenge grantees working on corridor- or neighborhood- scale projects will need to identify the census tracts or block groups that make up the project area using the “Address” or “Map” tabs at the top of the “Select Geographies” box. ***(Census Tract Level by Region)***

i. Census tract-level data can be downloaded by selecting “Census Tract” in the “Select a geographic type” menu, selecting a state and county from the drop-down menus, and then selecting a census tract from the resulting list in the box marked “Select one or more geographic areas and click Add to Your Selections.”

ii. Block group data can be downloaded from the ACS Summary File by following the instructions in Appendix A: *Working with Census Block Group Data*.

d. Note that you can select multiple geographies from the drop-down menus by holding down the control key and clicking on multiple states, metro areas, or census tracts.

8. Click the “Add to Your Selections” button.

9. Click on “Close” in the upper-right corner of the “Select Geographies” box.

10. Scroll through the search results until you see the *Table ID B08301: Means of Transportation* to Work, and click on the table title to view the table.

a. If there are a large number of search results, you can locate the table more quickly by entering “B08301” in the “Narrow your search” box at the top of the “Search results” window.

b. Multiple results from different years and different estimates (1-year, 3-year, or 5-year) may be available for the same table. Select data from the desired year using estimate that is collected over the shortest time span (i.e., 1-year estimates are more desirable than 3- or 5-year estimates; 3-year estimates are more desirable than 5-year estimates).

c. At the top of the table view, under “Actions,” click on “Download” to download the file in Excel format in order to facilitate calculations. If the data estimates download formatted as text, click the “!” error to convert them to numbers in order to facilitate calculations.

**Basic Calculation Steps:**

1. Sum number of workers commuting by carpool, public transportation, bicycling, and walking.

2. Divide by total number of workers and multiply by 100 to calculate the percentage of workers commuting by carpool, public transportation, bicycle, and foot.

3. If using multiple census geographies, create a weighted average by multiplying the percentage of workers commuting by carpool, public transportation, bicycle, and foot within each given geographical area by the percentage of total workers within the project area that are located within that area, and summing the results across all geographic areas. For in-depth instructions on calculating weighted averages, including sample calculations, refer to the separate *Weighted Averages Calculation Worksheet “*

Note: Used B08301 2011 5-Yr Estimate table, data only for census tract. Census tracts selected within each region and exported out, calculated as above, expected regional overlap in calculated percentages.

**Documentation Author**: Amy Kizak, Derek Serach, SNHPC

***Transportation***

**Variable: Population with access to multi-modal transportation** [ID #409]

**Description**: Percentage of Population with access to Multi-modal transportation.

**Source\_Name**: NH DOT 2011 Scorecard

**Source\_Date**: 2011

**Source\_URL**: http://www.nh.gov/dot/org/commissioner/documents/2011bsc\_executivesummarylr.pdf

**Source\_Name**: NH DOT Report

**Source\_Date:** 2011

**Source\_URL**: http://www.nh.gov/dot/org/commissioner/balanced-scorecard/department/documents/bs\_performance\_multimodaltrans.pdf

**Source\_Name**: 2010 Census Data – Population & NHDOT Multimodal Terminals

**Source\_Date:**

**Source\_URL**:

**Geography**: Statewide statistic.

**Methodology***:*

In the 2011 NH DOT Scorecard report, it is reported that 24 percent of the state’s population has access to multi-modal transportation.

The second source describes the GIS calculation NH DOT conducted using 2010 Census data to calculate the population within a quarter (.25) mile of multimodal terminals.

Buffered .25 miles for local transit files clipped to region. Selected by location intersecting Census Tract Blocks 2010 and exported into a separate shapefile.

**Calculation:** exported tables into excel to calculate total population of region vs. population within Census Tract Blocks that intersected local transit for that particular region to arrive at a percentage. Total Population for Selected Local Transit Tract Blocks/Total Population for Region X 100. Total Population was estimated using selection and census tract block data.

**Documentation Author**: Derek Serach, SNHPC