



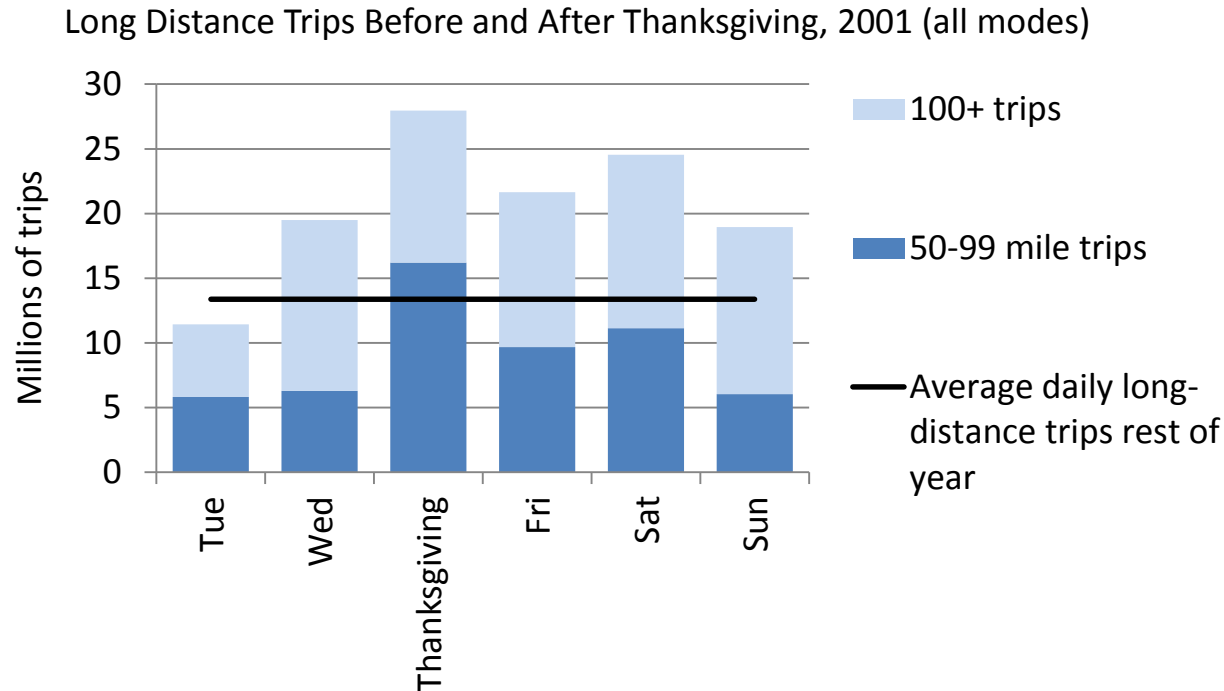
## **Moving Holidays in Transportation Data Series**

Theresa Firestine

11/04/2016

## Travel Patterns

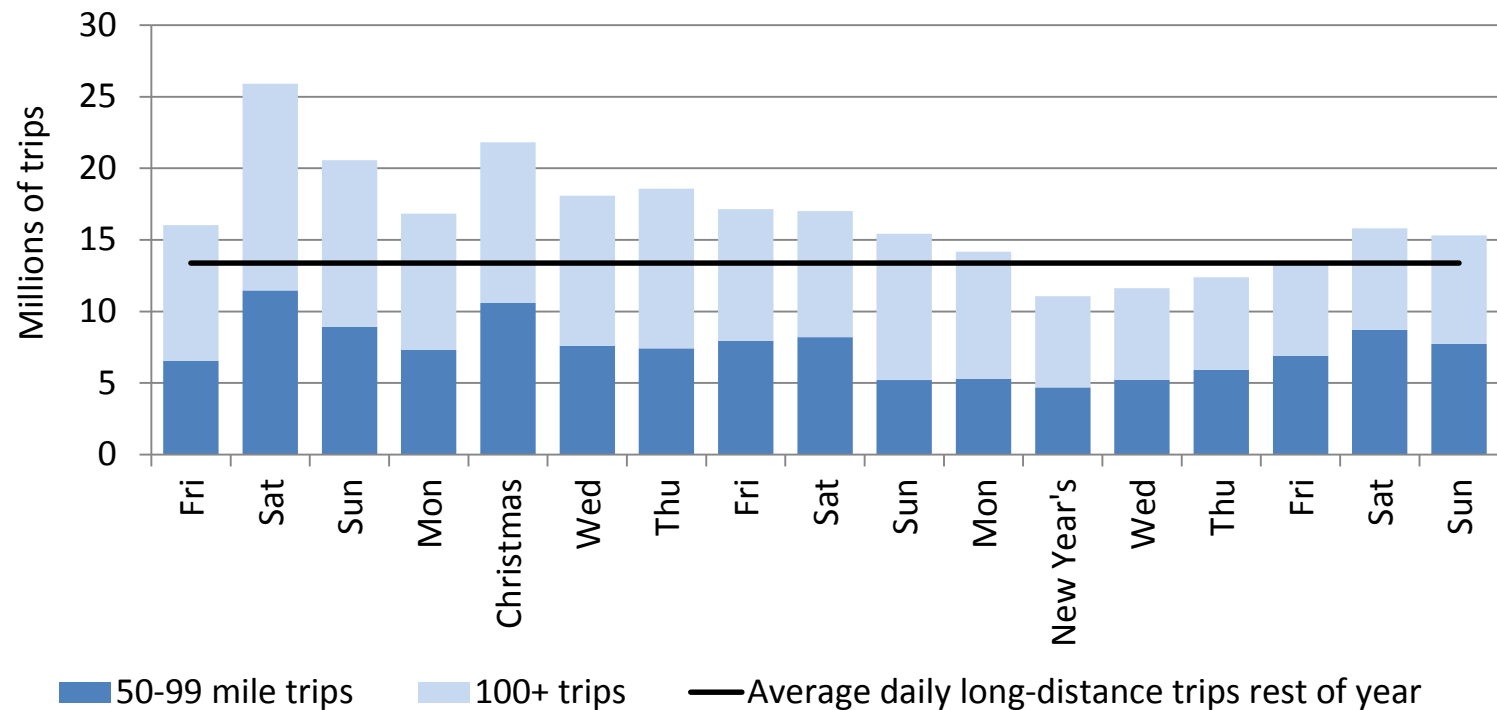
- Passenger travel occurs both before, on, and after a holiday
- Travel pattern depends on whether holiday occurs on same **day of the week** (e.g., Thanksgiving) or varies (Christmas)



SOURCE: U.S. Department of Transportation, Bureau of Transportation Statistics, Federal Highway Administration, National Household Travel Survey 2001

## Travel Patterns When Day of Week Changes

Long Distance Trips Taken During the Christmas/New Year Holiday Period, 2001 (all modes)



SOURCE: U.S. Department of Transportation, Bureau of Transportation Statistics, Federal Highway Administration, National Household Travel Survey 2001



## Transportation Specific Holiday Regressors

- Holidays that affect more than one month are included as regressors in seasonal adjustment models to control for the year-to-year variation they introduce
- The Bureau of Transportation Statistics developed transportation specific holiday regressors to capture transportation activity before and after a holiday

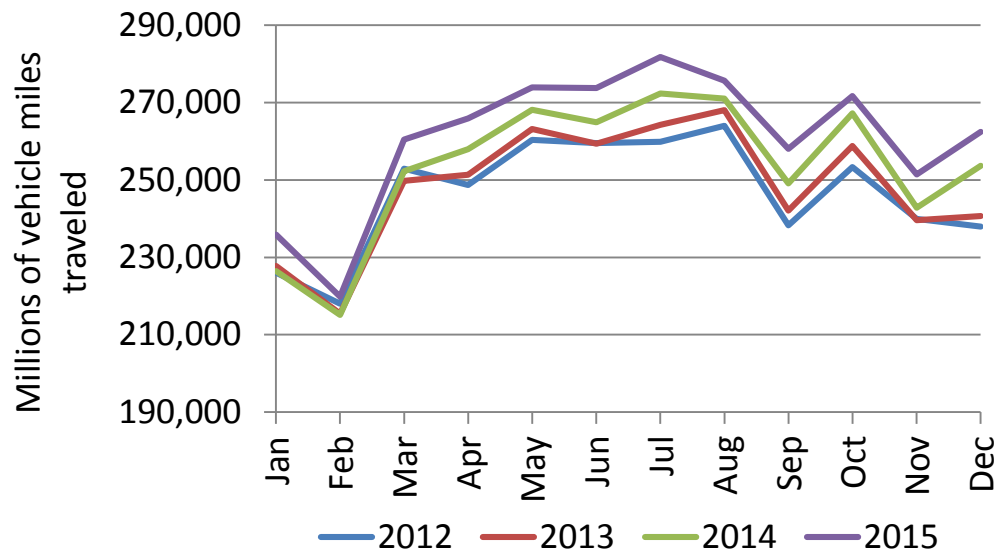
U.S. Holidays with Transportation Activity Affecting Months Other than Holiday Month

Holiday	Holiday Travel Period	Months Impacted
Easter	Thursday before to Tuesday after (6 days)	March, April
Memorial Day	Friday before to the Tuesday after (5 days)	May, June
Labor Day	Friday before to Tuesday after (5 days)	August, September
Thanksgiving	Tuesday before to Sunday after (7 days)	November, December
Christmas		
If Christmas falls on a Monday	23rd through the 1st (10 days)	December, January
If Christmas falls on a Tuesday	22nd through the 1st (11 days)	
If Christmas falls on a Wednesday	21st through the 1st (12 days)	
If Christmas falls on a Thursday	23rd through the 4th (13 days)	
If Christmas falls on a Friday	23rd through the 3rd (12 days)	
If Christmas falls on a Saturday	23rd through the 2nd (11 days)	
If Christmas falls on a Sunday	23rd through the 1st (10 days)	



## Roadway Vehicle Miles Traveled

- Roadway vehicle miles traveled (VMT) highly seasonal
  - VMT rise sharply from February and continue to rise through the summer months until peaking in August
  - VMT decline through the Fall and Winter with slight increase in October and to a lesser extent, in December, before reaching the all-time calendar year low in February.



SOURCE: Data provided by U.S. Department of Transportation (U.S. DOT) Federal Highways Administration (FHWA) to the U.S. DOT, Bureau of Transportation Statistics. Data collected by FHWA for their monthly Traffic Volume and Trends report:  
[http://www.fhwa.dot.gov/policyinformation/travel\\_monitoring/tvt.cfm](http://www.fhwa.dot.gov/policyinformation/travel_monitoring/tvt.cfm).



## Moving Holidays Impacting Roadway Vehicle Miles Traveled

- Only Labor Day and Thanksgiving found to affect a month other than the month of the holiday

Model for Seasonally Adjusting Vehicle Miles Traveled (VMT), 2000 to present							
Model Type	Trans-formation	Trading days / Significance		Holidays / Significance		Outliers	ARIMA
Additive	None	Day-of-week	***	Labor Day	**	None	(0 1 1)(0 1 1)
				Thanksgiving	*		

**NOTE:**

Labor Day = Friday before to Tuesday after (5 days)

Thanksgiving = Tuesday before to Sunday after (7 days)

\*\*\* = significant at 0.01 level

\*\* = significant at 0.05 level

\* = significant at 0.10 level



## Seasonally Adjusted Transportation Data: Available Series

---

- Scheduled air service
  - Revenue passenger miles (domestic, international, domestic + international)
  - Available seat miles (domestic, international, domestic + international)
  - Load factor (domestic, international, domestic + international)
  - Enplanements (domestic, international, domestic + international)
- All air service
  - Revenue passenger miles
  - Revenue ton-miles (freight)
- Other
  - Vehicle miles traveled (roadway)
  - Rail freight carloads
  - Rail freight intermodal
  - Rail passenger miles
  - Public transit ridership
  - Pipeline petroleum
  - Natural gas pipeline
  - Truck tonnage
  - U.S. waterways tonnage



# Seasonally Adjusted Transportation Data: Significant Holidays

---

- Easter
  - 2 days before
    - Air freight revenue ton-miles
  - 7 days before
    - Rail passenger miles
    - Rail freight intermodal
  - Thursday before to Tuesday after (6 days)
    - Air revenue passenger miles (all services)
- Memorial Day: Friday before to Tuesday after (5 days)
  - Rail freight intermodal
  - Air freight revenue ton-miles
- Labor Day: Friday before to Tuesday after (5 days)
  - Vehicle miles traveled (roadway)
- Thanksgiving
  - Tuesday before to Sunday after (7 days)
    - Vehicle miles traveled (roadway)
    - Rail passenger miles
  - Tuesday before to Monday after (8 days)
    - Rail freight intermodal
    - Air freight revenue ton-miles
    - Air revenue passenger miles (all services)
- Christmas
  - Rail freight intermodal





# Seasonally Adjusted Transportation Data: Data Availability

- Seasonally adjusted freight and passenger transportation data series available at:  
<http://www.transtats.bts.gov/osea/seasonaladjustment/>



## Contact Information

---

Theresa Firestine, Senior Economist  
Bureau of Transportation Statistics  
U.S. Department of Transportation  
[theresa.firestine@dot.gov](mailto:theresa.firestine@dot.gov)  
202-366-3629

