# تاثیر قیمت سوخت بر تعداد کشته‌های جاده‌ای

Gasoline Prices and Road Fatalities, 2014

# چه عواملی و چگونه بر تقاضای سفر تاثیر گذارند؟

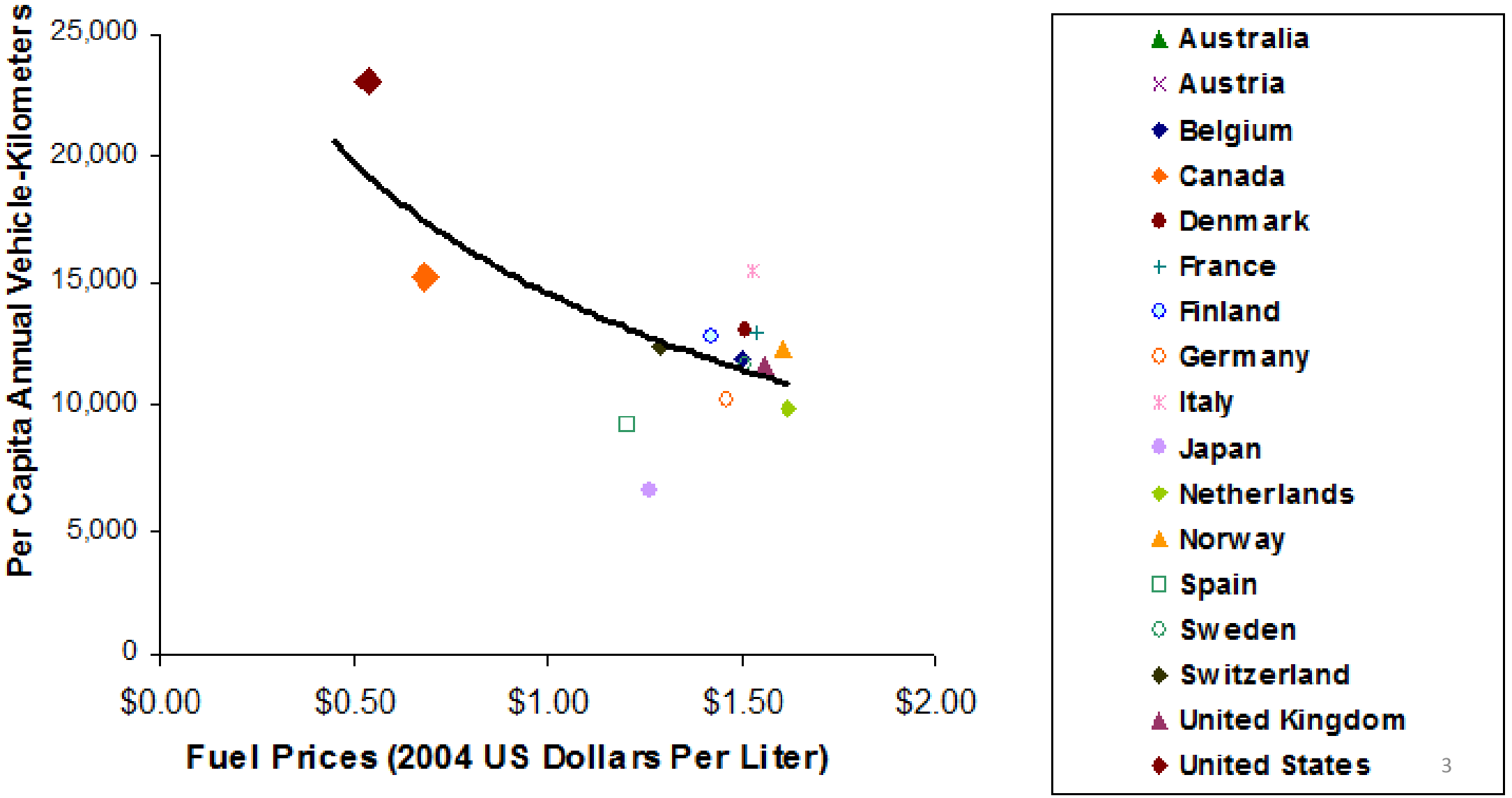
VICTORIA Transport Policy INSTITUTE

EFFICIENCY • EQUITY • CLARITY

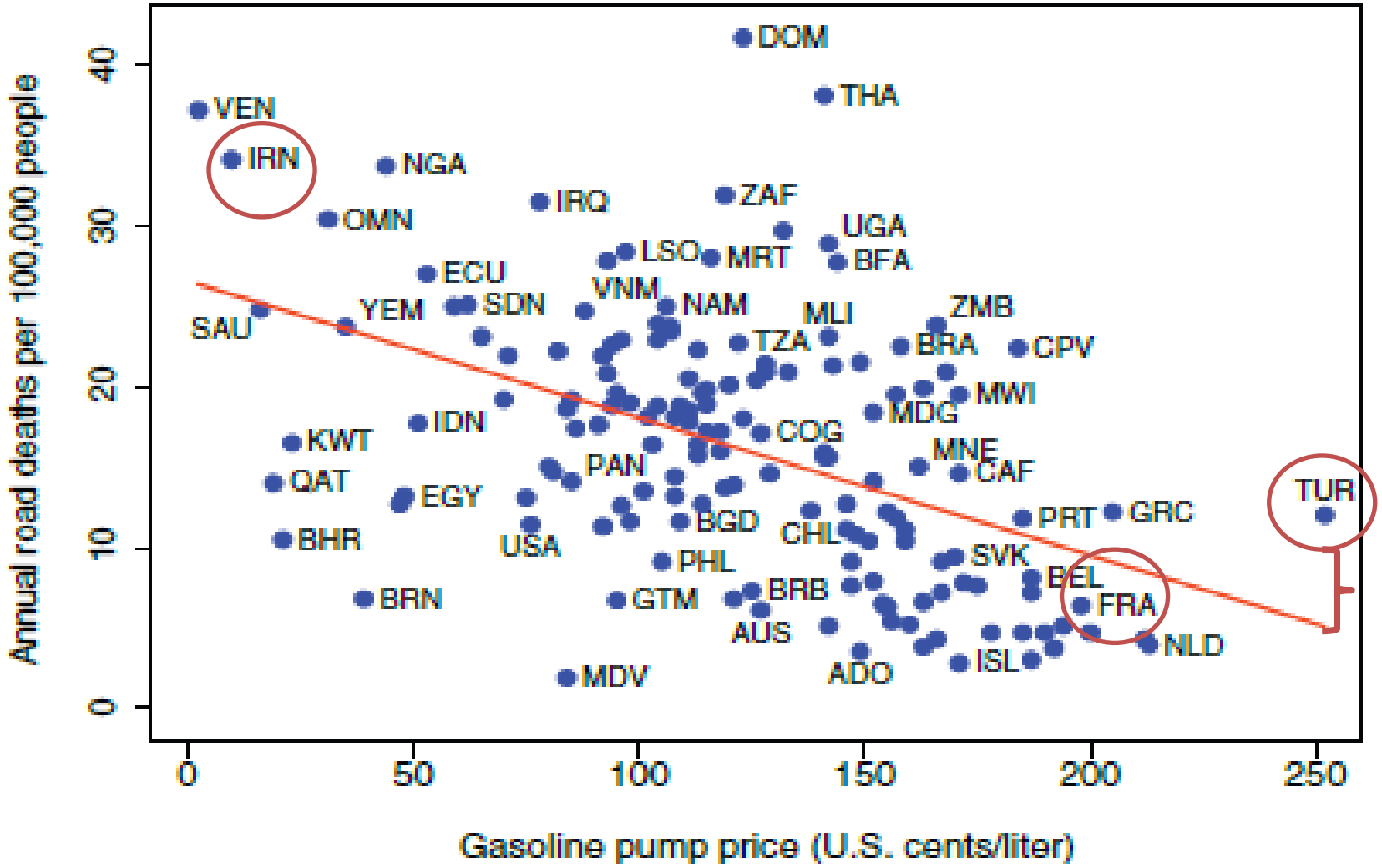
***Understanding Transport Demands and Elasticities***

Feb, 2017

# Fuel Price Versus Per Capita Vehicle Travel (VTPI 2007)



# Higher gasoline prices significantly reduce road deaths



**افزایش قیمت سوخت می‌بایست همزمان با تقویت مدهای حمل و نقل همگانی و سرمایه‌گذاری بر روی ایمنی جاده، ناوگان و نیروی انسانی باشد، در غیر این‌صورت، افزایش قیمت سوخت تاثیر کاهشی کوتاه مدت بر تعداد تلفات خواهد داشت.**

# Impacts of Fuel Tax Increase, Year 2010 (Harvey and Deakin 1998)

| Region | Tax Increase | VMT | Trips | Fuel | ROG | Revenue |
|---|---|---|---|---|---|---|
| Bay Area | $0.50 | -3.6% | -3.4% | -8.8% | 3.5% | $1,332 |
| | $2.00 | -11.7% | -11.3% | -30.6% | 11.6% | $4,053 |
| Sacramento | $0.50 | -4.1% | -3.9% | -9.3% | 4.0% | $414 |
| | $2.00 | -13.2% | -12.7% | -31.8% | 13.0% | $1,245 |
| San Diego | $0.50 | -3.9% | -3.5% | -9.1% | 3.8% | $747 |
| | $2.00 | -12.5% | -12.0% | -31.1% | 12.3% | $2,257 |
| South Coast | $0.50 | -4.2% | -3.5% | -9.3% | 4.1% | $3,724 |
| | $2.00 | -13.0% | -12.5% | -31.6% | 12.8% | $11,235 |

**AGENDA:**

**Tax Increase = additional fuel taxes applied in addition to current taxes. VMT = change in total vehicle mileage. Trips = change in total vehicle trips. Fuel = change in fuel consumption. ROG = a criteria air pollutant. Revenue = annual revenue in millions of 1991 U.S. dollars.**

Increasing Fuel Tax up to 0.5$ will decrease Total Vehicle mileage at least 3.6%, this number for number of trips is at least 3.4 %, It will also reduce fuel consumption at least 8.8%.
Also, Increasing Fuel Tax up to 2$ will decrease Total Vehicle mileage at least 11.7%, this number for number of trips is at least 11.3%, It will also reduce fuel consumption at least 30.6%.

# Impacts of Fuel Tax Increases on Trips Demand

**A durable, 10% real (inflation adjusted) fuel price increase causes :**

- ✓Vehicle travel declines by approximately 1% within about a year and about 3% in the longer run (about five years).
- ✓ Fuel consumption declines approximately 2.5% within a year and 6% in the longer run.

[Goodwin, Dargay and Hanly (2003)]

Fuel consumed declines more than vehicle travel because motorists purchase more fuel-efficient vehicles and drive more carefully. As a result, price increase cause:

- ✓Vehicle fuel efficiency increases approximately 1.5% within a year and approximately 4% over the longer run.
- ✓Total vehicle ownership declines less than 1% in the short run and 2.5% in the longer run.

# کاهش تعداد سفرها با افزایش قیمت سوخت به دلیل:

- ✓انتقال بخشی از سفرهای جاده ای به ریلی
- ✓استفاده از سایر مدهای حمل و نقل
- ✓خرید خودروهای با مصرف بهینه تر انرژی
- ✓حذف برخی از سفرها
- ✓بهینه شدن تعداد قابل توجهی از سفرها
- ✓کاهش قدرت خرید جوانان

A 10% real fuel price increase causes **Total vehicle ownership declines** less than 1% in the short run and 2.5% in the longer run

**افزایش قیمت سوخت، نه تنها در مالکیت خودرو کاهش ایجاد می‌کند، بلکه در کاهش ترافیک درون و بیرون شهرها ، تعداد کشته های حوادث و آلودگی هوا نیز، تاثیر بسزایی دارد.**

# Relation Between  Fuel Price and Fatalities

- ✓ **Countries providing the largest fuel subsidies are particularly compelling candidates for reform.**

- ✓ **Globally, around 35,000 road deaths could be avoided each year by the  removal of the fuel subsidies that were in place in 2010. This number for Iran is 10600 .**

Gasoline-Subsidizing Countries: Estimated Road Deaths Avoided
if Gasoline Price Were Equal to the Level in the United States
(76 cents per liter, 2010)

| (1) | (2) | (3) | (4) | (5) |
|---|---|---|---|---|
| Country | Gasoline pump price (US cents) | Road deaths per 100,000 population (WHO, 2013b) | Road deaths (WHO, 2013b) | Estimate: avoided road deaths if gasoline price were 76 US cents |
| Venezuela | 2 | 37 | 10,791 | >5,000 |
| Iran | 10 | 34 | 25,224 | 10,600 |
| Saudi Arabia | 16 | 25 | 6,800 | 2,700 |
| Libya | 17 | n.a. | n.a. | 584 |
| Qatar | 19 | 14 | 247 | 158 |
| Bahrain | 21 | 11 | 132 | 103 |
| Turkmenistan | 22 | n.a. | n.a. | 382 |
| Kuwait | 23 | 17 | 452 | 202 |
| Oman | 31 | 30 | 845 | 144 |
| Algeria | 32 | n.a. | n.a. | 1,700 |
| Yemen | 35 | 24 | 5,698 | 1,000 |
| Brunei Darussalam | 39 | 7 | 27 | 15 |
| Nigeria | 44 | 34 | 53,339 | 4,200 |
| United Arab Emirates | 47 | 13 | 956 | 210 |
| Egypt | 48 | 13 | 10,729 | 1,800 |
| Indonesia | 51 | 18 | 42,434 | 4,500 |
| Ecuador | 53 | 27 | 3,911 | 259 |
| Malaysia | 59 | 25 | 7,085 | 345 |
| Sudan | 62 | 25 | 10,935 | 331 |
| Angola | 65 | 23 | 4,407 | 141 |
| Bolivia | 70 | 19 | 1,910 | 38 |
| Kazakhstan | 71 | 22 | 3,514 | 51 |
| Azerbaijan | 75 | 13 | 1,202 | 6 |
| *Sum for 23 countries* | | | | *~35,000* |

# The impact of gasoline prices on fatalities and injuries in OECD countries

For all countries, the correlation between annual crash injuries and gasoline prices was significant and negative

## 1996-2012

**-10%**

**Gasoline price**

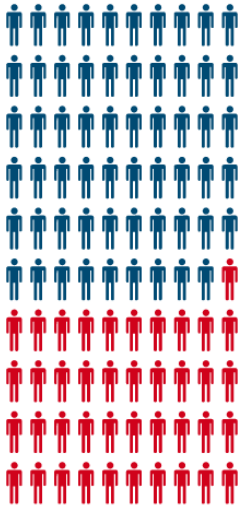
**INCREASE IN CASUALTIES PER MILLION POPULATION**

**+3%**

**Non Fatal Injuries**

**+8.5%**

**Fatal Injuries**



Compared to 2012, gasoline prices in January 2015 are an average of 26.8% lower across all countries.

## 2012-2015

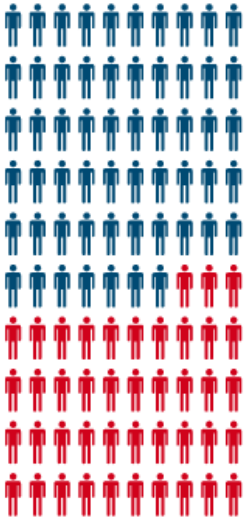
**INCREASE IN CASUALTIES PER MILLION POPULATION**

**+8%**

**Non Fatal Injuries**

**+23%**

**Fatal Injuries**



**Ref: Wilson et al. 2015**


Thank you for
your attention