

# Fertility Decline in the Muslim World, c. 1975 - c. 2005:

## A Veritable Sea-Change, Still Curiously Unnoticed

Nicholas Eberstadt

Henry Wendt Chair in Political Economy

American Enterprise Institute

[eberstadt@aei.org](mailto:eberstadt@aei.org)

Doha Institute for Family Studies and Development

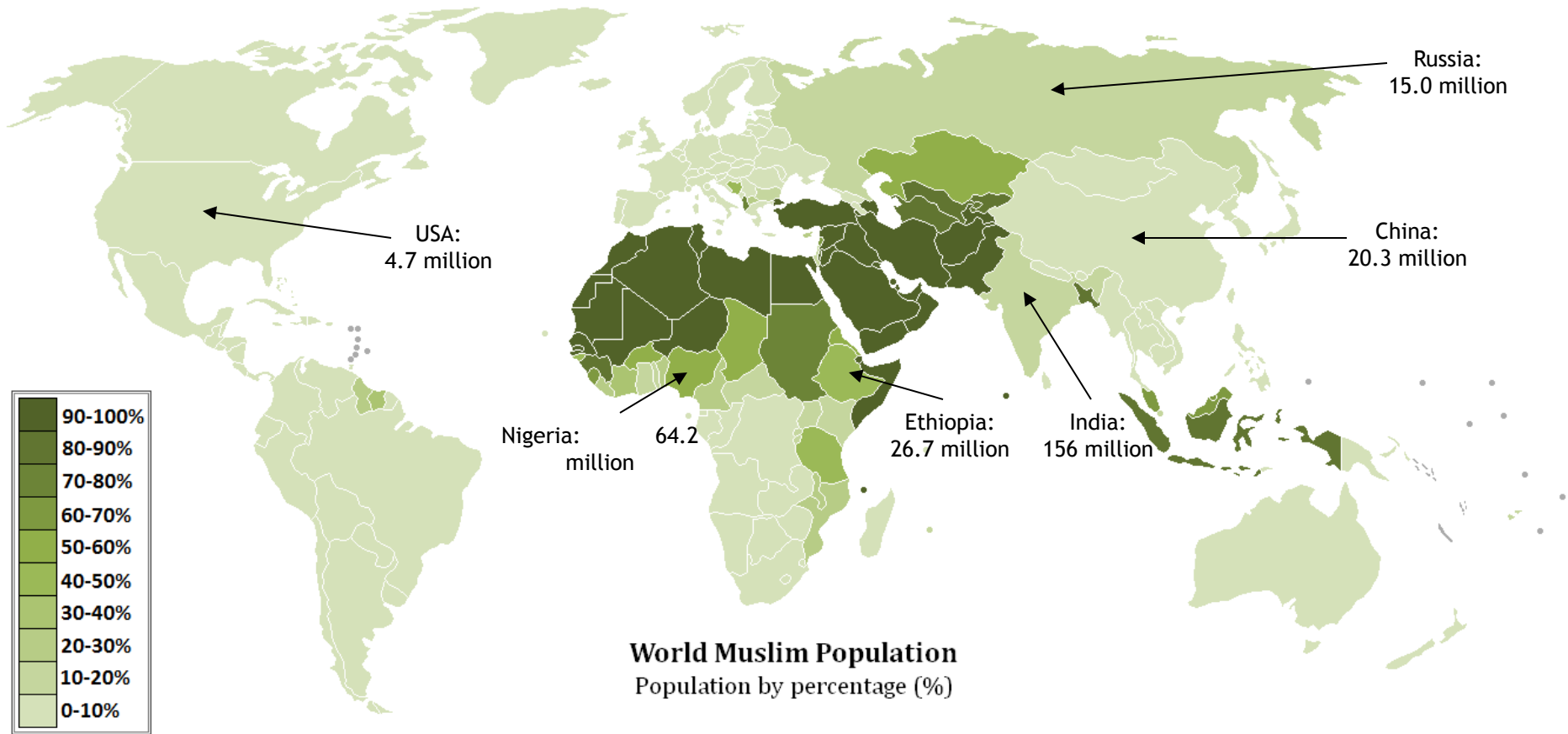
Doha, Qatar

January 2013

This presentation is based on work conducted with co-author Apoorva Shah

# Figure 1

## The Ummah, circa 2005

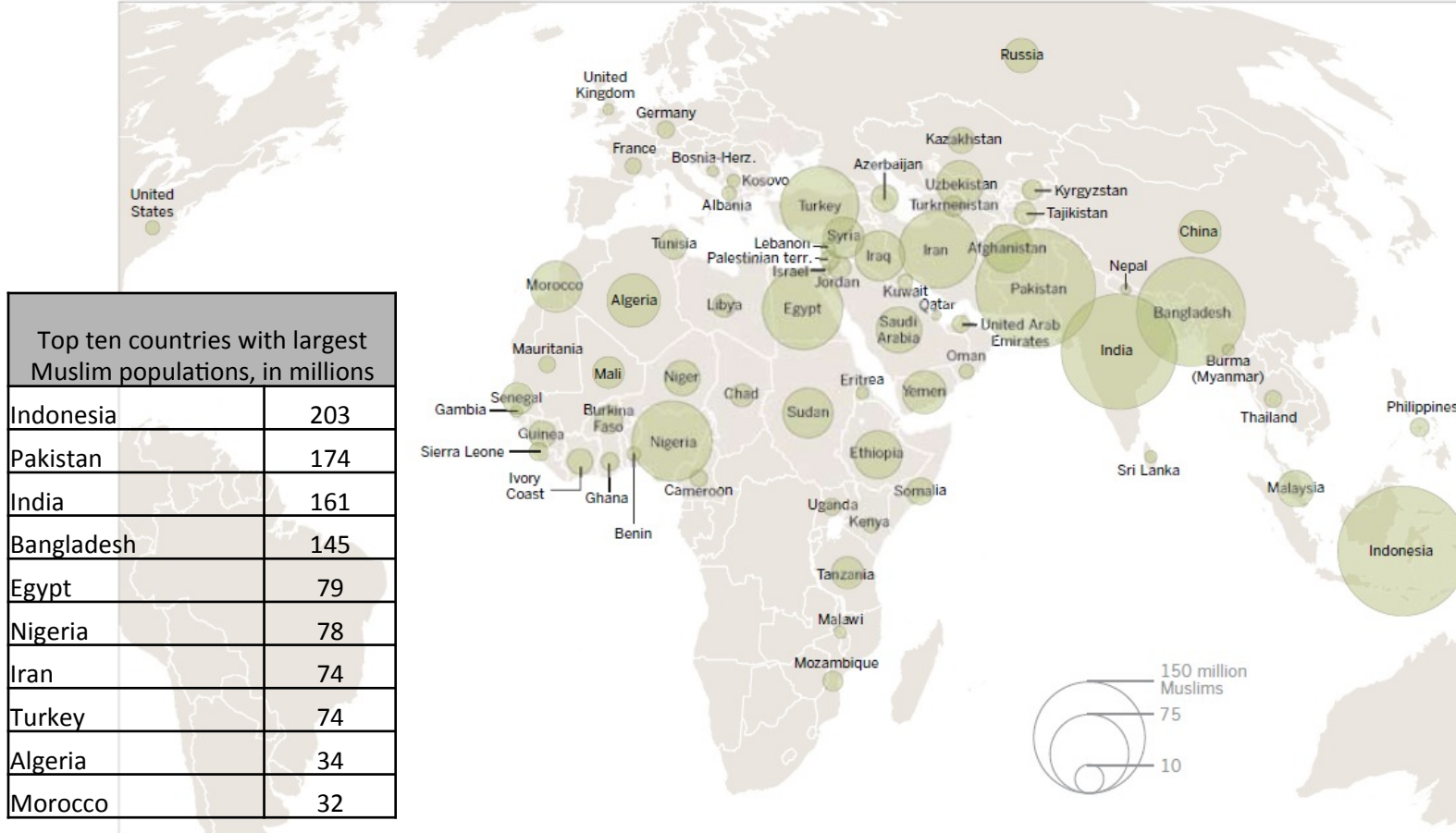


Total Estimated Muslim Population in the World: 1.42 billion

Estimated Population Living in Muslim-Majority Countries: 1.03 billion

# Figure 2

## The Ummah, circa 2009

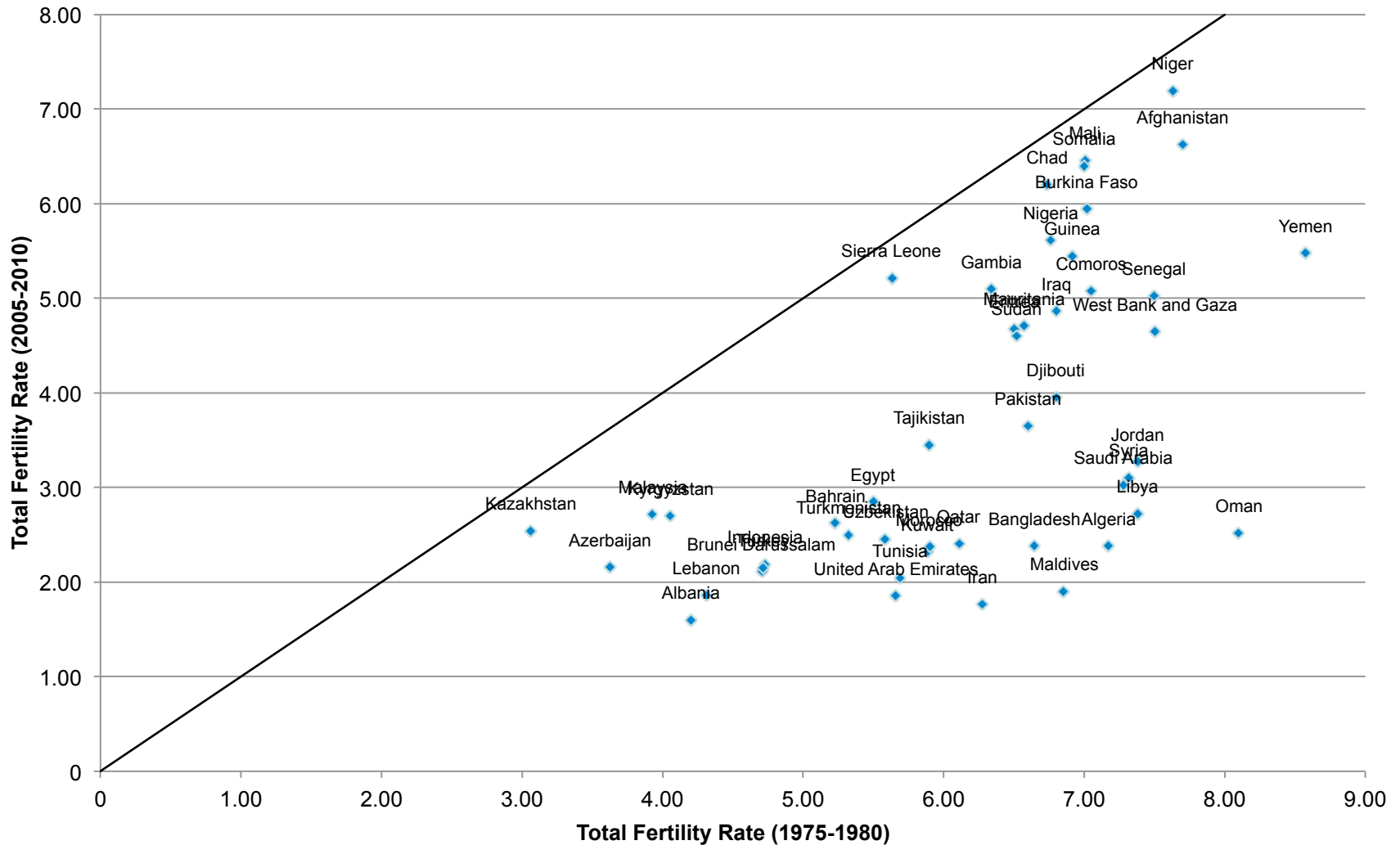


Total Estimated Muslim Population in the World: 1.57 billion

Estimated Population Living in Muslim-Majority Countries: 1.25 billion

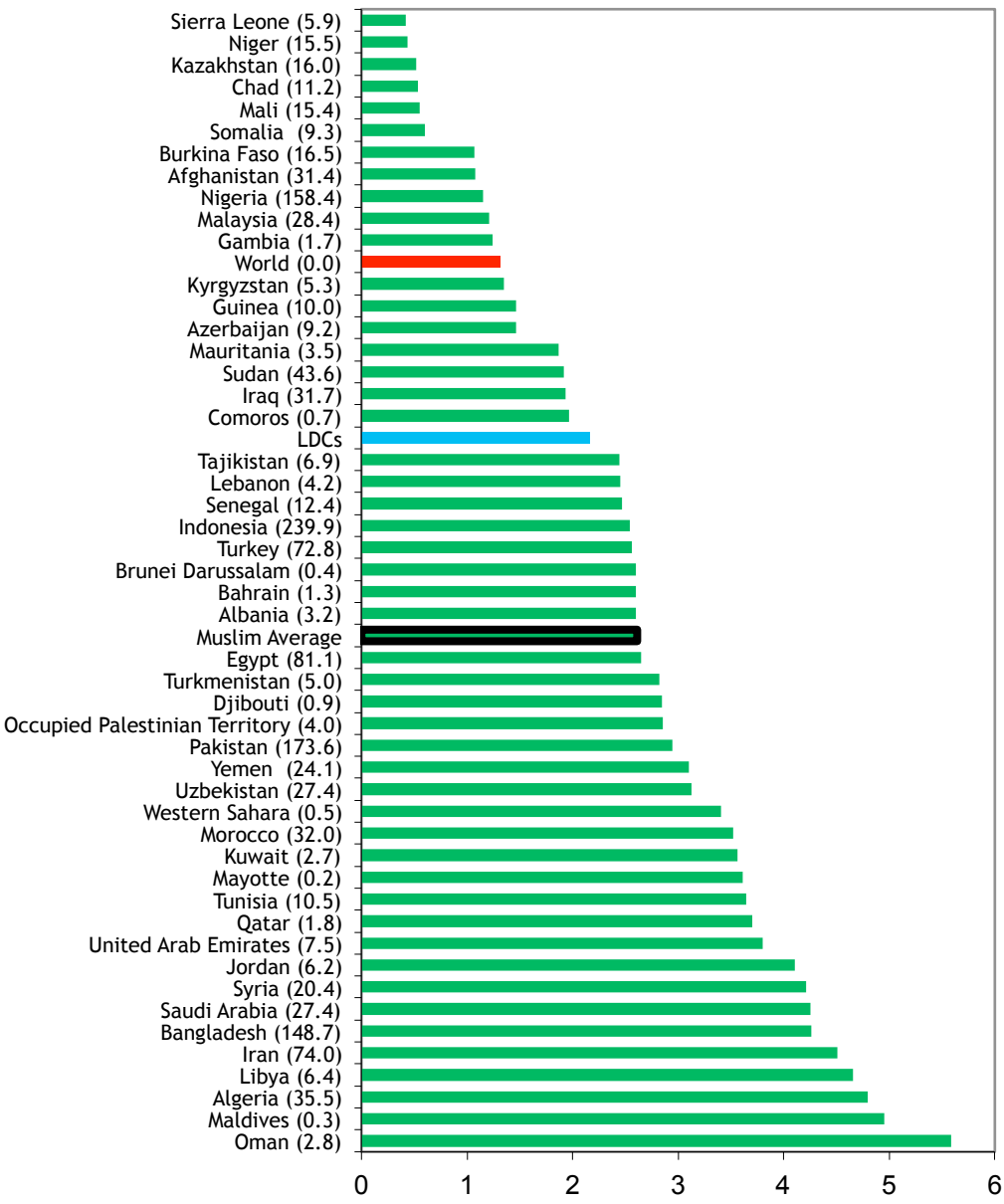
# Figure 3

## Total Fertility Rates in the Muslim World, 1975-80 vs. 2005-10



Source: Population Division of the Department of Economic and Social Affairs of the United Nations Secretariat, World Population Prospects: The 2010 Revision, [http://esa.un.org/unpd/wpp/unpp/panel\\_population.htm](http://esa.un.org/unpd/wpp/unpp/panel_population.htm), November 16, 2011.

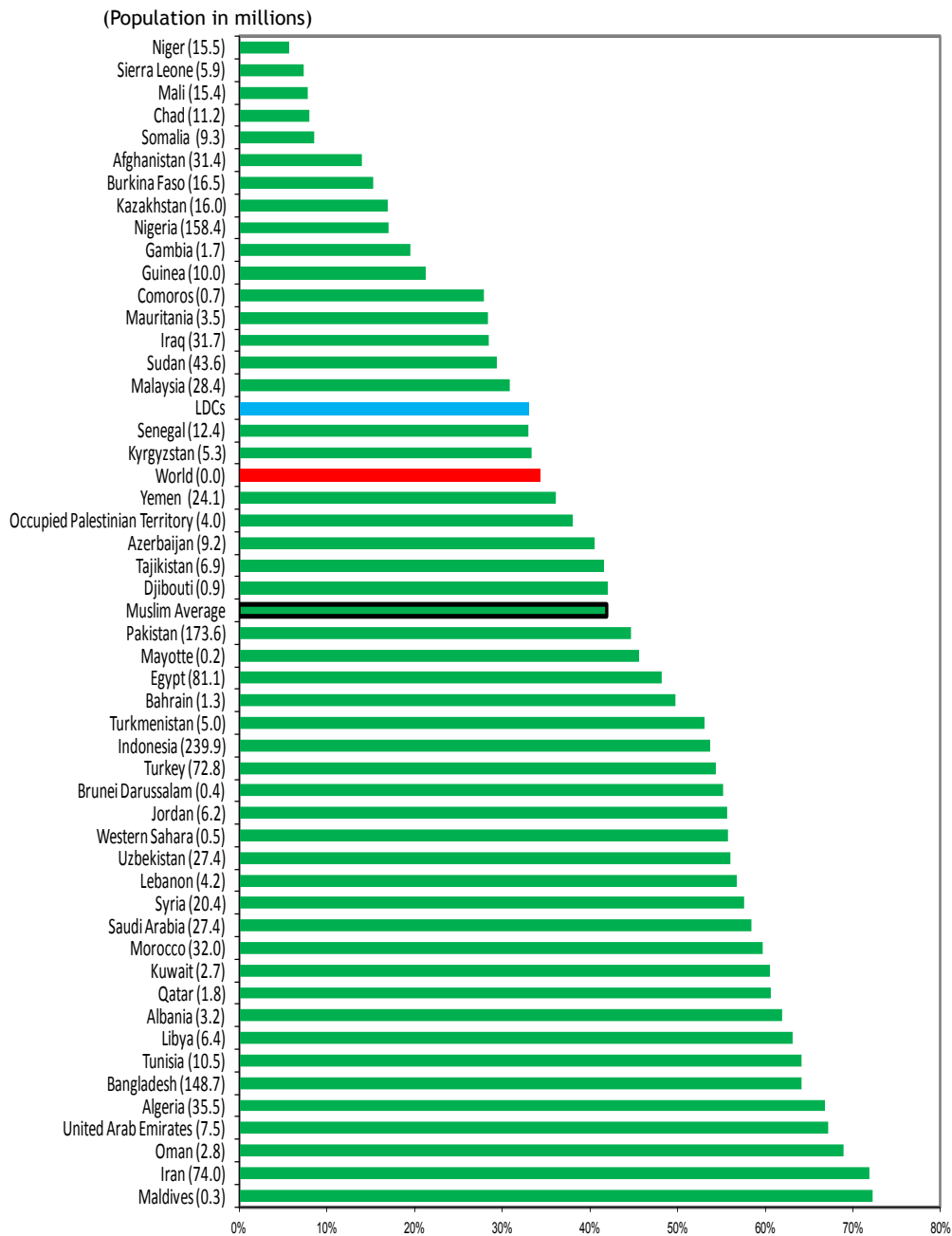
(Population in millions)



# Figure 4

Absolute Decline in Total Fertility Rates, 1975/80-2005/10:  
Muslim-Majority Countries and Selected Additional Regions

Source: Population Division of the Department of Economic and Social Affairs of the United Nations Secretariat, World Population Prospects: The 2010 Revision, <http://esa.un.org/unpd/wpp/Excel-Data/fertility.htm>, May 3, 2011. Accessed November 16, 2011.



**Figure 5**  
 Percentage Decline in Total Fertility Rates, 1975/80-2005/10:  
 Muslim-Majority Countries and Selected Additional Regions

Source: Population Division of the Department of Economic and Social Affairs of the United Nations Secretariat, World Population Prospects: The 2010 Revision, <http://esa.un.org/unpd/wpp/Excel-Data/fertility.htm>, May 3, 2011. Accessed November 16, 2011.

**Table 1**  
**The 10 biggest declines in total fertility rates (births per woman) in the postwar era:**  
**most rapid 20-year Total Fertility Rate decline in absolute terms**

<b>Major area, region, country or area</b>	<b>Time Period</b>	<b>Absolute Change</b>
Oman	<b>1985-1990 to 2005-2010</b>	-5.33
Maldives	<b>1985-1990 to 2005-2010</b>	-4.91
Kuwait	<b>1970-1975 to 1990-1995</b>	-4.70
Iran (Islamic Republic of)	<b>1980-1985 to 2000-2005</b>	-4.57
Singapore	<b>1955-1960 to 1975-1980</b>	-4.50
Algeria	<b>1975-1980 to 1995-2000</b>	-4.29
Mongolia	<b>1970-1975 to 1990-1995</b>	-4.20
Libyan Arab Jamahiriya	<b>1980-1985 to 2000-2005</b>	-4.18
Viet Nam	<b>1970-1975 to 1990-1995</b>	-3.92
Mauritius	<b>1960-1965 to 1980-1985</b>	-3.89

Source: Source: Population Division of the Department of Economic and Social Affairs of the United Nations Secretariat, World Population Prospects: The 2010 Revision, available at [http://esa.un.org/unpd/wpp/unpp/panel\\_population.htm](http://esa.un.org/unpd/wpp/unpp/panel_population.htm), accessed November 16, 2011.

**Table 2**

**The 10 biggest declines in total fertility rates (births per woman) in the postwar era:  
most rapid 20-year Total Fertility Rate relative to the starting year**

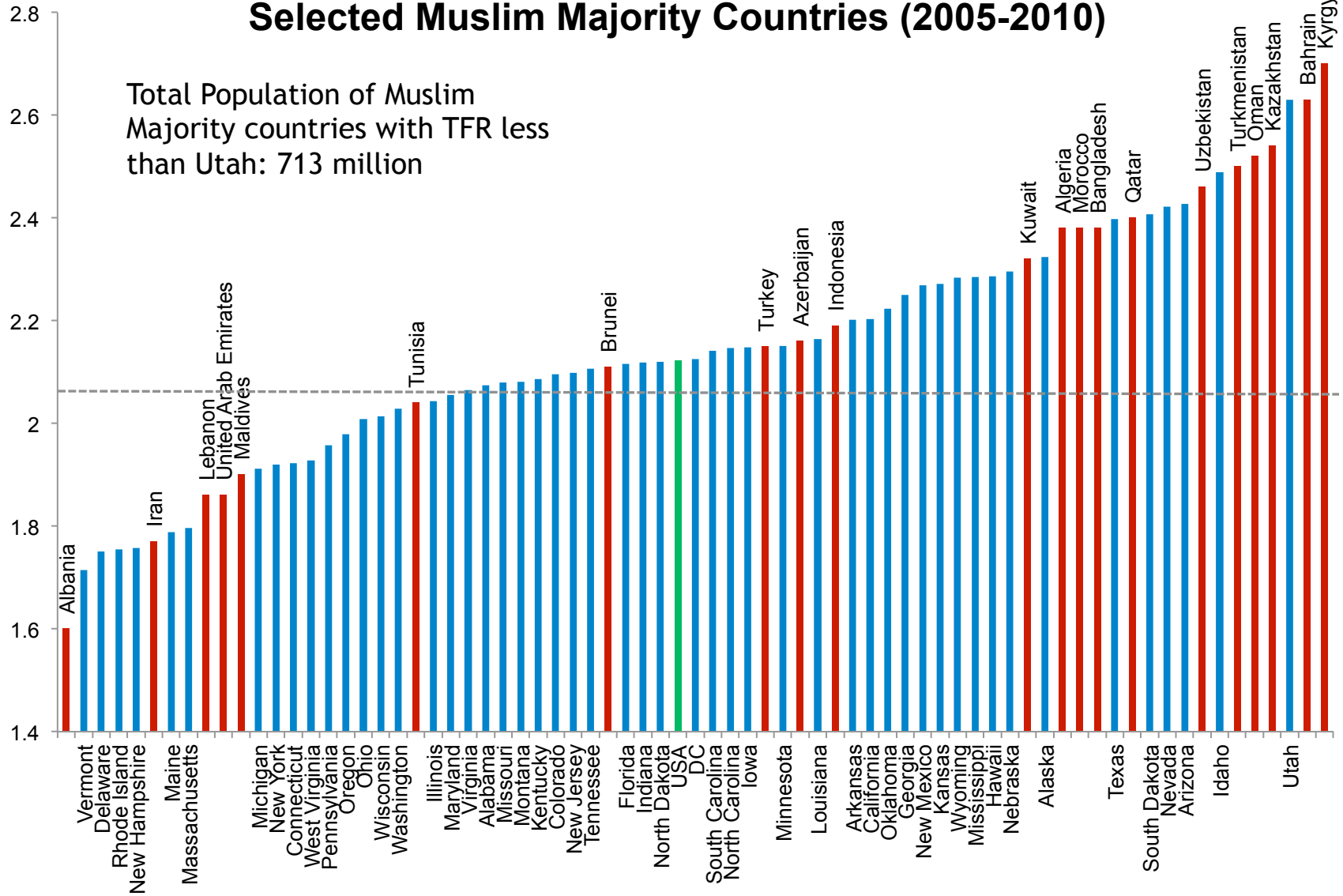
<b>Major area, region, country or area</b>	<b>Time Period</b>	<b>% Change</b>
China, Macao SAR	<b>1955-1960 to 1975-1980</b>	<b>-72</b>
Maldives	<b>1985-1990 to 2005-2010</b>	<b>-72</b>
Singapore	<b>1955-1960 to 1975-1980</b>	<b>-71</b>
Iran (Islamic Republic of)	<b>1980-1985 to 2000-2005</b>	<b>-70</b>
Kuwait	<b>1970-1975 to 1990-1995</b>	<b>-68</b>
Oman	<b>1985-1990 to 2005-2010</b>	<b>-68</b>
Republic of Korea	<b>1965-1970 to 1985-1990</b>	<b>-66</b>
Mongolia	<b>1980-1985 to 2000-2005</b>	<b>-63</b>
Viet Nam	<b>1975-1980 to 1995-2000</b>	<b>-63</b>
Mauritius	<b>1960-1965 to 1980-1985</b>	<b>-63</b>

Source: Source: Population Division of the Department of Economic and Social Affairs of the United Nations Secretariat, World Population Prospects: The 2010 Revision, available at [http://esa.un.org/unpd/wpp/unpp/panel\\_population.htm](http://esa.un.org/unpd/wpp/unpp/panel_population.htm), accessed November 16, 2011.



# Figure 6

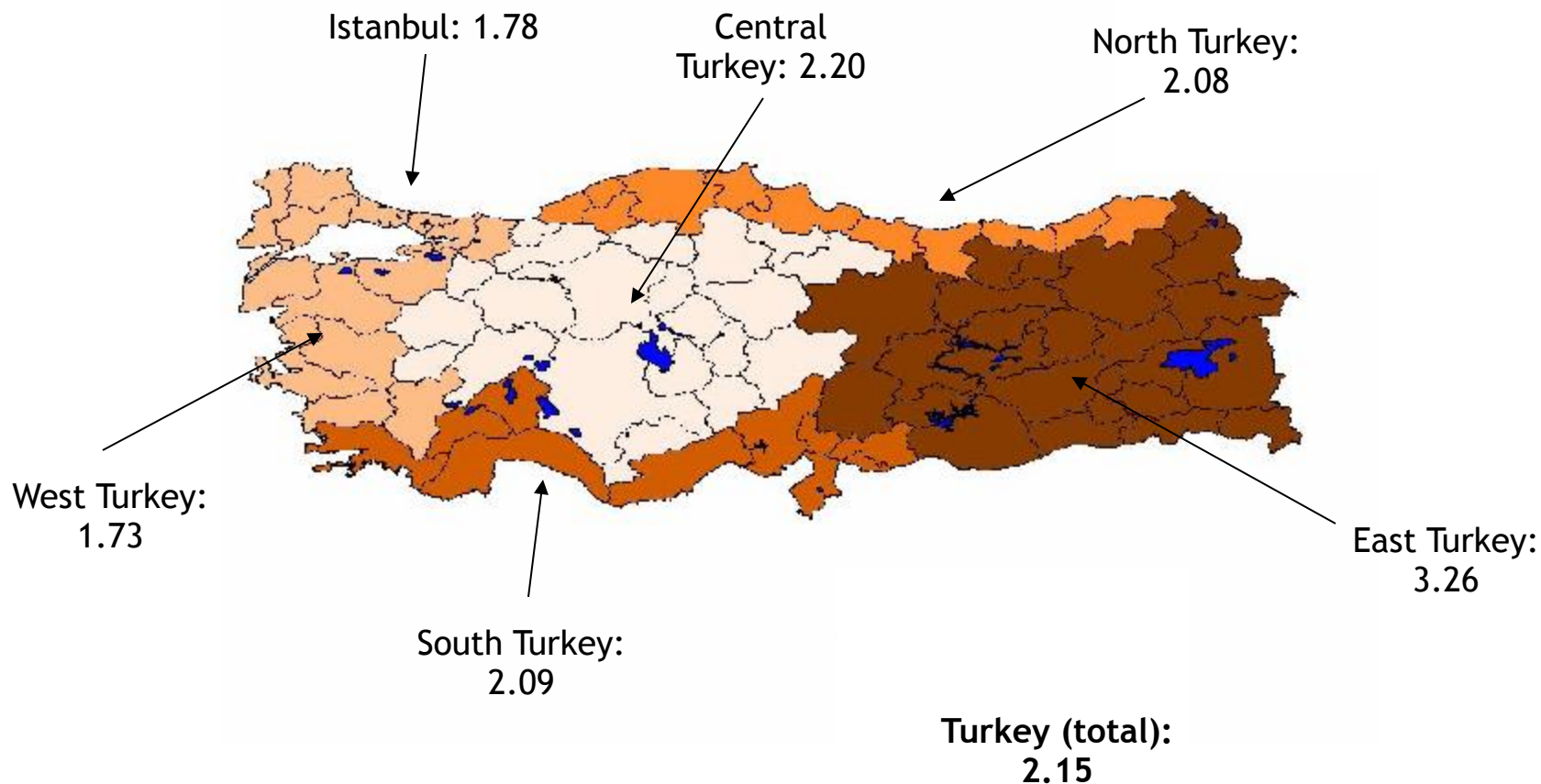
## Total Fertility Rate in the United States (2007) vs. Selected Muslim Majority Countries (2005-2010)



Sources: US TFR Source (2007 data): National Vital Statistics Reports, Volume 58, Number 24, August 9, 2010, [http://www.cdc.gov/nchs/data/nvsr/nvsr58/nvsr58\\_24.pdf](http://www.cdc.gov/nchs/data/nvsr/nvsr58/nvsr58_24.pdf); Muslim-majority country TFR source (2005-2010 data): Population Division of the Department of Economic and Social Affairs of the United Nations Secretariat, World Population Prospects: The 2010 Revision, <http://esa.un.org/unpd/wpp/Excel-Data/fertility.htm>.

# Figure 7

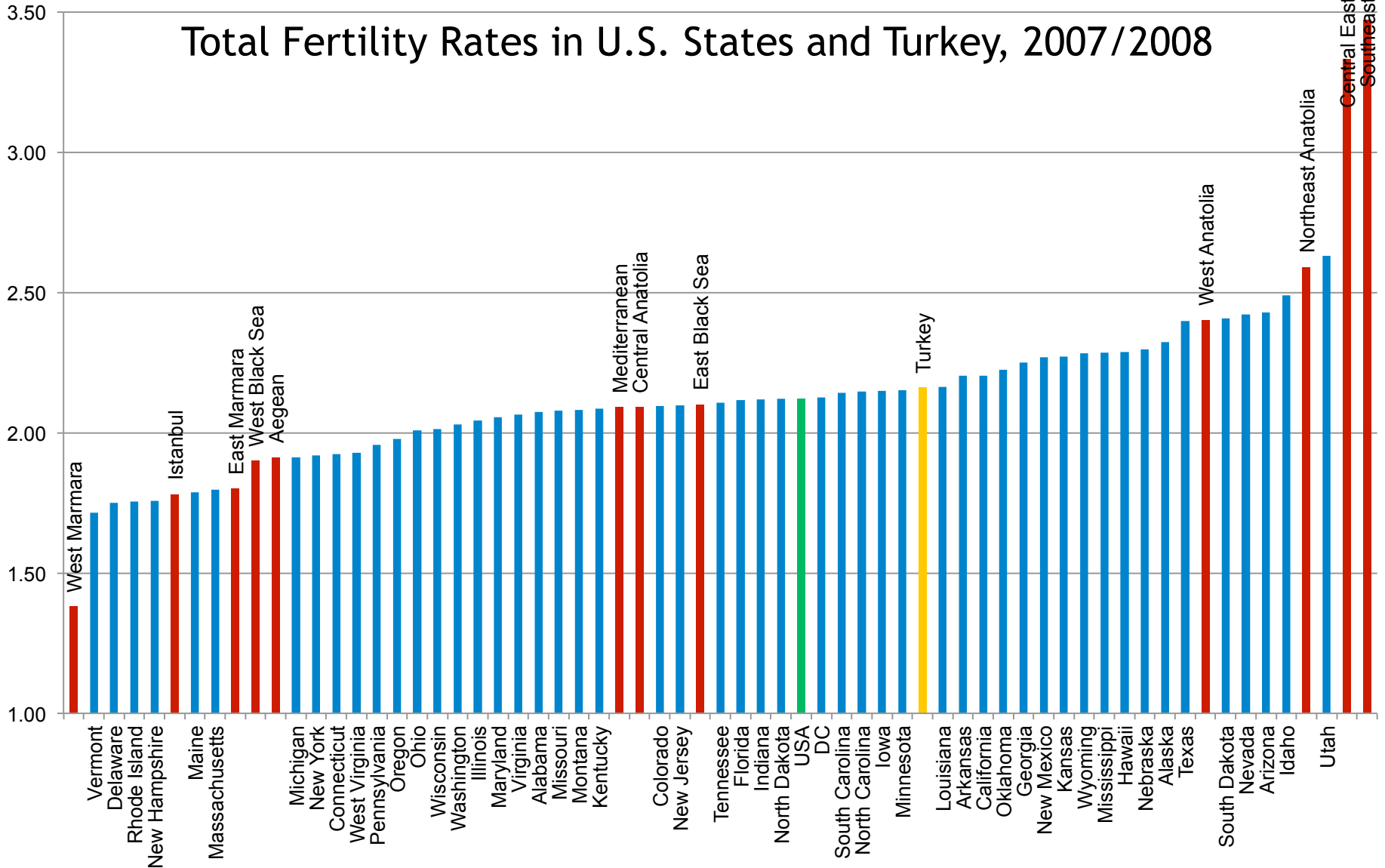
## Total Fertility Rates by Region in Turkey, 2005-2008



Source: TFRs: "Turkey Demographic and Health Survey: Preliminary Report," March 2009. Available at [http://www.hips.hacettepe.edu.tr/eng/tdhs08/TDHS-2008\\_Preliminary\\_Report.pdf](http://www.hips.hacettepe.edu.tr/eng/tdhs08/TDHS-2008_Preliminary_Report.pdf), accessed March 17, 2012. Image: Sutay Yavuz, "Fertility Transition and The Progression to a Third Birth in Turkey," (Presentation, Institute of Population Studies, Hacettepe University). 2005. Available at <http://www.demogr.mpg.de/papers/working/wp-2005-028.pdf>, accessed November 23, 2011.

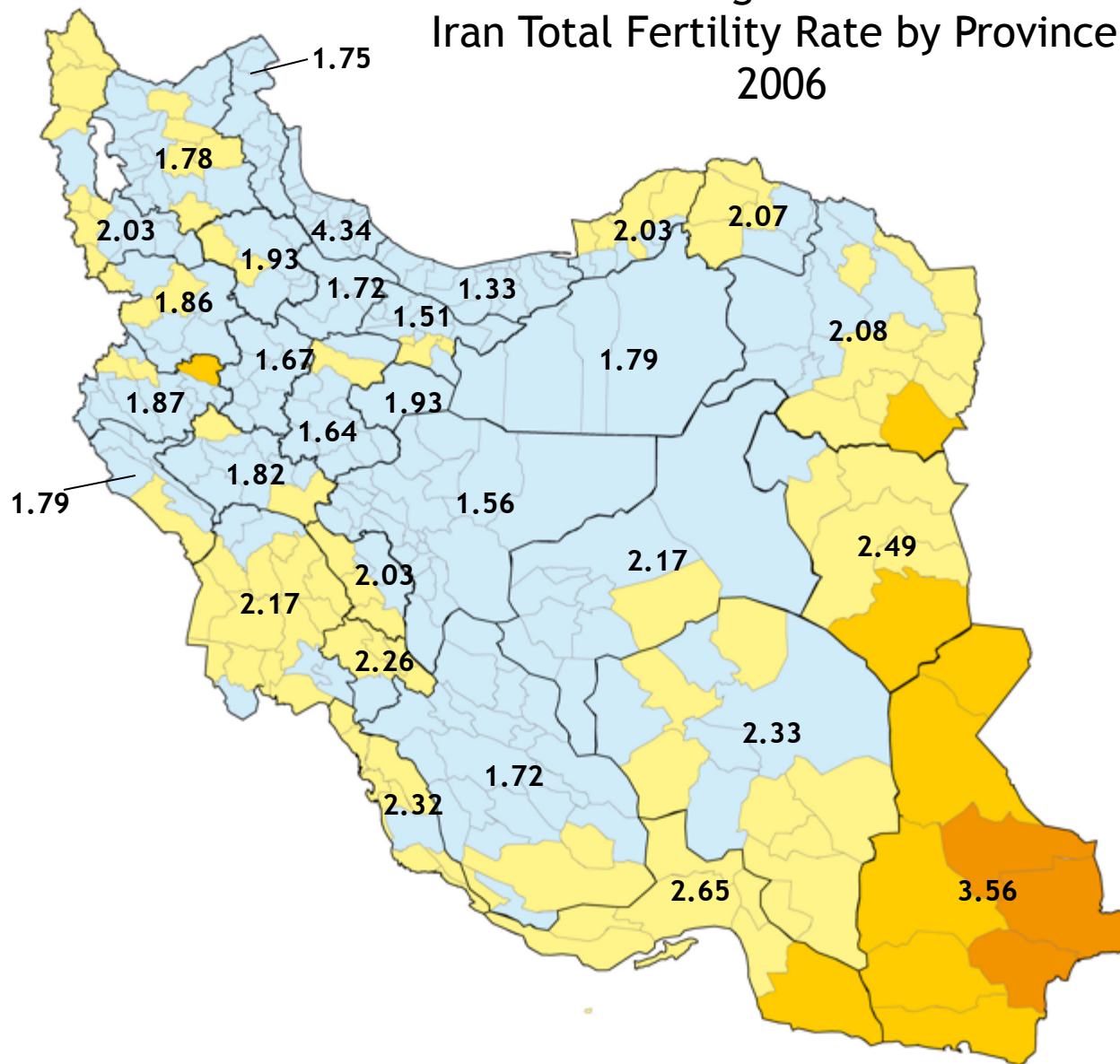
# Figure 8

## Total Fertility Rates in U.S. States and Turkey, 2007/2008



Sources: US TFR Source (2007 data): National Vital Statistics Reports, Volume 58, Number 24, August 9, 2010, [http://www.cdc.gov/nchs/data/nvsr/nvsr58/nvsr58\\_24.pdf](http://www.cdc.gov/nchs/data/nvsr/nvsr58/nvsr58_24.pdf); Turkey: Turkey Demographic and Health Survey, 2008, Hacettepe University Institute of Population Studies, October 2009.

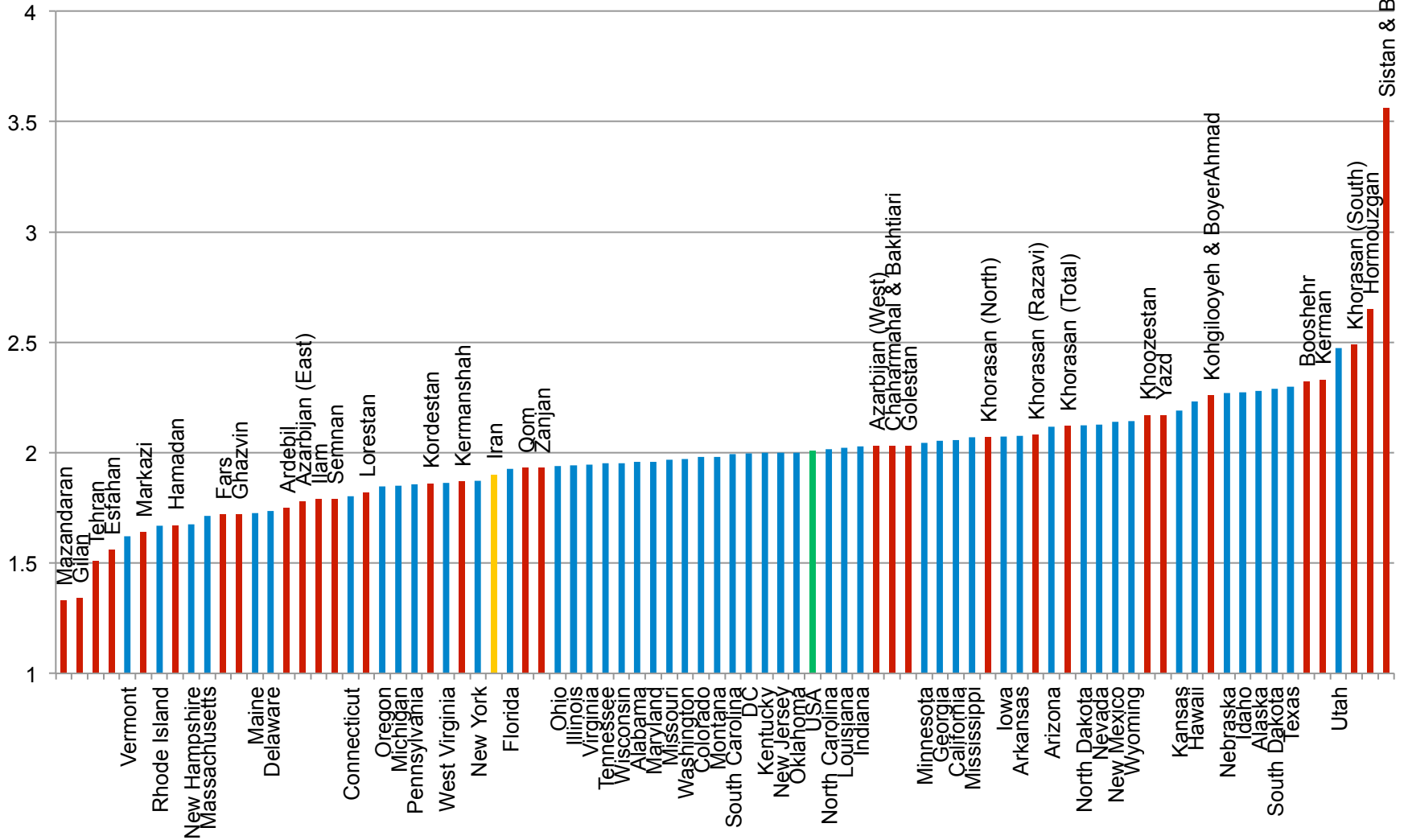
Figure 9:  
Iran Total Fertility Rate by Province,  
2006



Abbasi-Shavazi, M.J., P. McDonald, and Hosseini-Chavoshi, M. 2009, *The Fertility Transition in Iran: Revolution and Reproduction*, Springer, Dordrecht. Abbasi-Shavazi, M.J., Hosseini-Chavoshi, M. Nourollahi, T., and Banihashemi, F. 2011 *Own-children method estimation of fertility using the 2006 census in Iran*, Research Report, Statistical Center of Iran, Tehran [Persian]. Map: Iran Carto, <http://www.irancarto.cnrs.fr/index.php?l=en>

Figure 10

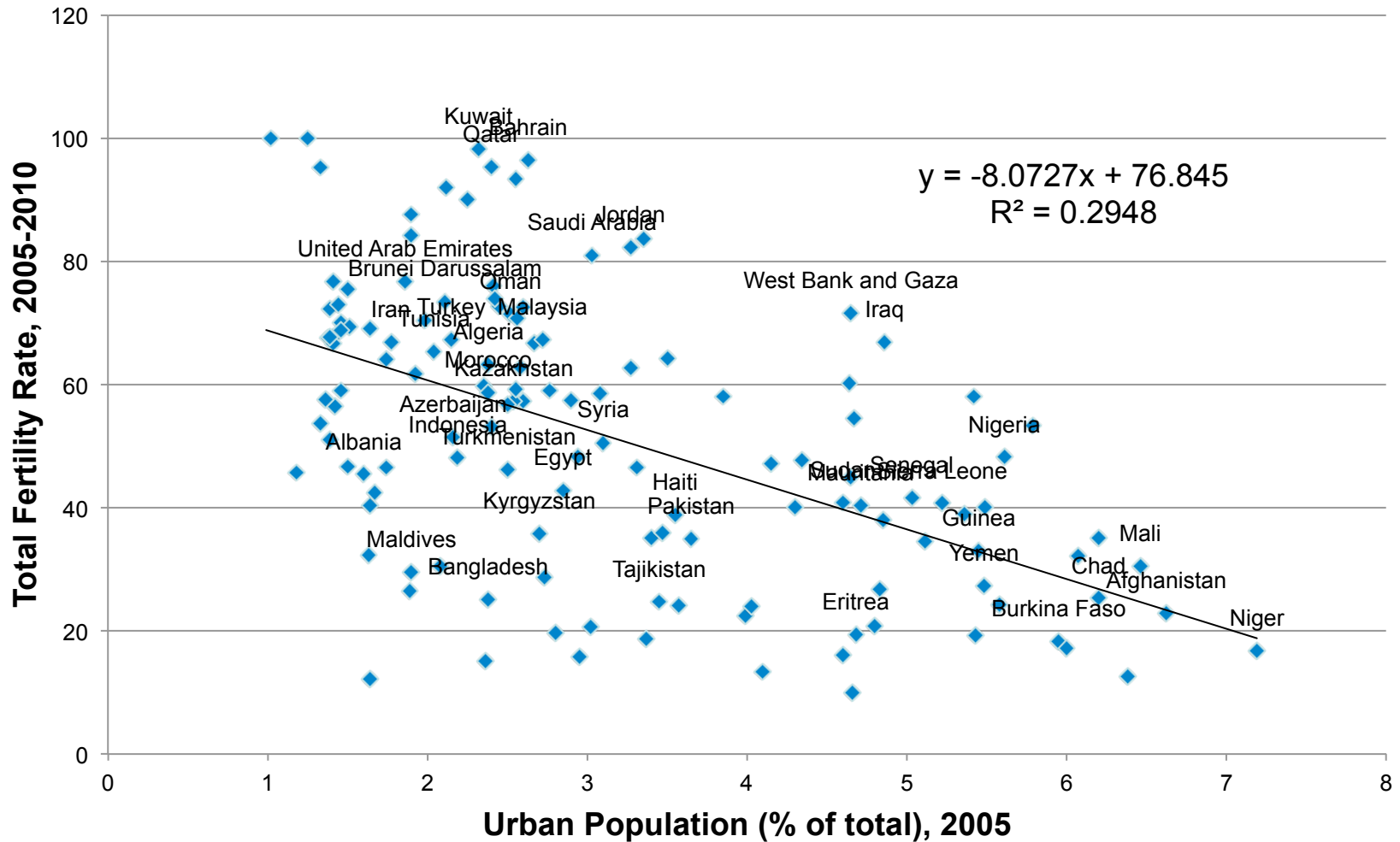
Total Fertility Rates in U.S. States (2007) vs. Iranian Provinces (2006)



Sources: Sources: US TFR Source (2007 data): National Vital Statistics Reports, Volume 58, Number 24, May 20, 2010, [http://www.cdc.gov/nchs/data/nvsr/nvsr58/nvsr58\\_24.pdf](http://www.cdc.gov/nchs/data/nvsr/nvsr58/nvsr58_24.pdf); Iran: Abbasi-Shavazi, M.J., P. McDonald, and Hosseini-Chavoshi, M. 2009, The Fertility Transition in Iran: Revolution and Reproduction, Springer, Dordrecht. Abbasi-Shavazi, M.J., Hosseini-Chavoshi, M. Nourollahi, T., and Banihashemi, F. 2011 Own-children method estimation of fertility using the 2006 census in Iran, Research Report, Statistical Center of Iran, Tehran [Persian].

# Figure 11

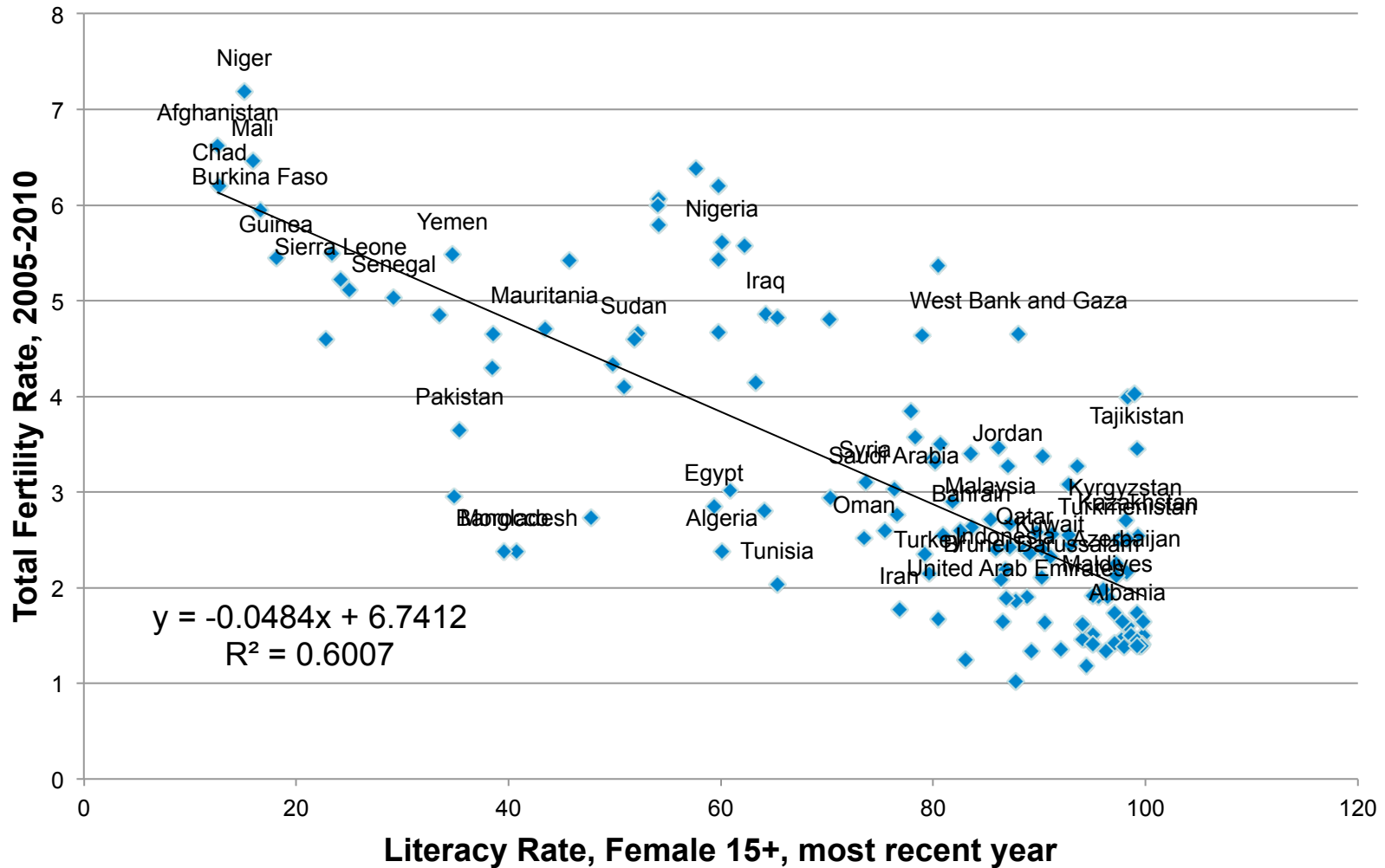
Percentage of Total Population Urban, 2005 vs. Total Fertility Rate, 2005-2010



Source: Population Division of the Department of Economic and Social Affairs of the United Nations Secretariat, World Population Prospects: The 2010 Revision, [http://esa.un.org/unpd/wpp/unpp/panel\\_population.htm](http://esa.un.org/unpd/wpp/unpp/panel_population.htm), November 21, 2011. World Development Indicators 2010, <http://databank.worldbank.org/ddp/home.do?Step=2&id=4>, November 21, 2011.

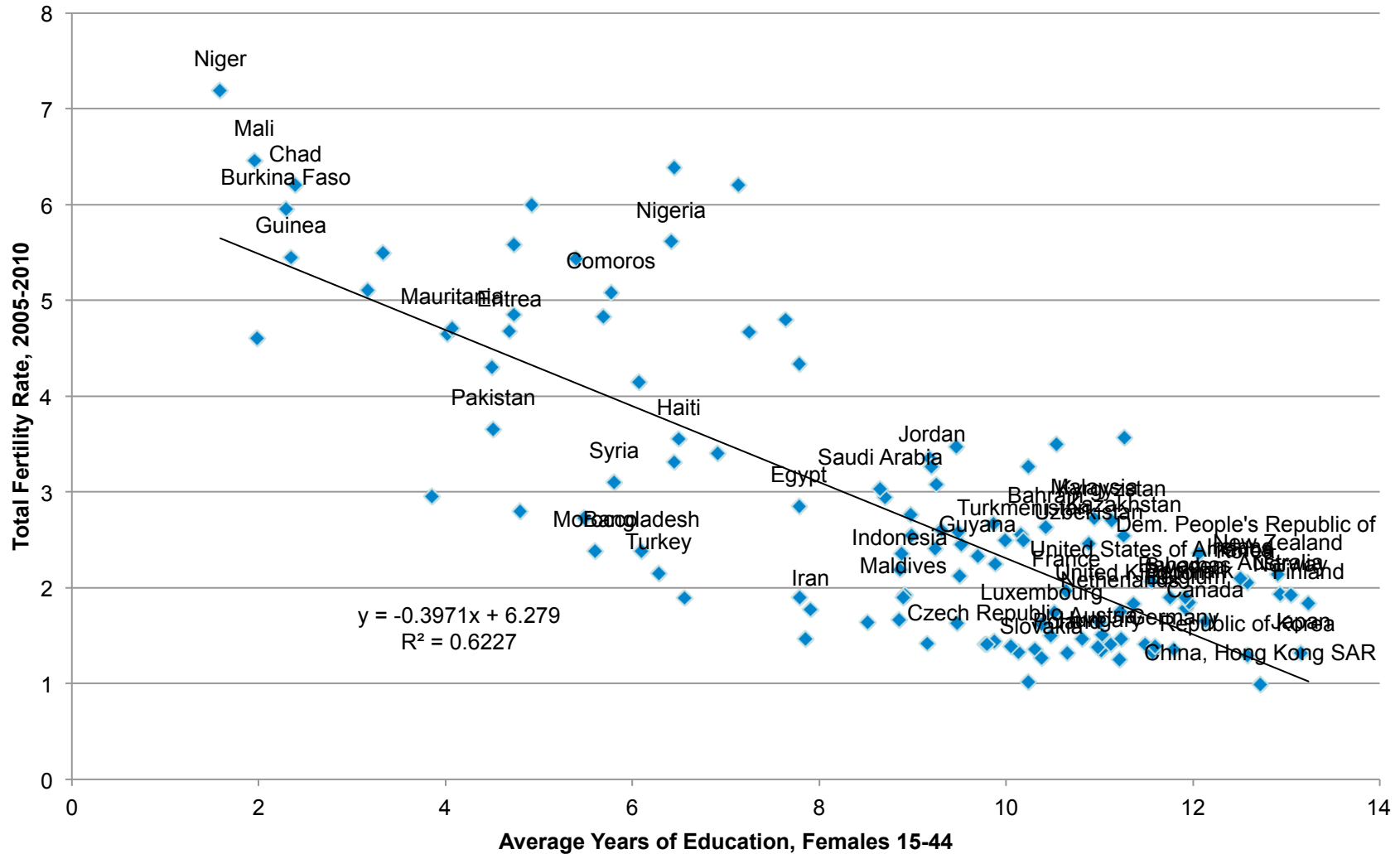
# Figure 12

## Female Literacy Rates c. 2000 vs. Total Fertility Rates, 2005-2010



Source: Literacy Rates: UNESCO Institute for Statistics - UNESCO UIS, <http://www.uis.unesco.org/Pages/default.aspx>, November 21, 2011; TFR: Population Division of the Department of Economic and Social Affairs of the United Nations Secretariat, World Population Prospects: The 2010 Revision, [http://esa.un.org/unpd/wpp/unpp/panel\\_population.htm](http://esa.un.org/unpd/wpp/unpp/panel_population.htm), November 21, 2011.

# Total Fertility Rate 2005-2010 vs. Average Years of Education, Female 15-44, 2010

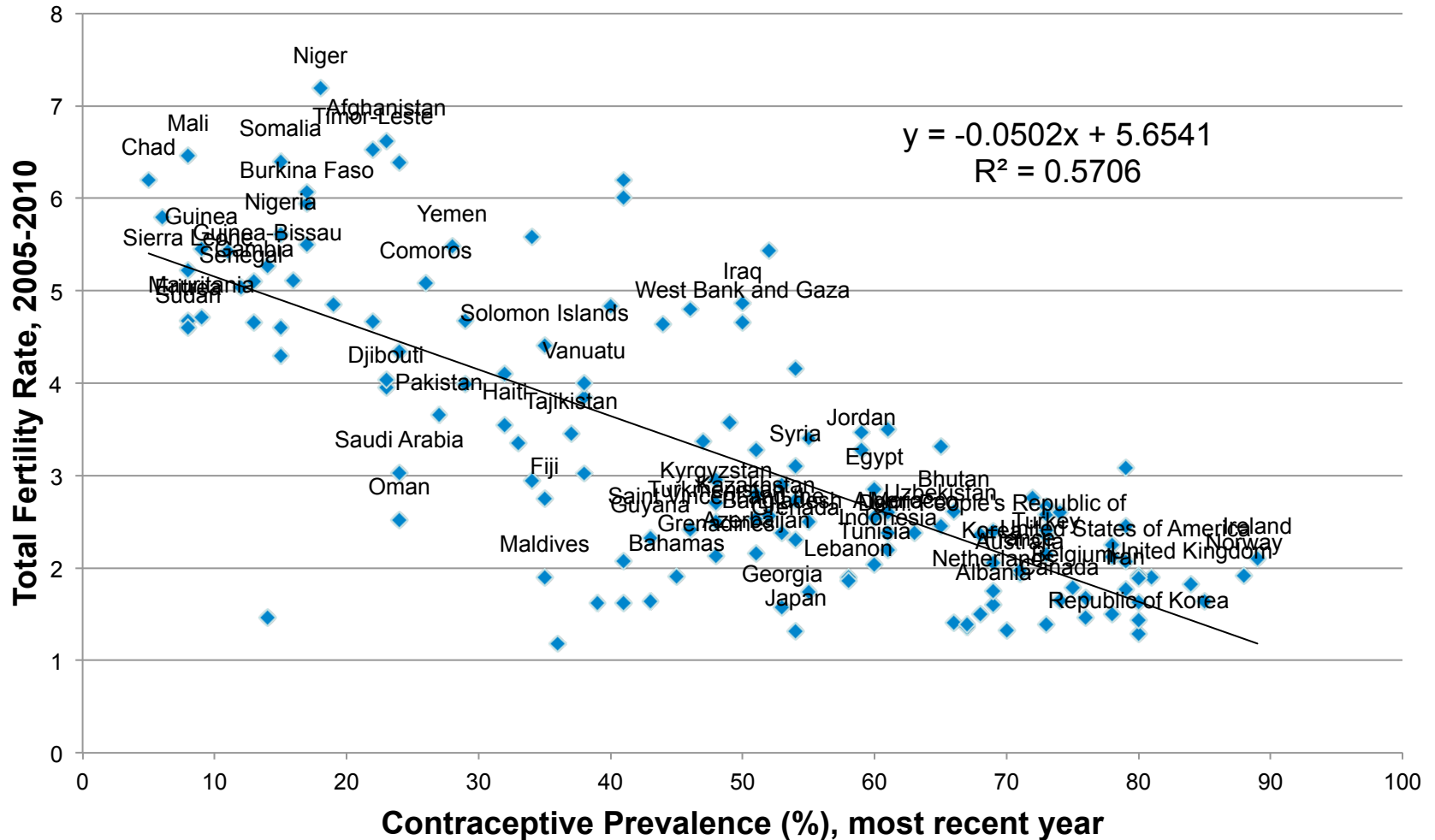


Source: Education: International Institute for Applied Systems Analysis, <http://www.nationsencyclopedia.com/WorldStats/Edu-iiasa-years-schooling-15-44-female.html>, February 8, 2012; TFR: Population Division of the Department of Economic and Social Affairs of the United Nations Secretariat, World Population Prospects: The 2010 Revision, [http://esa.un.org/unpd/wpp/unpp/panel\\_population.htm](http://esa.un.org/unpd/wpp/unpp/panel_population.htm), November 21, 2011.



# Figure 13

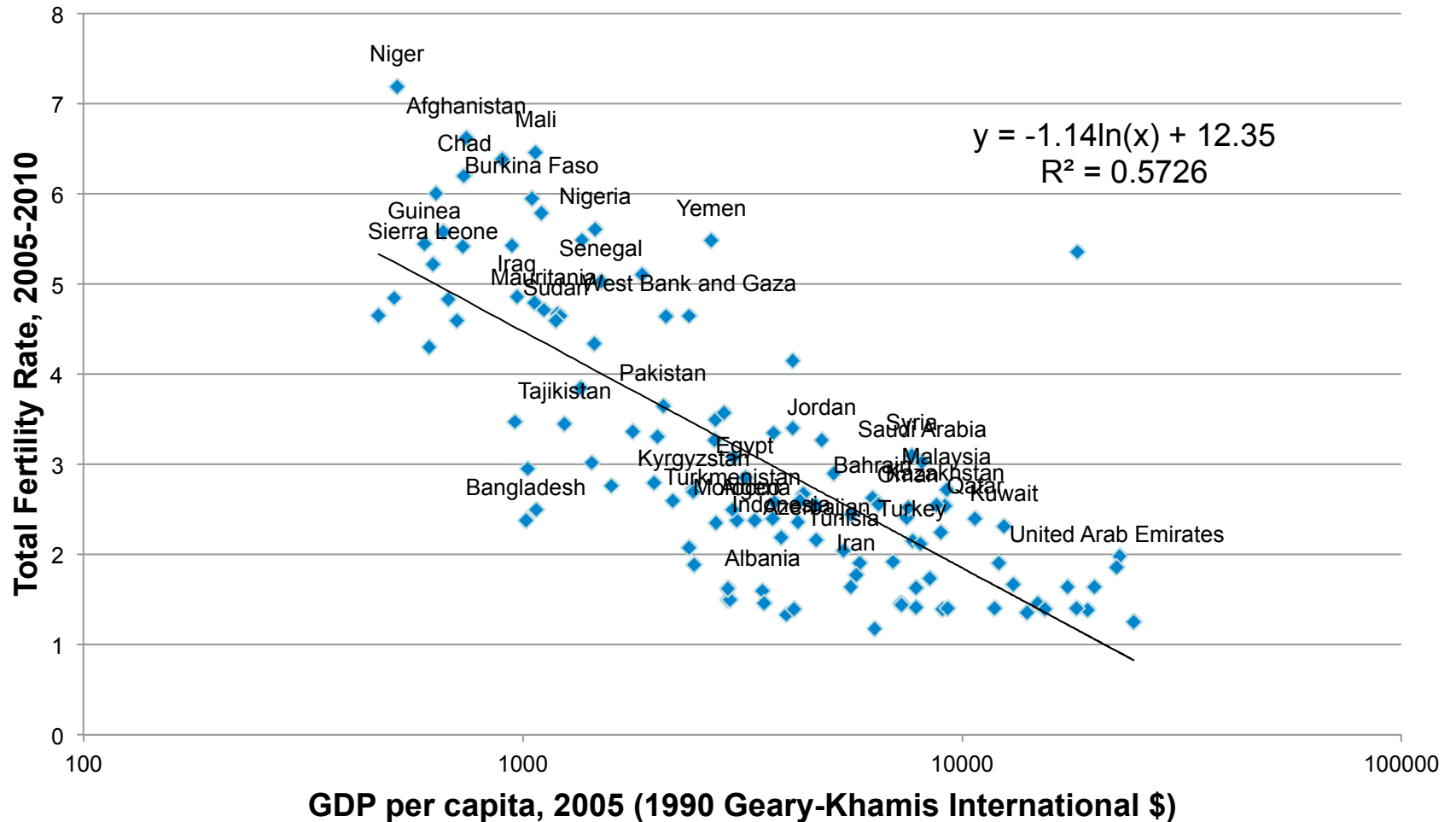
## Contraceptive Prevalence, 2006-2010 vs. Total Fertility Rates, 2005-2010



Source: Contraceptive prevalence, 2006-2010: UNICEF "The State of the World's Children 2009." <http://www.unicef.org/sowc09/statistics/tables.php>, November 21, 2011; TFR: Population Division of the Department of Economic and Social Affairs of the United Nations Secretariat, The 2010 Revision, [http://esa.un.org/unpd/wpp/unpp/panel\\_population.htm](http://esa.un.org/unpd/wpp/unpp/panel_population.htm), November 21, 2011.

# Figure 14

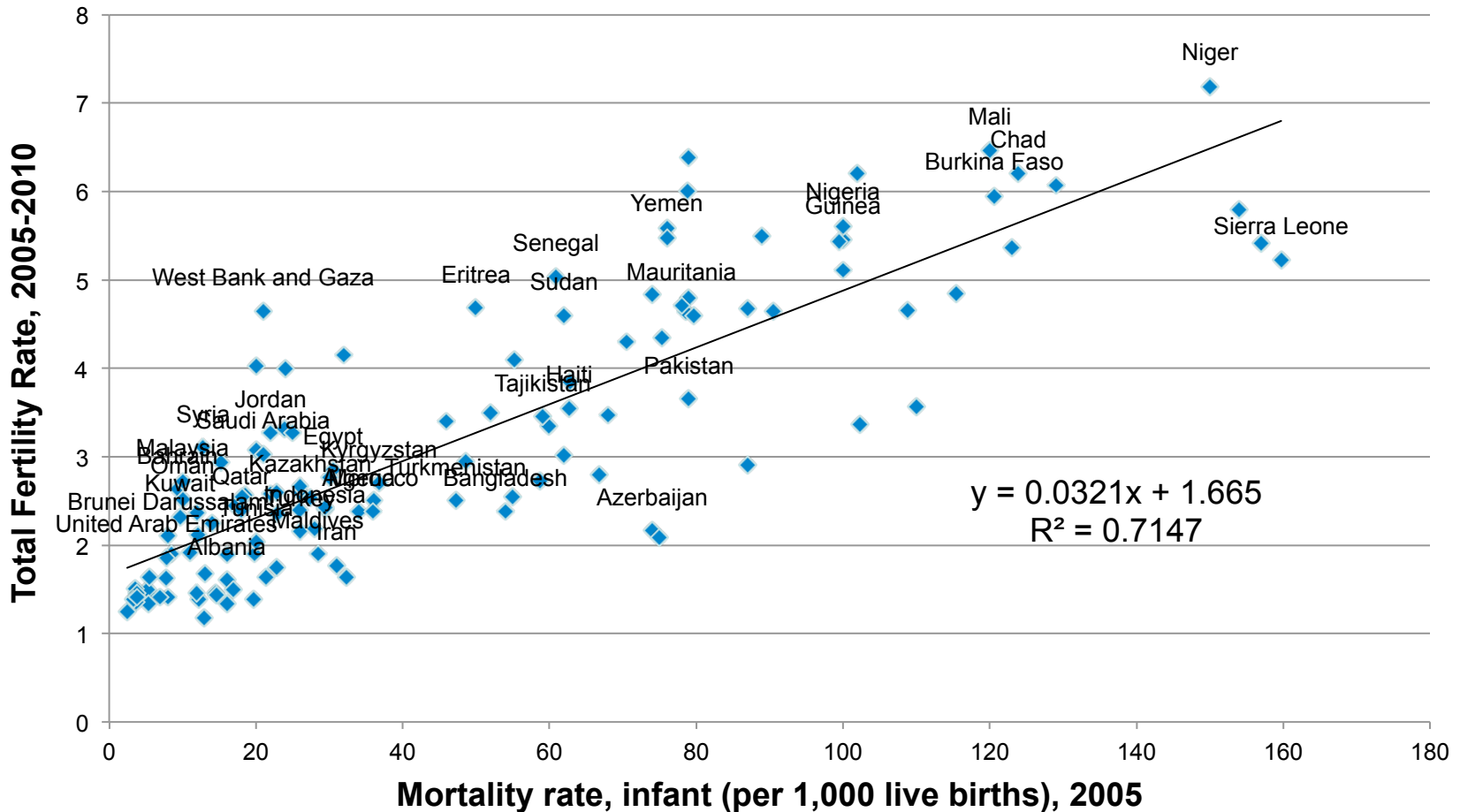
## Per Capita GDP 2005 vs. Total Fertility Rates, 2005-2010



Source: Angus Maddison, "Per Capita GDP PPP (in 1990 Geary-Khamis dollars)," Historical Statistics for the World Economy: 1-2008 AD, table 3, <http://www.ggdc.net/maddison/> (accessed November 21, 2011); Population Division of the Department of Economic and Social Affairs of the United Nations Secretariat, World Population Prospects: The 2010 Revision, [http://esa.un.org/unpd/wpp/unpp/panel\\_population.htm](http://esa.un.org/unpd/wpp/unpp/panel_population.htm), accessed November 21, 2011.

# Figure 15

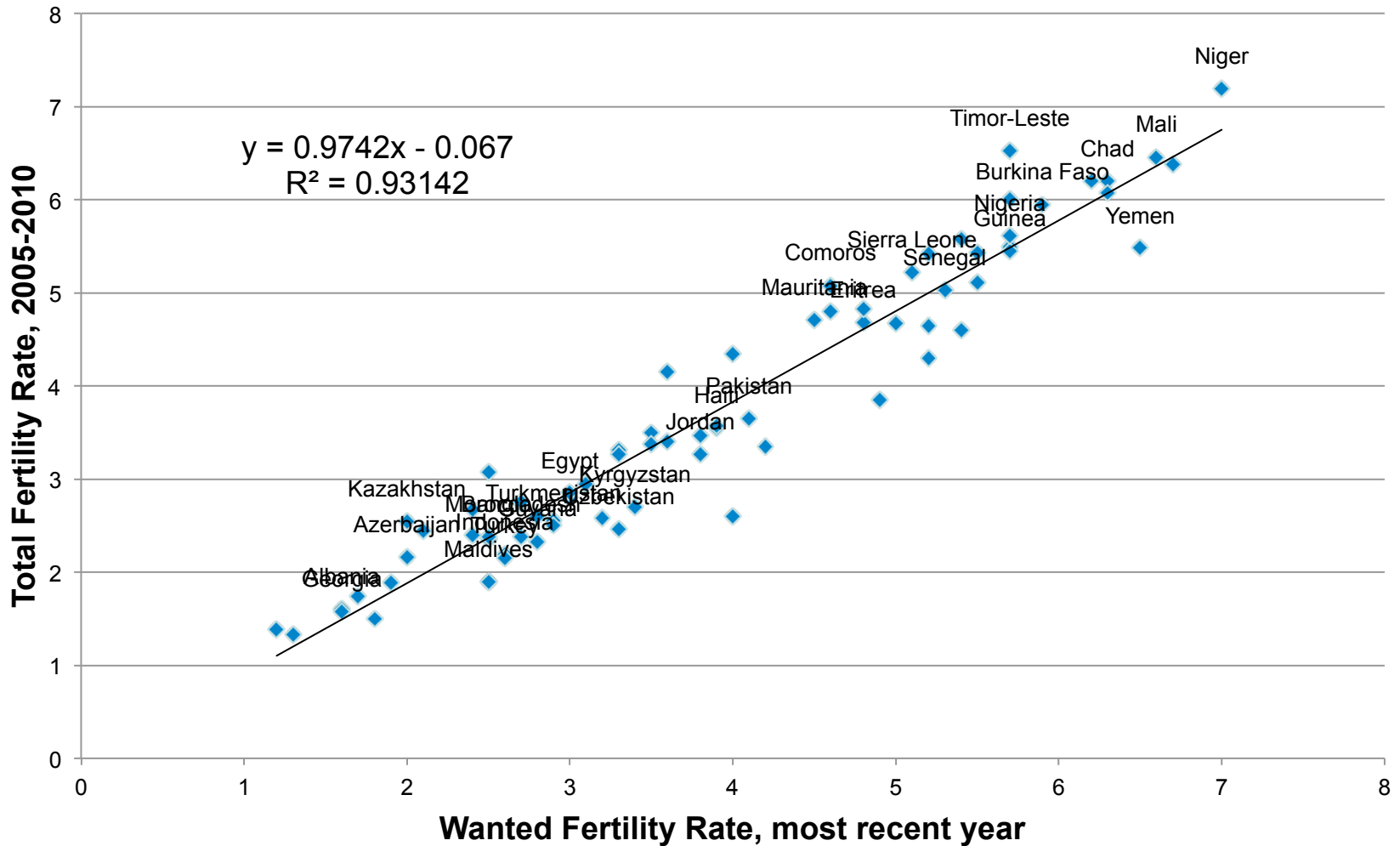
## Infant Mortality Rate, 2005 vs. Total Fertility Rate, 2005-2010



Source: Population Division of the Department of Economic and Social Affairs of the United Nations Secretariat, World Population Prospects: The 2010 Revision, [http://esa.un.org/unpd/wpp/unpp/panel\\_population.htm](http://esa.un.org/unpd/wpp/unpp/panel_population.htm), November 21, 2011. World Development Indicators 2010, <http://databank.worldbank.org/ddp/home.do?Step=2&id=4>, November 21, 2011.

# Figure 16

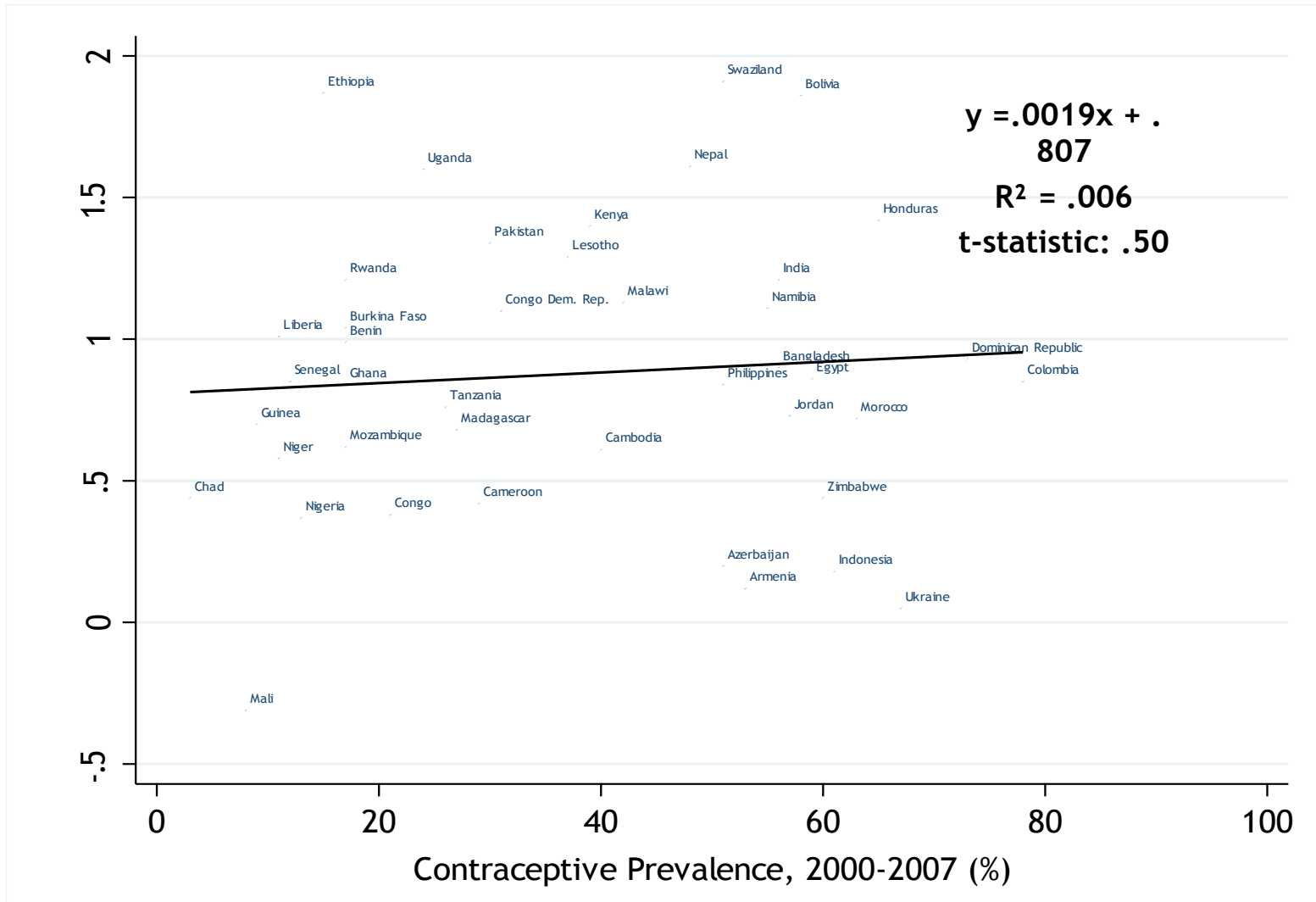
## Total Fertility Rates 2005-2010 vs. Wanted Total Fertility Rates, c. 2005



Source: Macro International Inc, 2011. MEASURE DHS STATcompiler. <http://www.measuredhs.com>, February 24, 2012. Population Division of the Department of Economic and Social Affairs of the United Nations Secretariat, World Population Prospects: The 2010 Revision, [http://esa.un.org/unpd/wpp/unpp/panel\\_population.htm](http://esa.un.org/unpd/wpp/unpp/panel_population.htm), November 21, 2011.

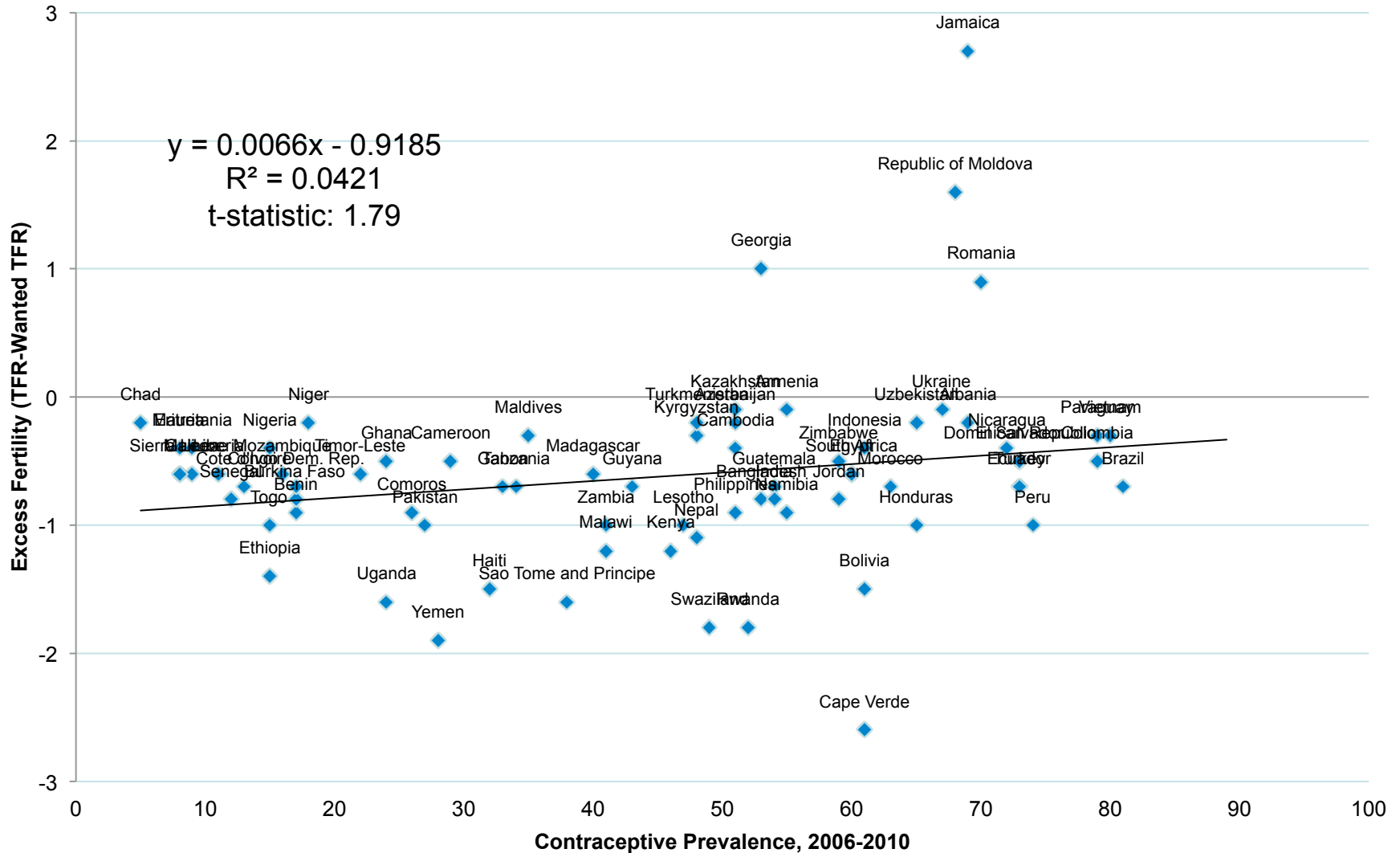
# Figure 17

## Contraceptive Prevalence and “Excess Fertility”, 2000/07



# Figure 17

## Contraceptive Prevalence and “Excess Fertility”, 2000/10



Source: Contraceptive prevalence, 2006-2010: UNICEF "The State of the World's Children 2012."; Wanted TFR and TFR: Macro International Inc, 2012. MEASURE DHS STATcompiler. <http://www.measuredhs.com>

# Figure 18

## Determinants of Total Fertility Rates: What The Regressions Equations Suggest

Explanatory Variables	Dependent Variable: Total Fertility Rate			
<b>Wanted Total Fertility Rates</b> (most recent year)	0.868*** (12.10)	0.862*** (12.61)	0.824*** (13.70)	0.809*** (13.85)
<b>Ln GDP PPP, 2005</b> (1990 Geary-Khamis International \$)	-0.195 (-1.828)	-0.136 (-1.300)	-0.232* (-2.430)	-0.163 (-1.685)
<b>Contraceptive Use</b> (%, married women 15-49)	0.001 (0.205)	-0.001 (-0.278)	-0.001 (-0.316)	-0.003 (-0.844)
<b>Average years of Education,</b> (females 15-44, 2010)	-0.039 (-1.476)	-0.050 (-1.961)		
<b>Literacy Rate</b> (female 15+, most recent year)			-0.004 (-1.329)	-0.005 (-1.975)
<b>Muslim Country Dummy Variable</b>		-0.258* (-2.479)		-0.230* (-2.317)
<b>Number of Observations</b>	55	55	66	66
<b>R<sup>2</sup> (unadjusted)</b>	0.952	0.957	0.952	0.956

\*p<0.05 \*\*p<0.01 \*\*\*p<0.001

Note: t-scores in parentheses.

Sources: Angus Maddison, "Per Capita GDP PPP (in 1990 Geary-Khamis dollars)," Historical Statistics for the World Economy: 1-2008 AD, table 3, <http://www.ggd.net/maddison/>, accessed November 21 2011; MEASURE DHS STATcompiler. <http://www.measuredhs.com>, accessed March 30 2009; IIASA, <http://www.nationsencyclopedia.com/WorldStats/Edu-iiasa-years-schooling-15-44-female.html>, accessed March 12, 2012

# Figure 19

## How “Conservative” are ‘Muslim Societies’?

### Explaining Contraceptive Prevalence in the World

Dependent Variable: <b>Contraceptive Prevalence (%)</b>	<b>1980s</b>		<b>2000s</b>	
<b>Explanatory Variables</b>				
<b>Muslim Country</b> (dummy variable)	<b>-15.974**</b> (-2.94)	<b>-13.872**</b> (-2.99)	<b>-10.95*</b> (-2.53)	<b>-10.956**</b> (-3.20)
<b>Log of GDP Per Capita</b> (PPP 1990 International \$)		<b>14.224***</b> (6.02)		<b>14.852***</b> (9.03)
<b>R<sup>2</sup> (unadjusted)</b>	.086	.352	.051	.461
<b>Number of Observations</b>	94	93	120	113

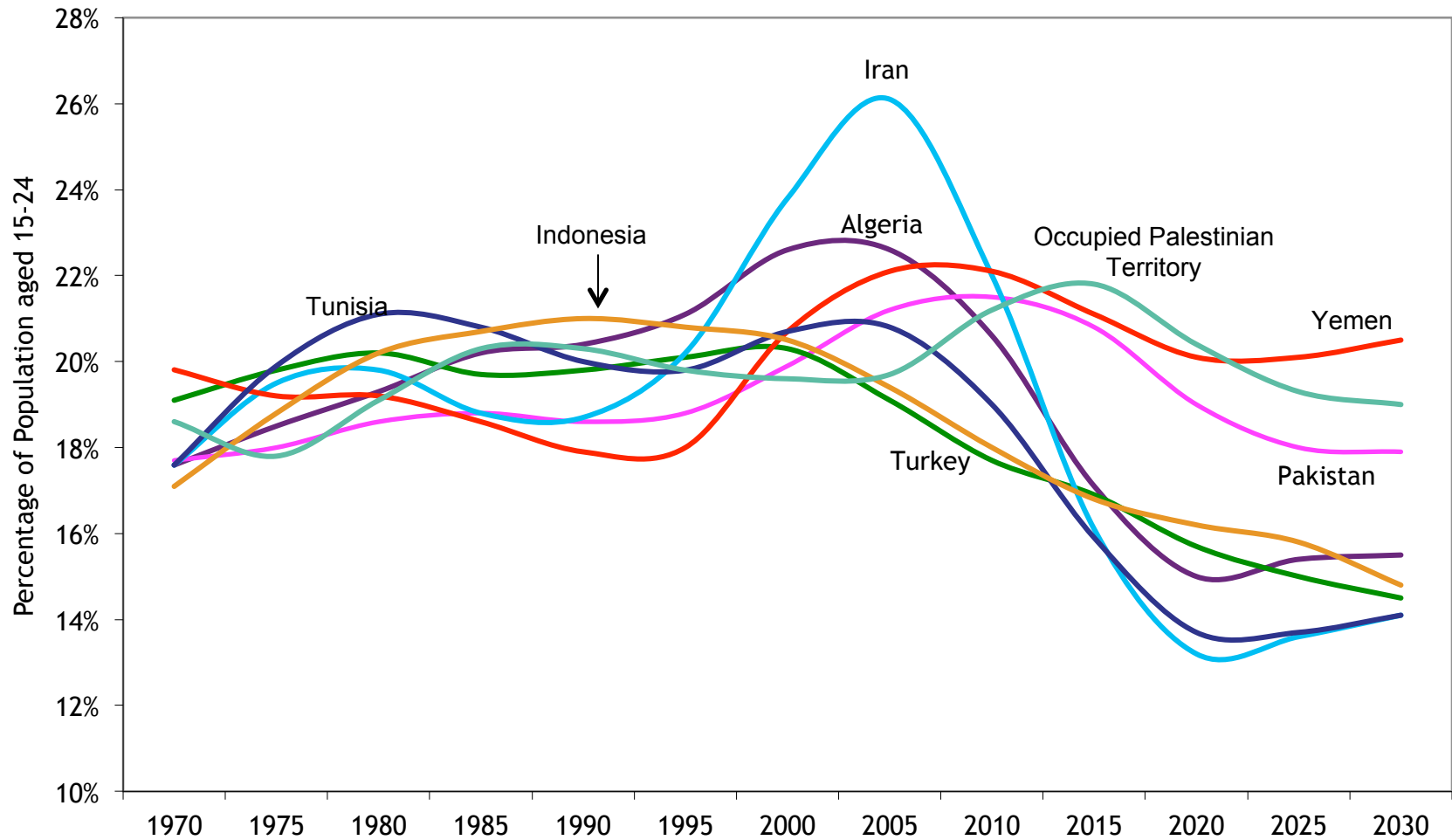
\*p<0.05 \*\*p<0.01 \*\*\*p<0.001

Note: t-scores in parentheses.

Sources: MEASURE DHS STATcompiler. <http://www.measuredhs.com>, March 30 2009



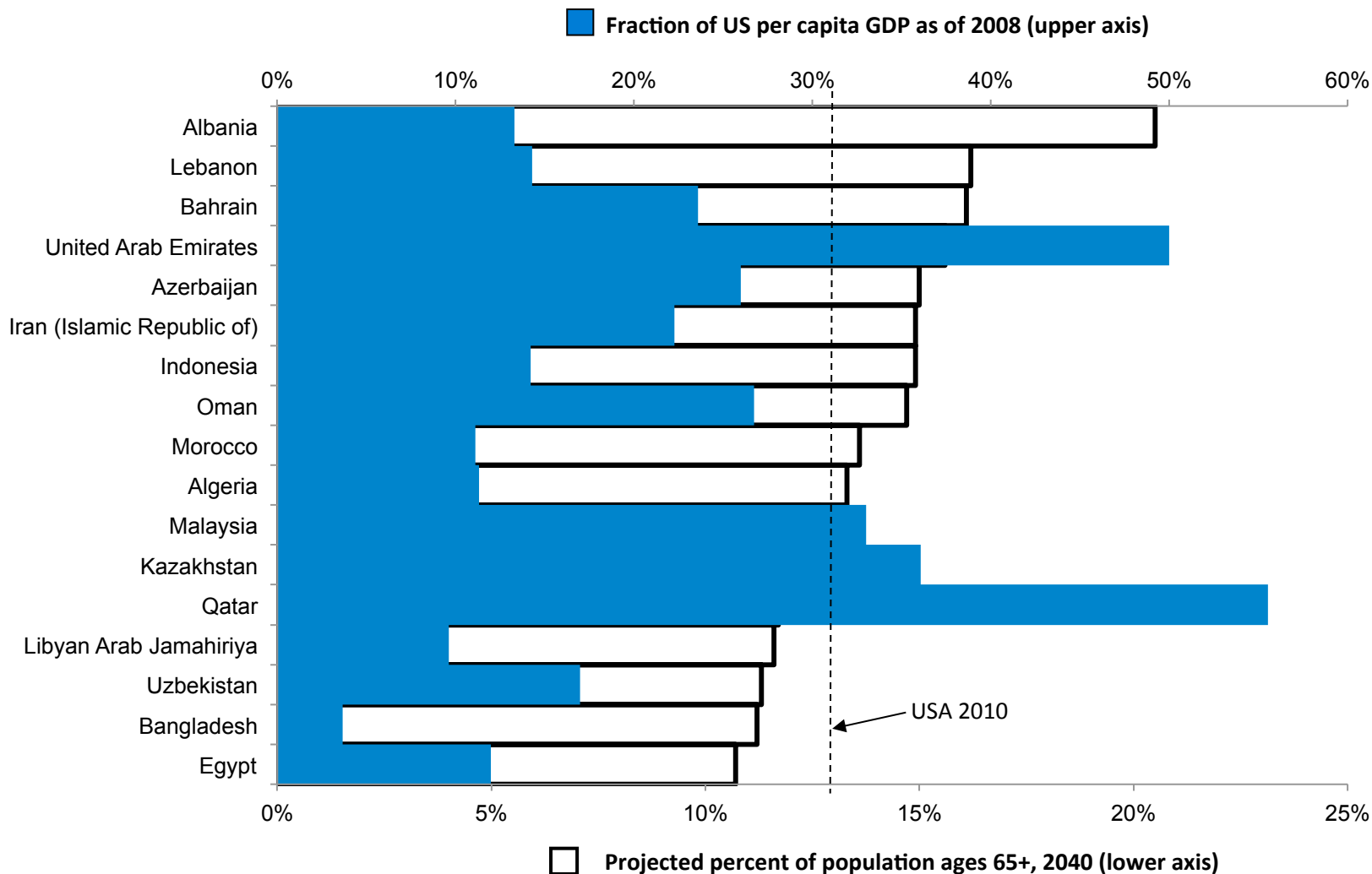
Figure 20  
 Actual and Projected Percentage of Total Population Aged 15-24:  
 Selected Muslim-Majority Countries And Territories, 1970-2030



Note: Names of countries and territories per UNPD's taxonomy.

Source: Population Division of the Department of Economic and Social Affairs of the United Nations Secretariat, World Population Prospects: The 2010 Revision, <http://www.un.org/esa/population> Accessed Sept 21, 2011.

**Figure 21**  
**The outlook for population aging in Muslim-majority countries: Projected percent population 65+ (2040) versus current income levels (2008) for selected countries in comparison with USA**



Source: Population Division of the Department of Economic and Social Affairs of the United Nations Secretariat, *World Population Prospects: The 2010 Revision*, <http://esa.un.org/unpd/wpp/index.htm>, accessed May 12, 2011; Angus Maddison, "Per Capita GDP PPP (in 1990 Geary-Khamis dollars)," *Historical Statistics for the World Economy: 1-2008 AD*, <http://www.ggd.net/maddison/>; accessed November 21, 2011.