



IMMIGRATION AND STATISTICS: SHEDDING LIGHT ON ILLEGAL AFRICAN IMMIGRATION INTO SPAIN

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Background

- Historical
- 1991
- 1993
- 1998
- 1999
- 2001
- 2002
- 2005
- 2007
- 2010
- 2013
- 2014



Objectives

- The primary objective of this statistical study is to mathematically investigate the issue of illegal immigration into Ceuta and Melilla.
- More specifically, we would like to see if statistical methodology can help Spanish legislators in shaping policy on immigration.

*In other words, what can
available data tell Spanish
policymakers?*

Methods

- All test results and graphs were produced using R programming language.
- Variables were chosen based on exploratory data analysis.
- Data were collected from the public historical archives of reputable organizations such as the World Bank, Frontex, and the Interior Ministry of Spain.
- Multiple variables not presented were also considered in this study but determined to be not statistically significant.

Methods

- The data were split at the year 2005 to see if doing this would tell us anything about the situation.
- The year 2005 was chosen because this was when the heights of the fences preventing would-be illegal immigrants from entering the two cities were doubled.
- Political interventions were considered in this study.
- Conclusions were drawn based on the results of ANOVA testing, correlation coefficient calculation, and analysis of generated visualizations.

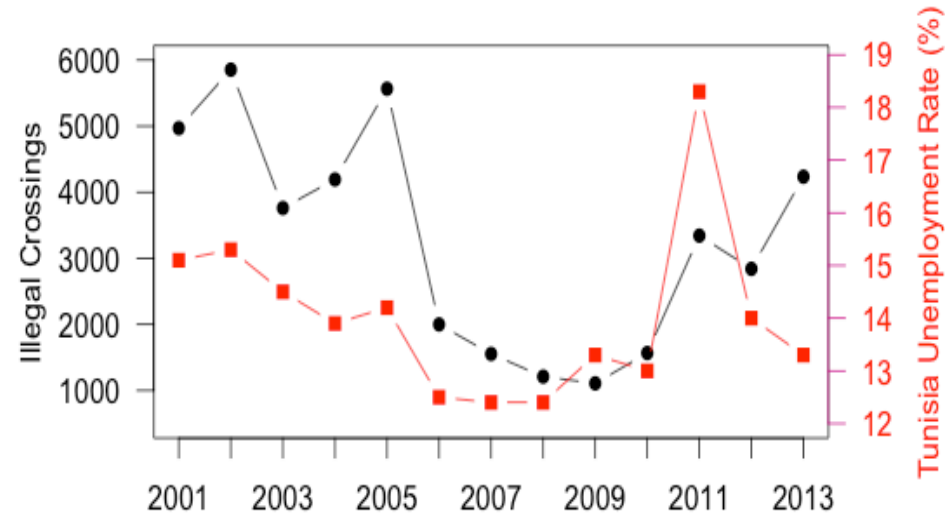
Results: Correlation Coefficients

Variable (2001-2013)	Correlation
SpainUnemp	-0.12
MoroccoUnemp	0.68
AlgeriaUnemp	0.67
NoAfricaUnemp	0.85
SSA GDP Growth	-0.03
Border Investments	-0.72
LibyaUnemp	0.61
TunisiaUnemp	0.52
EUUnemp	0.44

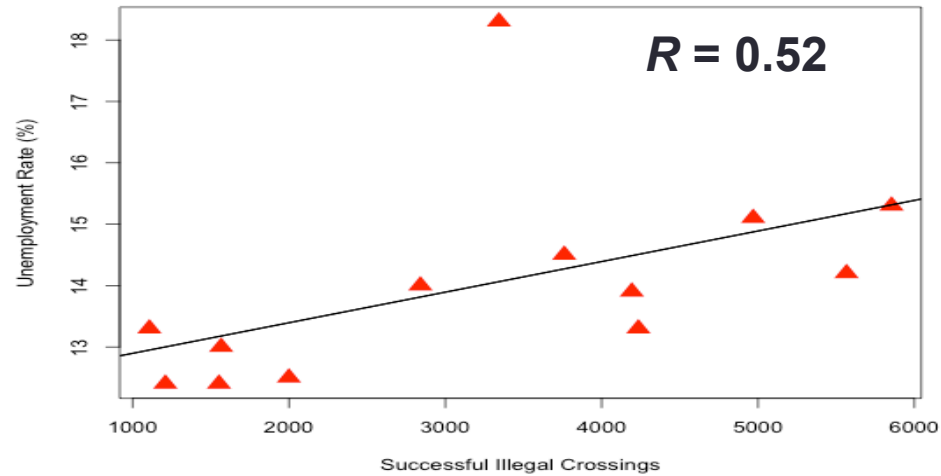
Unemp = total unemployment rate (%)

SSA = Sub-Saharan Africa

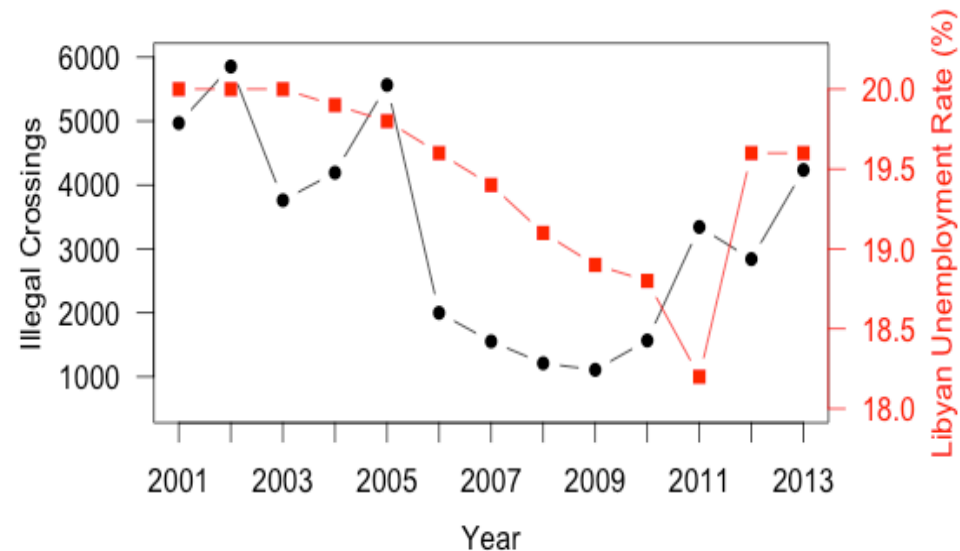
Illegal Crossings vs. Tunisian Unemployment Rates



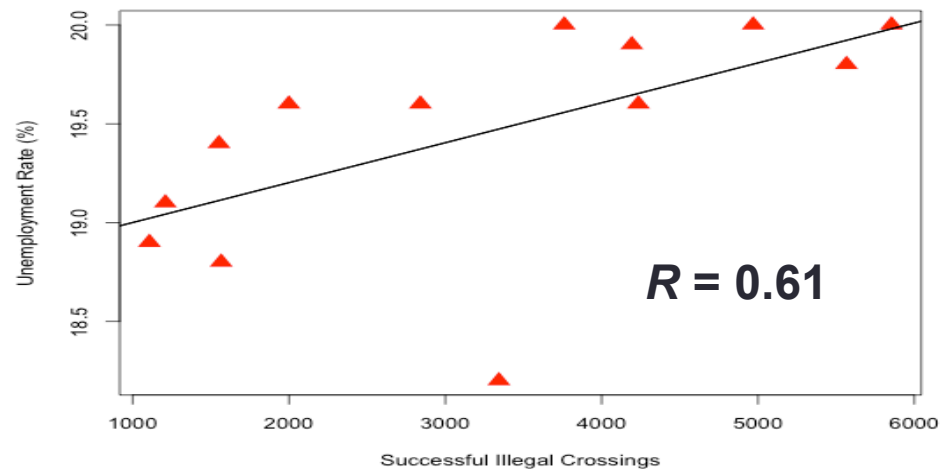
TunisiaUnemp Correlation 2001-2013



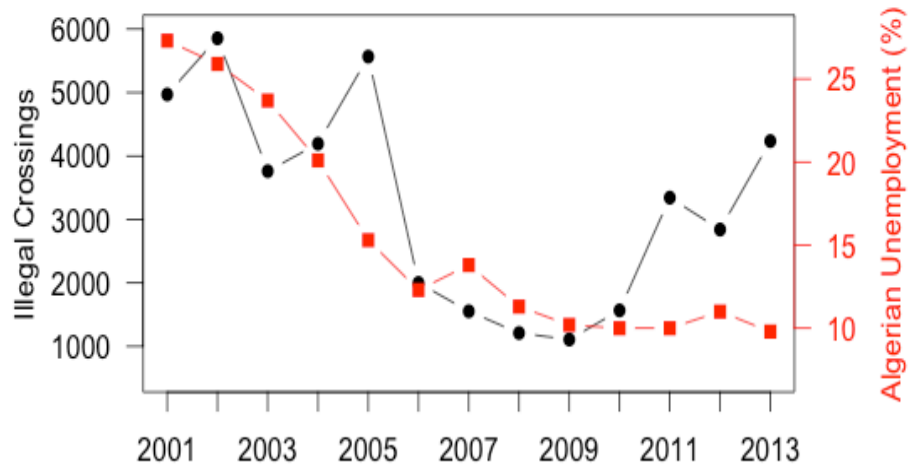
Illegal Crossings vs. Libya Unemployment Rates



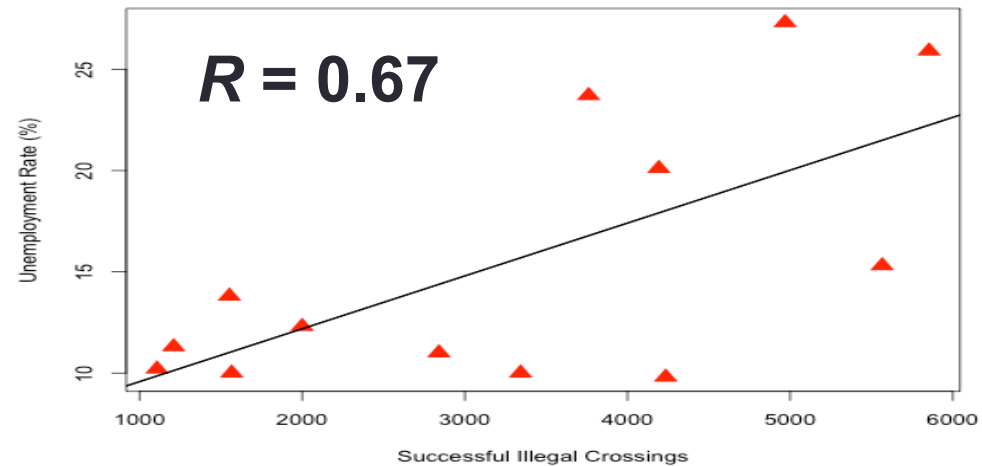
LibyaUnemp Correlation 2001-2013



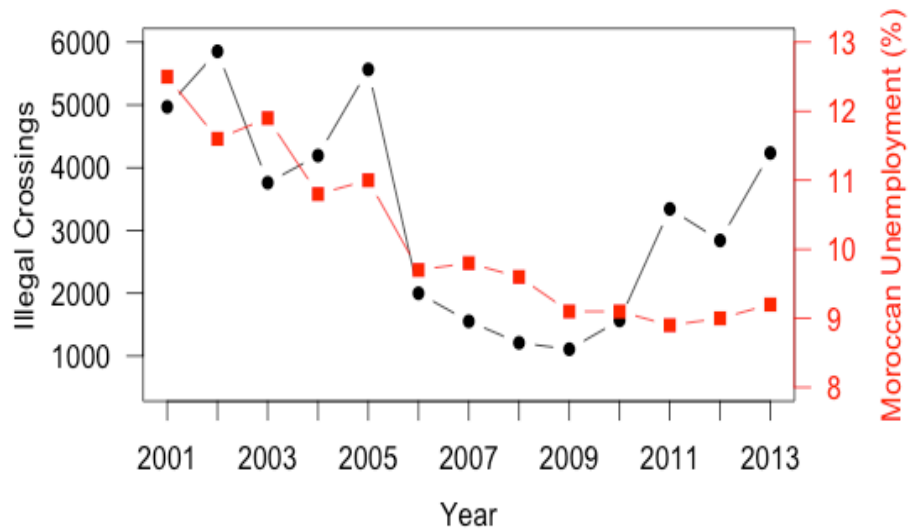
Illegal Crossings vs. Algerian Unemployment Rates



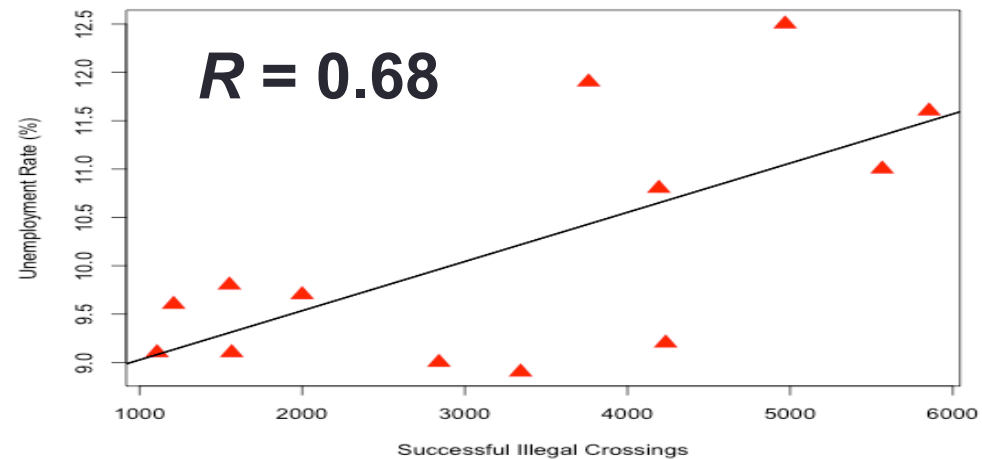
AlgeriaUnemp Correlation 2001-2013



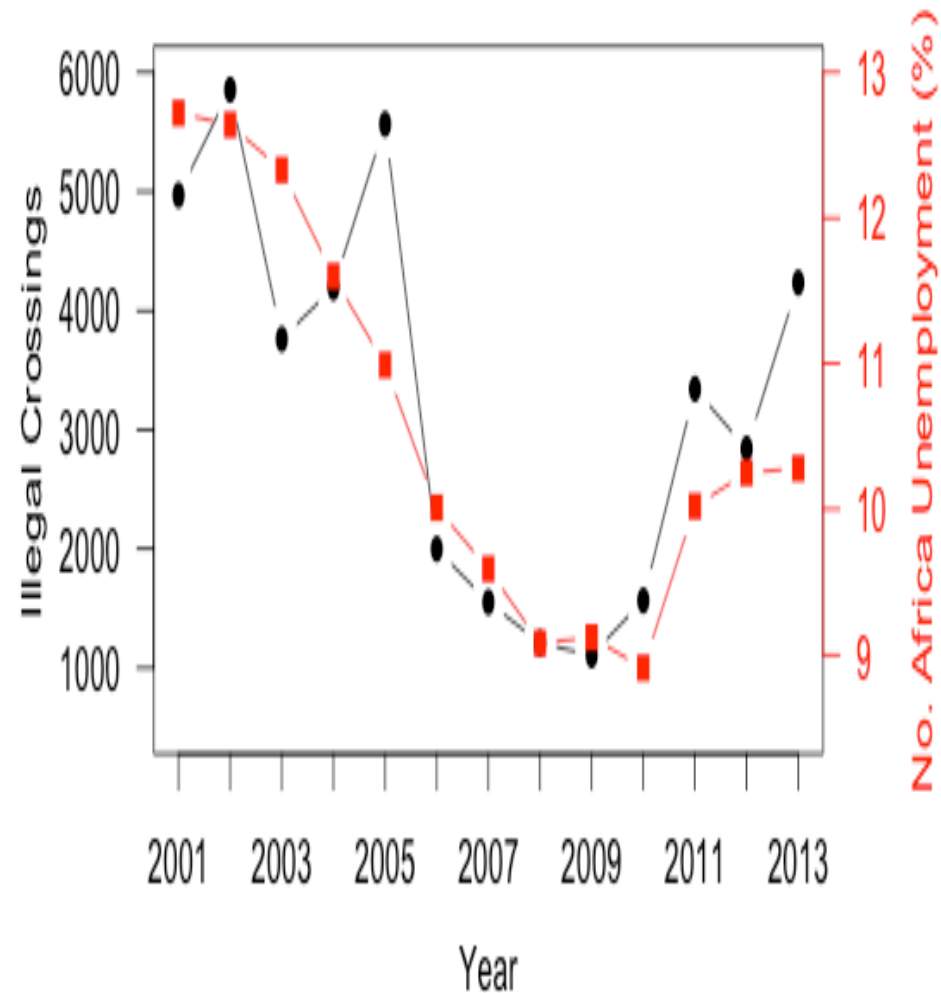
Illegal Crossings vs. Moroccan Unemployment Rates



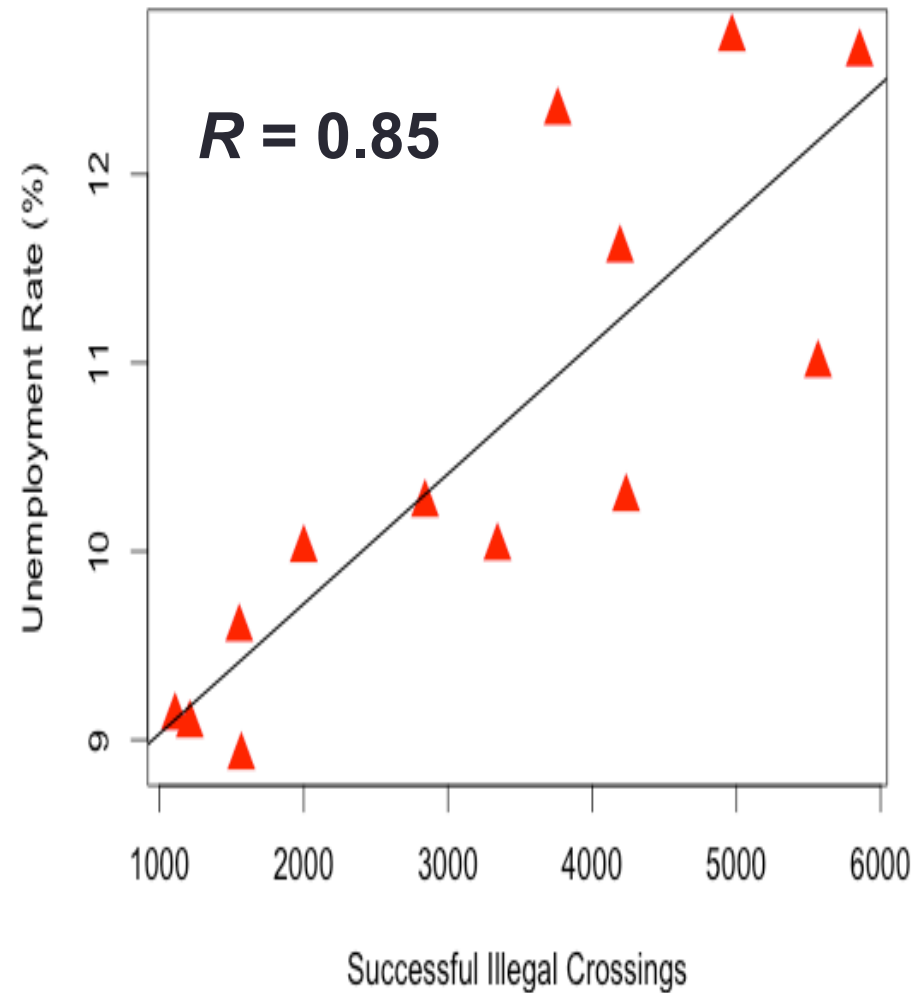
Morocco Correlation 2001-2013



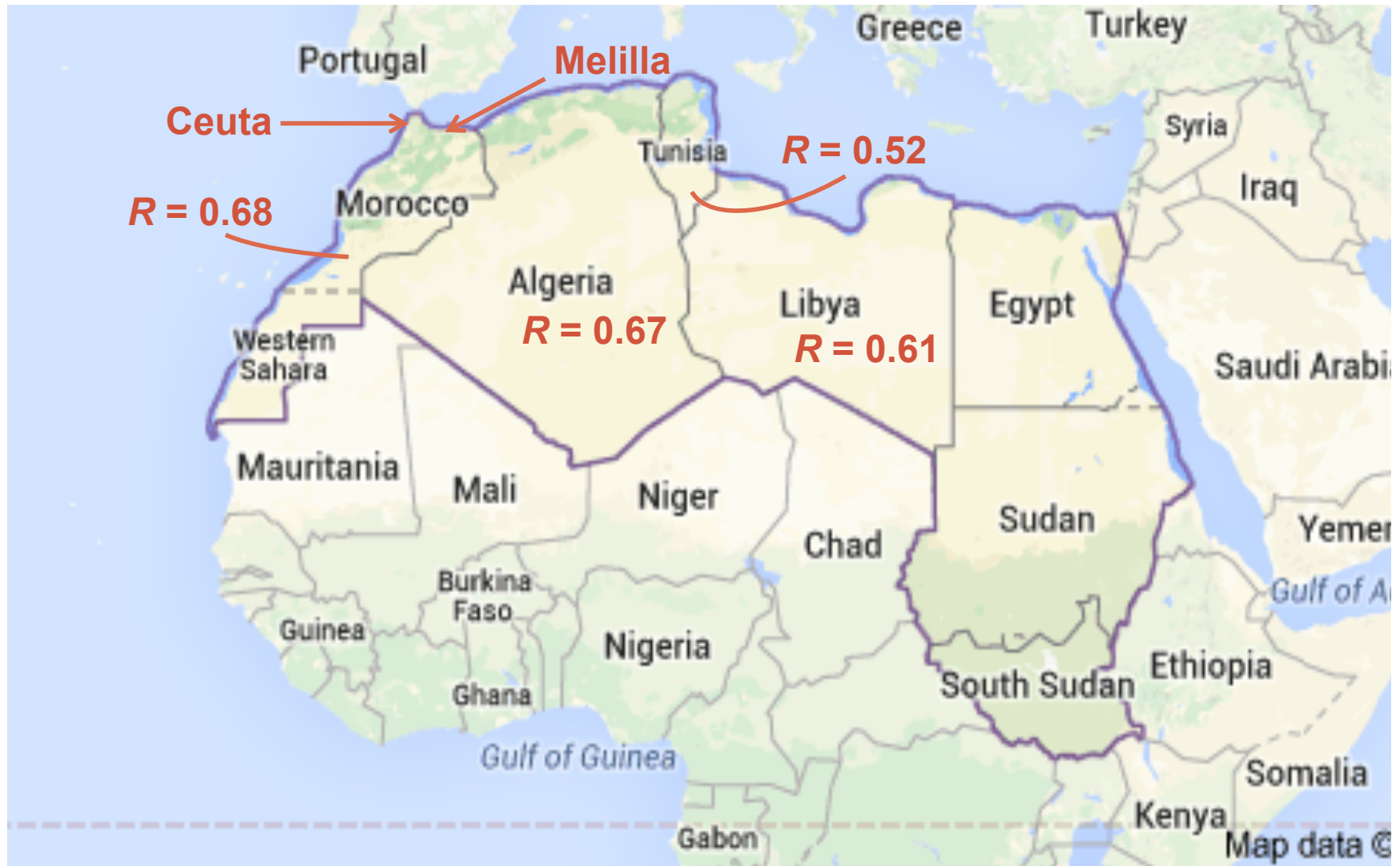
Illegal Crossings vs. No. Africa Unemployment



North Africa Correlation 2001-2013



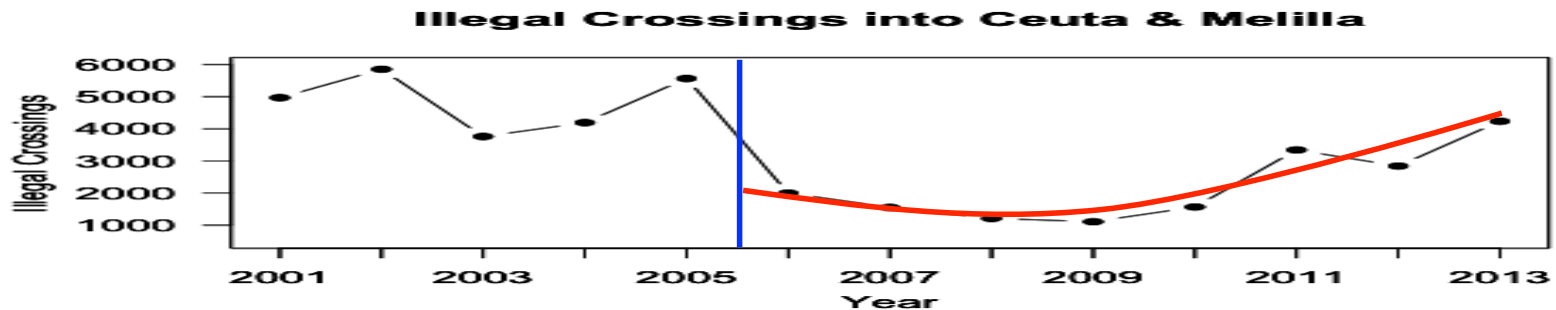
Reference Map



Analysis: Correlation Coefficients

- SSA GDP
- EU
- Border investments
- 2005: the fences

Variable (2001-2013)	Correlation
SpainUnemp	-0.12
MoroccoUnemp	0.68
AlgeriaUnemp	0.67
NoAfricaUnemp	0.85
SSA GDP Growth	-0.03
Border Investments	-0.72
LibyaUnemp	0.61
TunisiaUnemp	0.52
EUUnemp	0.44



Analysis: ANOVA

Variable	Sum Sq = Mean Sq	F-Value	P(>F)
NoAfricaUnemp	24011014	28.07	0.000253
MoroccoUnemp	15675615	9.717	0.0098
AlgeriaUnemp	14972790	8.928	0.0123
LibyaUnemp	12263882	6.376	0.0282
Tunisia	8930166	4.011	0.0705
EUUnemp~SpainUnemp			
EUUnemp	6523911	3.705	0.0864 (0.131)
SpainUnemp	11017361	6.257	0.0338 (0.689)

Analysis: ANOVA

By analyzing the variances, we determine the following variables to be statistically significant:

- NoAfricaUnemp at p-value = 0.0005
- BorderInvest at 0.005
- MoroccoUnemp at 0.05
- AlgeriaUnemp at 0.05
- LibyaUnemp at 0.05

- Additionally, *Illegals~EUUnemp*SpainUnemp* produces interesting results.
- EUUnemp: 0.0864 (0.131), SpainUnemp: 0.0338 (0.689)

Analysis: Data Split

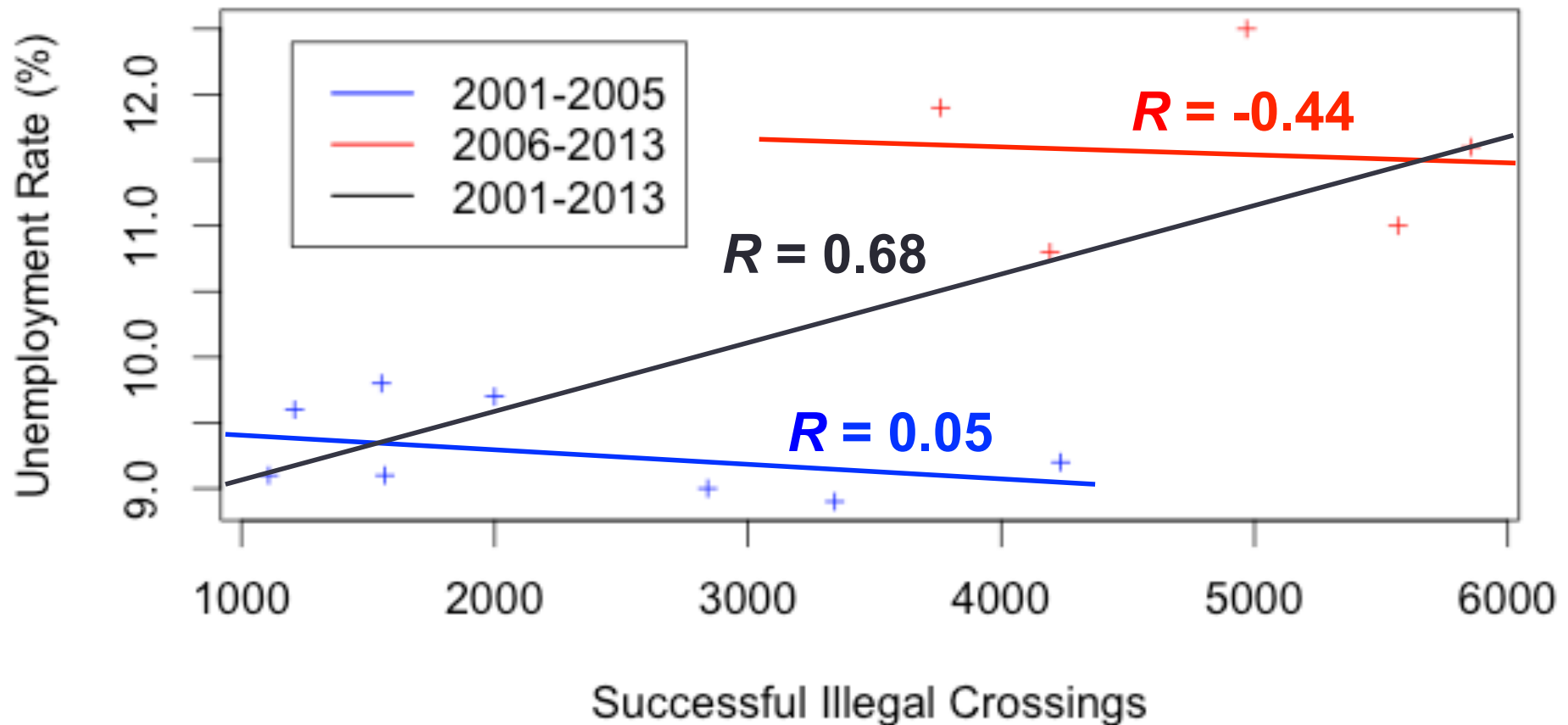
Variable	2001-2005	2006-2013	2001-2013
SpainUnemp	-0.39	0.69	-0.12
MoroccoUnemp	-0.05	-0.44	0.68
AlgeriaUnemp	-0.05	-0.40	0.67
NoAfricaUnemp	-0.04	0.83	0.85
SSA GDP Growth	-0.38	-0.17	-0.03
Border Invest	NA, SD = 0	0.16	-0.72
LibyaUnemp	-0.23	0.10	0.61
TunisiaUnemp	0.50	0.51	0.52
EUUnemp	-0.57	0.85	0.44

Analysis: Data Split

Variable	2001-2005	2006-2013	2001-2013
SpainUnemp	-0.39	0.69	-0.12
MoroccoUnemp	-0.05	-0.44	0.68
AlgeriaUnemp	-0.05	-0.40	0.67
NoAfricaUnemp	-0.04	0.83	0.85
SSA GDP Growth	-0.38	-0.17	-0.03
Border Invest	NA, SD = 0	0.16	-0.72
LibyaUnemp	-0.23	0.10	0.61
TunisiaUnemp	0.50	0.51	0.52
EUUnemp	-0.57	0.85	0.44

Analysis: Data Split

Comparing MoroccoUnemp Halves



A photograph of a person wearing a grey hoodie, looking through a wire mesh fence. Their hands are wrapped in white bandages, and they are holding onto the fence. The background shows a building and a clear sky. The word "Conclusions" is overlaid in white text.

Conclusions

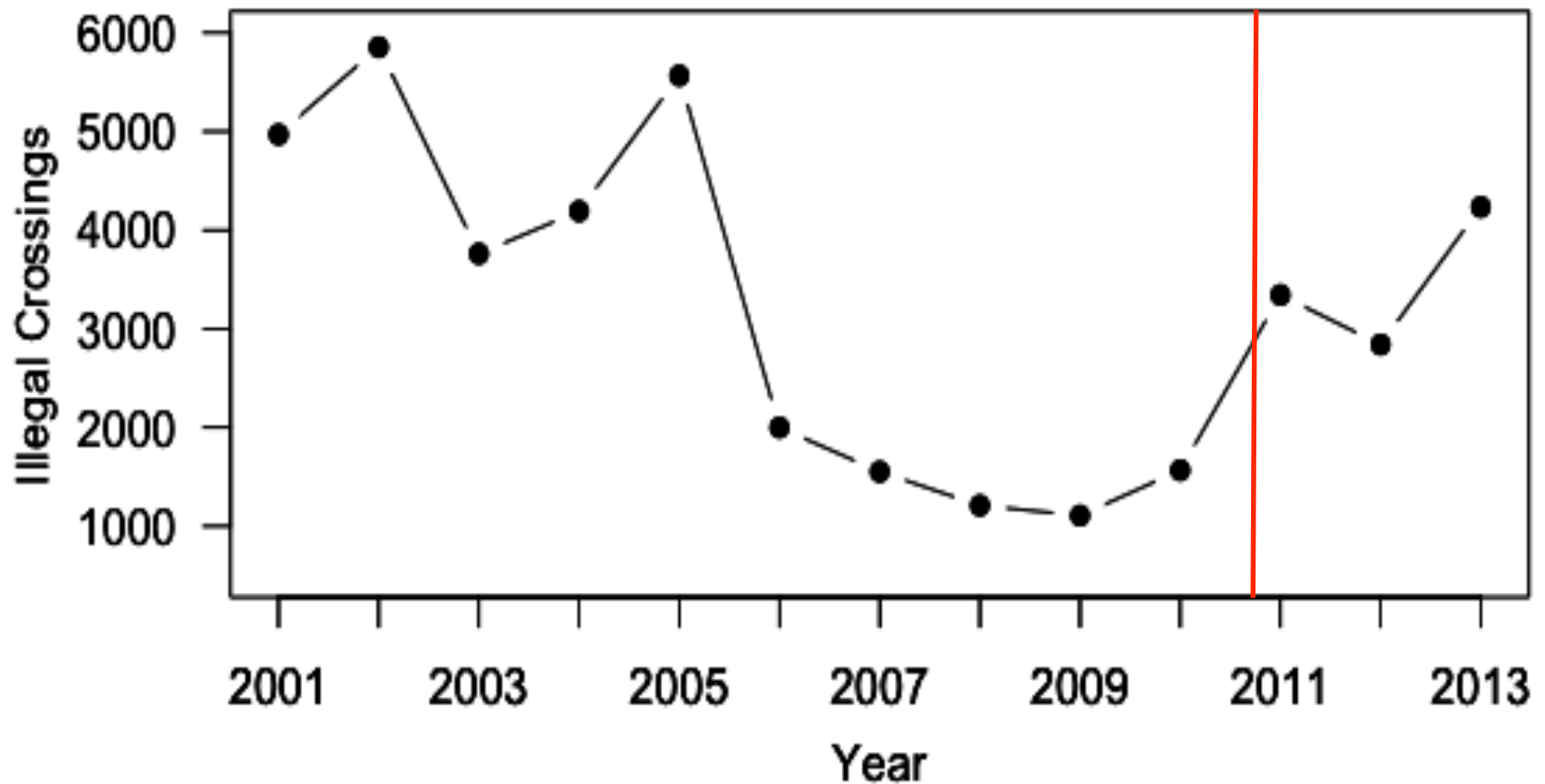
Conclusion: So what?

- Traditional qualitative studies on immigration
- From where the illegals are coming
- A key motivator in their choosing to emigrate
- Economic conditions – origin country vs. EU
- Coincidence?



Another Key Motivator...?

Illegal Crossings into Ceuta & Melilla



Considerations

- Small data set.
- At times, different sources had conflicting data.
- The region that we are considering is war-torn.
- The politics involved are much more complicated than presented.
- Potential of findings.

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