1. Speculation

In recent centuries, there is a trend of lower birth-rate in developed countries.

There is no only one reason why this is happening, it is rather conjuction of reasons and it is not the same for all the countries. The main reasons for this trend is a change in a lifestyle, changed values and rising of women's rights. In modern world women has a different place than few centuries ago, and people in general appreciate different things. While family is, and it will always remain, central point in people's lives, nowadays there are carrier and education which are sharing this central position.

As an argument to this, a small research has been conducted to find out is there a connection between women gaining more rights and fertility rate. As a comparison several years have been picked [section of few centuries] to visualize trend of lowering birth-rate. These years are related to certain years when women gain more rights, and coordinated with database available online. The first parameter is fertility rate, and the second one is age of women when getting married. The second parameter is chosen as it is already proved that education is to 'blame' or 'thank' to' for women getting married older, and education of women was one of the most important points in fight for women's right.
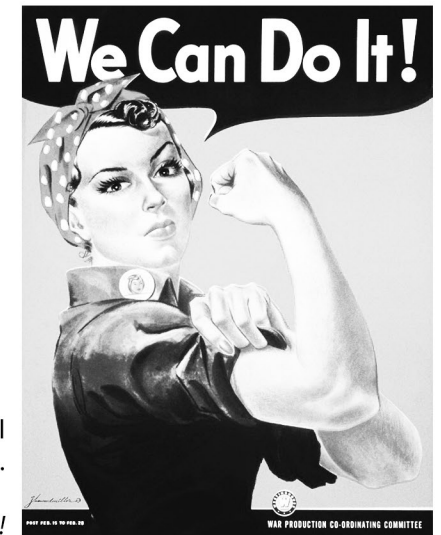
J. Howard Miller's "Rosie the Riveter" character became an international icon for women's rights throughout the decades following WW II.
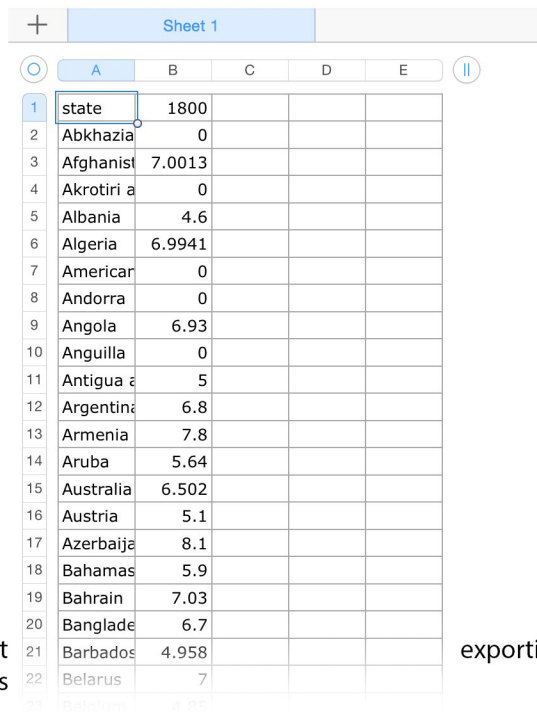
http://en.wikipedia.org/wiki/We_Can_Do_It!

Finding a relevant data is not always easy. Nowadays, a lot of data is available online, and anyone can use it or even participate in creating it.
For this small research several data sources were used.

First database is GAPMINDER http://www.gapminder.org/data/, where data about fertility rate was found. Data spreadsheet was downloaded as an Excel file, which made it easy to convert it to an csv (comma separated values) file. The problem was, as it always is, a lack of data in certain years or countries, but even though in process of making an visual argument these gaps in data are not as obvious.
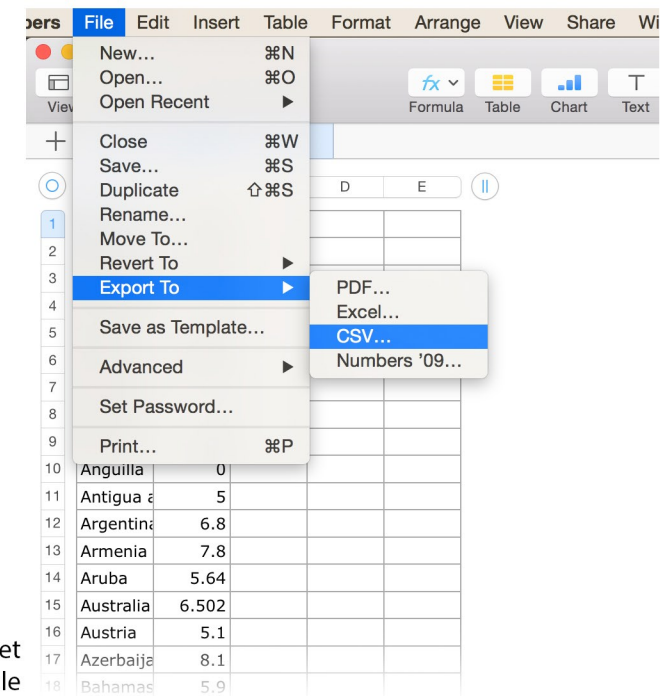
For the second parameter, age of female entering 1st marriage, was found on QUANDL https://www.quandl.com/c/society/.
Unfortunately this data spreadsheets were lacking too many years, so it was impossible to do comparison for all chosen years. The complete data for year 2005 was obtained from GAPMINDER and used in a visualization. The convenience with this data was a fact that both spreadsheets contained same countries, so the results can be visually compared. More accurate data was found on UNECE http://w3.unece.org, but the given countries were not matching the ones from fertility database.

opening spreadsheet
in excel or numbers

exporting spreadsheet
as an csv file

IaaC - Institute of Advanced Architecture of Catalonia | MAA01 2014/15 | Designing Associativity | Faculty: Luis Fraguada

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1800
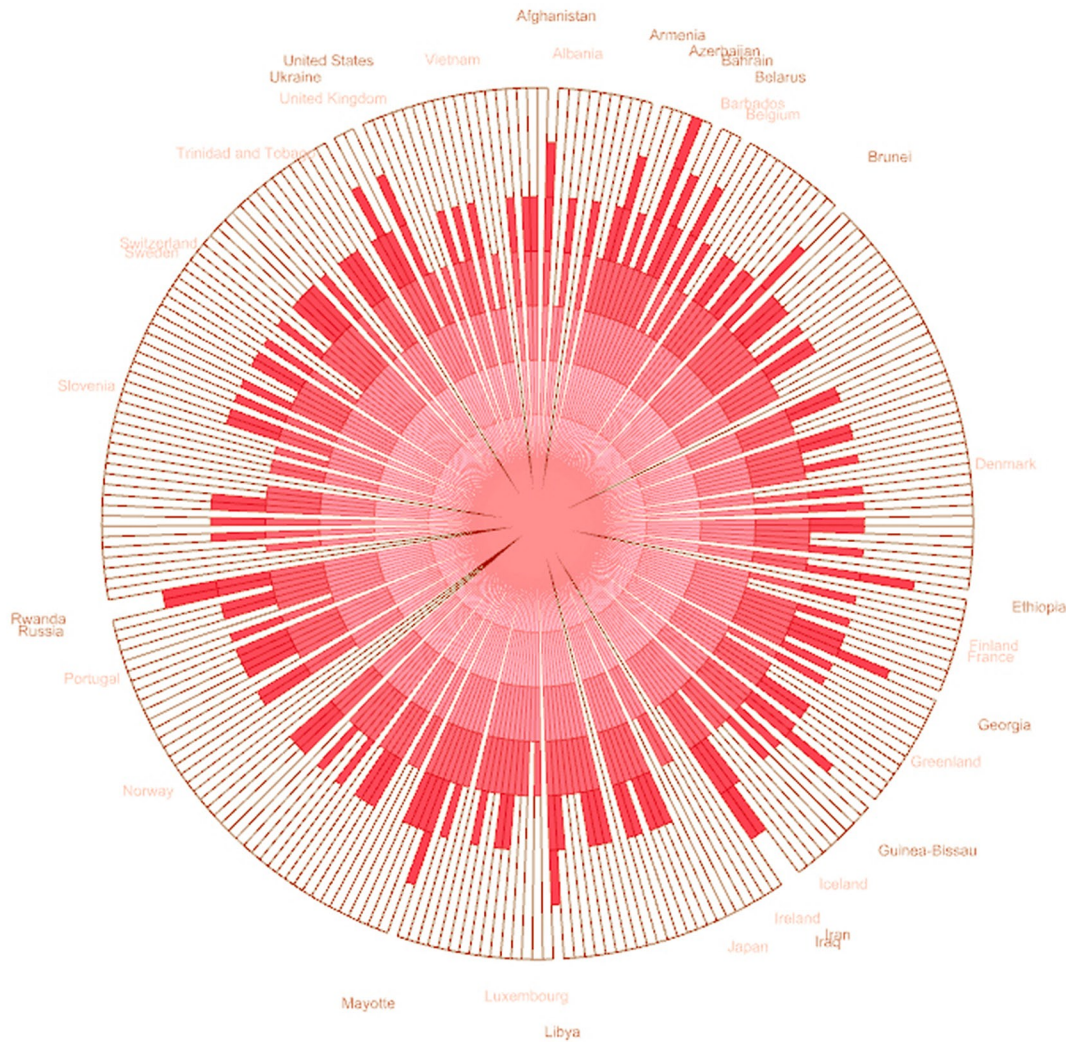
COUNTRIES WITH THE
LOWEST BIRTH - RATE

United Kingdom
Trinidad and Tobago
Switzerland
Sweden
Slovenia
Portugal
Norway
Luxemburg
Japan
Ireland
Iceland
Greenland
Finland
France
Denmark
Belgium
Barbados
Albania
Vietnam

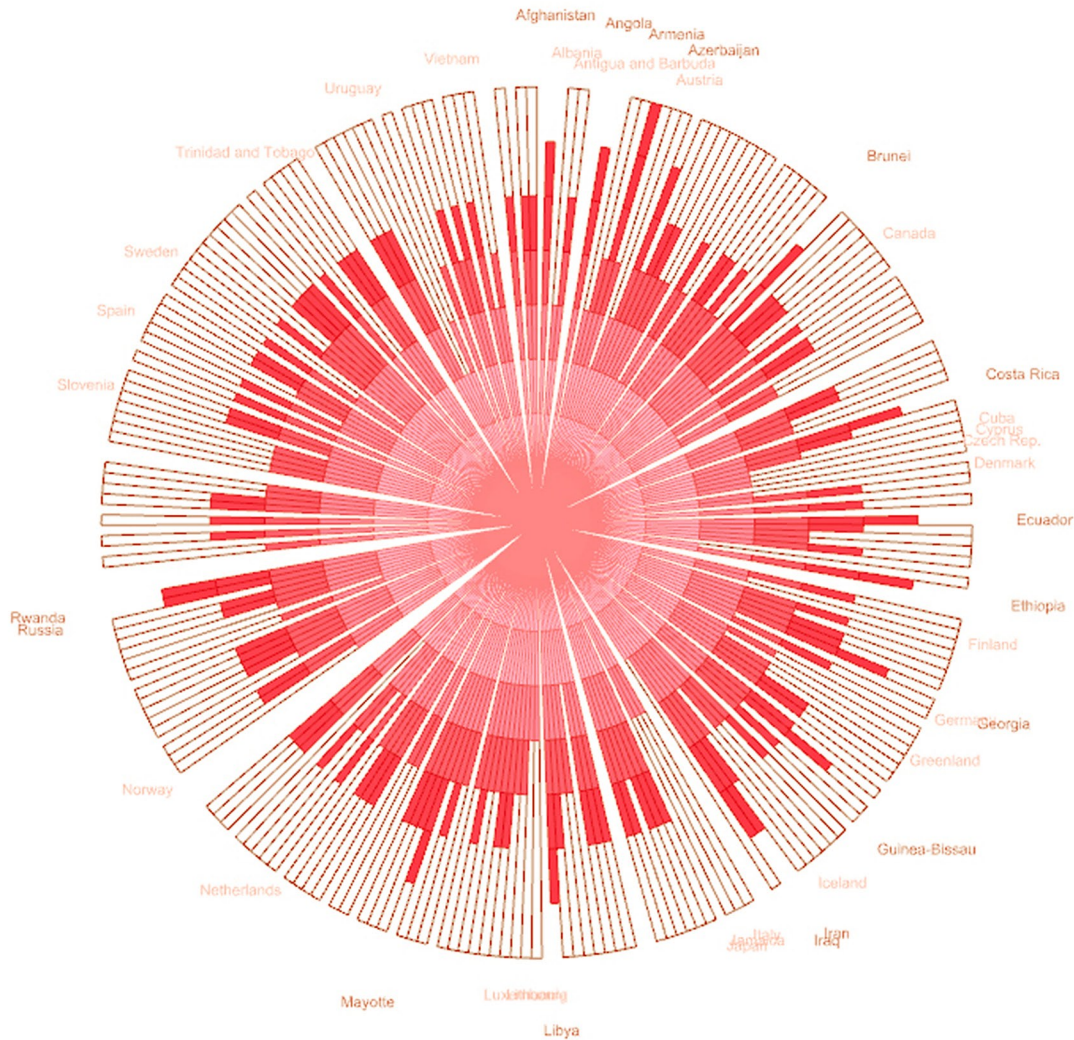LOWEST VALUE
4 kids per women

COUNTRIES WITH THE
HIGHEST BIRTH - RATE

United States
Ukraine
Rwanda
Russia
Mayotte
Libya
Iran
Iraq
Guinea-Bissau
Georgia
Ethiopia
Brunei
Belarus
Bahrain
Azerbajian
Armenia
Afghanistan

HIGHEST RATE
8 kids per women

1900

COUNTRIES WITH THE
LOWEST BIRTH - RATE

Urugay
Trinidad and Tobago
Sweden
Spain
Slovenia
Norway
Netherlands
Luxemburg
Japan
Italy
Iceland
Greenland
Germany
Finland
Denmark
Czech Republic
Cyprus
Cuba
Canada
Austria
Antigua and Barbuda
Albania
Vietnam
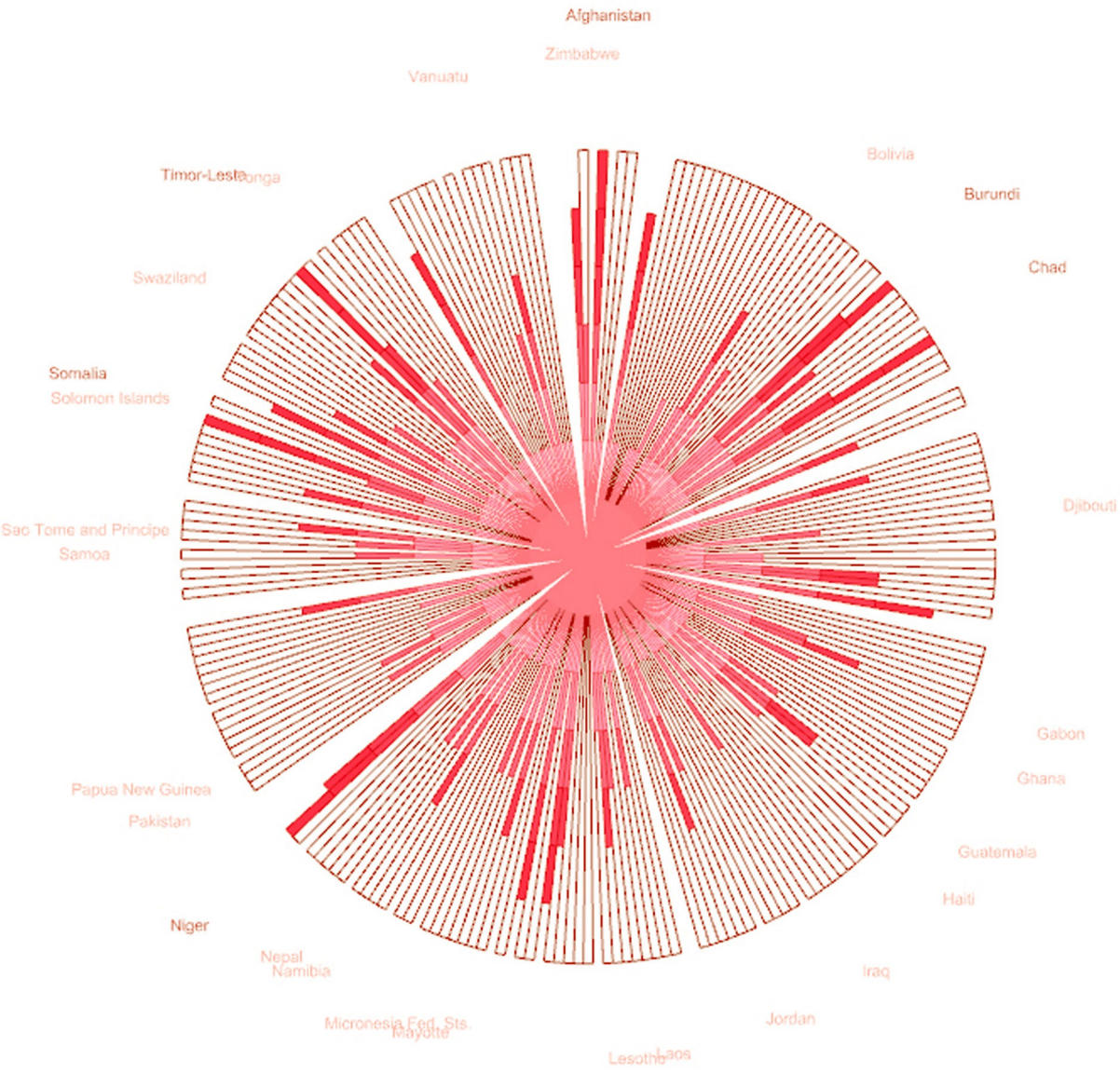
LOWEST VALUE
4 kids per women

COUNTRIES WITH THE
HIGHEST BIRTH - RATE

Rwanda
Russia
Mayotte
Libya
Iran
Iraq
Guinea-Bissau
Georgia
Ethiopia
Ecuador
Brunei
Azerbaijan
Armenia
Angola
Afganistan

HIGHEST RATE
8 kids per women

Nina Jotanovic

2000

COUNTRIES WITH THE
LOWEST BIRTH - RATE

Switzerland
Solomon Islands
Sao Tome and Principe
Samoa
Papa New Guinea
Pakistan
Nepal
Nambia
Mayotte
Laos
Jordan
Iraq
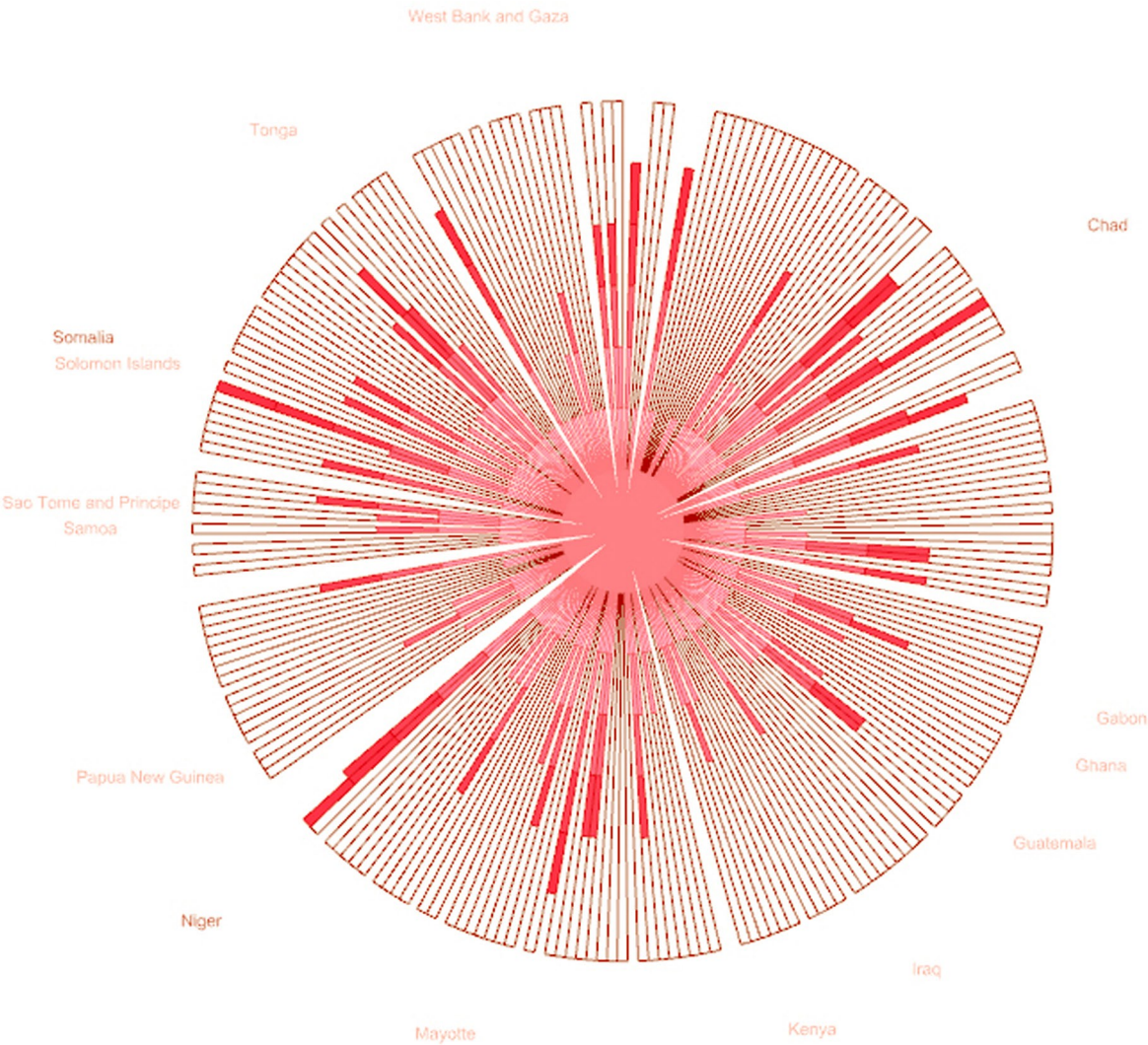Haiti
Guatemala
Ghana
Gabon
Djibouti
Bolivia
Zimbabwe
Vanuatu

LOWEST VALUE
4 kids per women

COUNTRIES WITH THE
HIGHEST BIRTH - RATE

Somalia
Niger
Chad
Burundi
Afganistan

HIGHEST RATE
8 kids per women

2005

West Bank and Gaza

Tonga

Chad

Somalia
Solomon Islands

Sao Tome and Principe
Samoa

Papua New Guinea

Niger

Mayotte

Kenya

Iraq

Guatemala

Ghana

Gabon

COUNTRIES WITH THE
LOWEST BIRTH - RATE

COUNTRIES WITH THE
HIGHEST BIRTH - RATE

Tonga
Solomon Islands
Sao Tome and Principe
Samoa
Papua New Guinea
Mayotte
Kenya
Iraq
Gualemata
Ghana
Gabon

Somalia
Niger
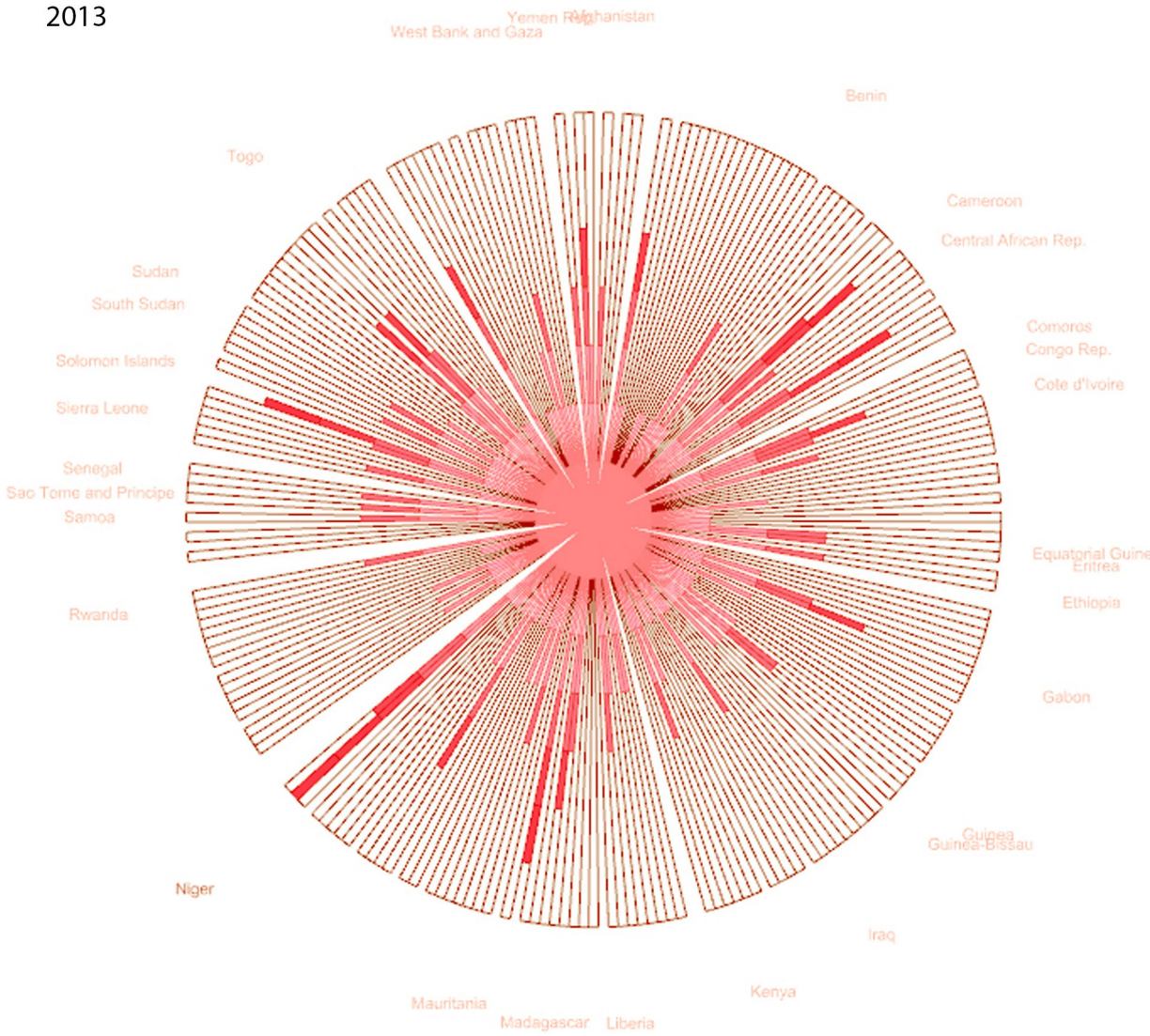Chad

LOWEST VALUE
4 kids per women

HIGHEST RATE
8 kids per women

2013

2013

COUNTRIES WITH THE
LOWEST BIRTH - RATE

COUNTRIES WITH THE
HIGHEST BIRTH - RATE

Togo
Sudan
South Sudan
Solomon Islands
Sierra Leone
Senegal
Sao Tome and Principe
Samoa
Rwanda
Mauritania
Madagascar
Liberia
Kenya
Iraq
Guinea
Gabon
Ethiopia
Equatorial Guinea
Congo Republic
Comoros
Central African Republic
Cameroon
Benin
Afghanista
Yemen Republic
West Bank andGaza

Niger

LOWEST VALUE
4 kids per women

HIGHEST RATE
8 kids per women

2005 | COMPARISON WITH FEMALE AGE OF 1st MARRIAGE

Comparing data showed that three countries that have the highest fertility rate, also have the lowest number of years when women are getting married. On the other hand, many European developed countries which are showing the highest number of years, are not matching the minimum number of children. This may be due to data that is visualized only with maximum and minimum values.

Nina Jotanovic

Visualized data is clearly showing the trend of lowering birth-rate on world level. This way of handling and representing data gives an opportunity to work vey fast and vary precise with big amount of data.

On the other side, research wasn't able to deliver comparison with all years between two parameters. Furthermore, information that is being derived out of data can be more specified and refined with focusing on only European countries etc.

1800   1900   2000   2005   2014

Nina Jotanovic
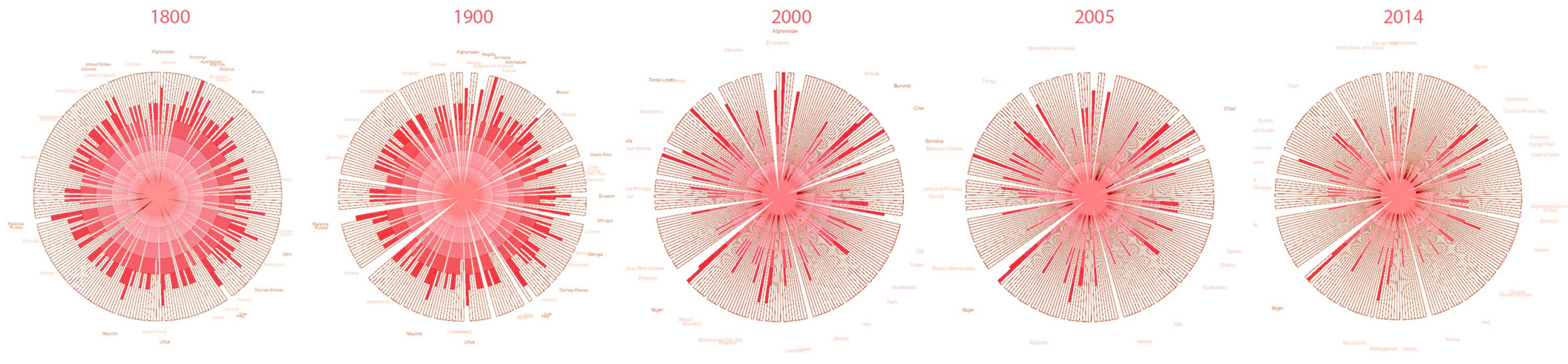
Visualizing data was done with Grasshopper, and mainly components that deal with organizing the list, and then extracting desired data from those list, and representing them visually.

1. Importing csv file.
2. Cleaning the file from all unnecessary rows/interpunction/words/numbers/etc. [text split/list item]
3. Making GH read the lists as we need it [flatten/simplify/grapht].
4. Making graph with simple GH geometry [radial/curves].
5. Tagging the graph.
6. Coloring the graph.

One challenge was to deal with huge amount of data, for example in this small research - 259 countries. Radial graph was a good way to visually represent data so that change of parameter is being received over the years clearly. But, putting tag names to all 259 countries was impossible. One solution was to tag the names of those countries that have minimum or maximum values, so we can see the extremes and then compare them. This was done by recognizing 'members' from one list, so indexes of the components that has a member were obtained, after that was possible to extract the names from the original list.

graph with all 259
countries tagged