

Survey: User Experience of Adaptive Visualizations

Welcome to the adaptive visualization survey/quiz

Thank you for agreeing to participate in this investigation.

This study is about the user experience while using adaptive visualizations combined with the concept of 'visualization literacy'.

You do **not** need to be a visualization-expert to answer the questionnaire appropriately. It is recommended to stay in a quiet environment while you fill out the questions.

All information that we collect from you in the course of the survey will be treated anonymously, i.e. it will be stored in such a way that no conclusions can be drawn about your person. Your data is used exclusively for research purposes.

Thank you in advance for your participation!

Click on the '**Next**' Button below to start the survey

There are 47 questions in this survey.

1 What device are you using to fill out this survey?

Please choose **only one** of the following:

- ☐ Laptop / Desktop
- ☐ Tablet
- ☐ Smartphone

2 What is your age?

*

Please choose **only one** of the following:

- ☐ 15 - 19
- ☐ 20 - 23
- ☐ 24 - 27
- ☐ 28 - 31
- ☐ 31 - 35
- ☐ 36 - 40
- ☐ 41 - 50
- ☐ 51 +
- ☐ No answer

3

To which gender do you most identify?

Please choose **only one** of the following:

- ☐ Female
- ☐ Male
- ☐ Transgender-Female
- ☐ Transgender-Male
- ☐ Gender Variant/ Non-conforming
- ☐ Prefer not to answer
- ☐ Other

4

What is the highest degree or level of education you have completed?

*

Please choose **only one** of the following:

- ☐ High School
- ☐ Bachelors Degree
- ☐ Masters Degree
- ☐ Ph.D. or higher
- ☐ Trade School
- ☐ prefer not to say

5 How would you describe your current main occupation? *

Please choose **only one** of the following:

- ☐ Student
- ☐ Employee at university
- ☐ other

6 How many semesters have you been studying? (in your current subject) *

Only answer this question if the following conditions are met:

DemoOccup.NAOK

(/umfragen/limesurvey/index.php/admin/questions/sa/view/surveyid/187677/gid/15634/qid/194566) == 'A4'

Please choose **only one** of the following:

- ☐ 1 - 2
- ☐ 3 - 4
- ☐ 5 - 6
- ☐ 7 - 10
- ☐ 11 or more
- ☐ No answer

7 What is the field of your study? *

Only answer this question if the following conditions are met:

DemoOccup.NAOK

(/umfragen/limesurvey/index.php/admin/questions/sa/view/surveyid/187677/gid/15634/qid/194566) == 'stu'

Please choose **only one** of the following:

- ☐ Natural sciences and mathematics (e.g. Chemistry, Mathematics, Psychology)
- ☐ Civil and Environmental Engineering (e.g. Architecture, Civil Engineering, Economics)
- ☐ Engineering Sciences (e.g. Computer Science, Electrical E., Mechanical E)
- ☐ Humanities and social sciences (Art History, Philosophy, Linguistics)
- ☐ Medicine
- ☐ Teaching profession
- ☐ Other

8 What is the field of your work? *

Only answer this question if the following conditions are met:

DemoOccup.NAOK

(/umfragen/limesurvey/index.php/admin/questions/sa/view/surveyid/187677/gid/15634/qid/194566) == 'emp'

Please choose **only one** of the following:

- ☐ Natural sciences and mathematics (e.g. Chemistry, Mathematics, Psychology)
- ☐ Civil and Environmental Engineering (e.g. Architecture, Civil Engineering, Economics)
- ☐ Engineering Sciences (e.g. Computer Science, Electrical E., Mechanical E)
- ☐ Humanities and social sciences (Art History, Philosophy, Linguistics)
- ☐ Medicine
- ☐ Teaching profession
- ☐ Other

9 How familiar are you with the following visualizations? (1 = never heard of it; 5 = daily usage) *

Please write your answer(s) here:

Pie Chart (Donut Chart)

Bar Chart

Line Chart

Area Chart

Scatterplot (Bubble Chart)

Polar Chart (Radar Chart; Nightingale Rose)

Tree Map (Mosaic Chart)

Network Graph

(1 = never heard of it; 5 = daily usage)

10 Do you have any eye conditions? (e.g. short or far sighted, color-blindness) *

Please choose **only one** of the following:

☐ Yes

☐ No

11 Please specify *

Only answer this question if the following conditions are met:

Answer was 'Yes' at question '10 [DemoEye]' (Do you have any eye conditions? (e.g. short or far sighted, color-blindness))

Please choose **all** that apply:

☐ visual impairment (short sighted, far sighted)

☐ Red-green color blindness

☐ Blue-yellow color blindness

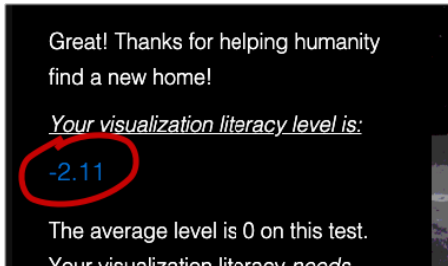
☐ Total color blindness

☐ Other

Visualization Literacy Test for Barcharts

Please click on the link below to take part in a short test about barcharts (ca. 8 minutes). A website will open in a new tab which guides you through a number of tasks. After you finished the test you can close the tab and resume to this survey here.

At the end of the visualization literacy test a single 'level'-score will appear – please enter this score in the field at the end of this question



Screenshot of the score at the end of the test

→ Link to the Barchart Test
(<http://peopleviz.gforge.inria.fr/trunk/vLiteracy/home/tests/bc/>)

Input your visualization literacy level for barcharts here:

*

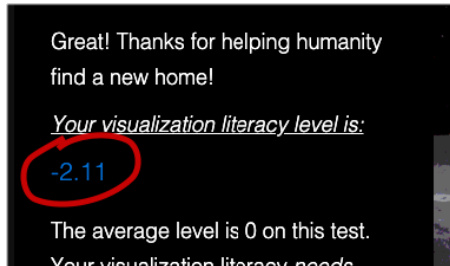
Please write your answer here:

13

Visualization Literacy Test for Scatterplots

Please click on the link below to take part in a short test about **scatterplots** (ca. 11 minutes). A website will open in a new tab which guides you through a number of tasks. After you finished the test you can close the tab and resume to this survey here.

At the end of the visualization literacy test a single 'level'-score will appear – please enter this score in the field at the end of this question



Screenshot of the score at the end of the test

→ Link to the Scatterplot Test
(<http://peopleviz.gforge.inria.fr/trunk/vLiteracy/home/tests/sp/>)

Input your visualization literacy level for scatterplots here:

*

Please write your answer here:

14

Understanding Human Population:

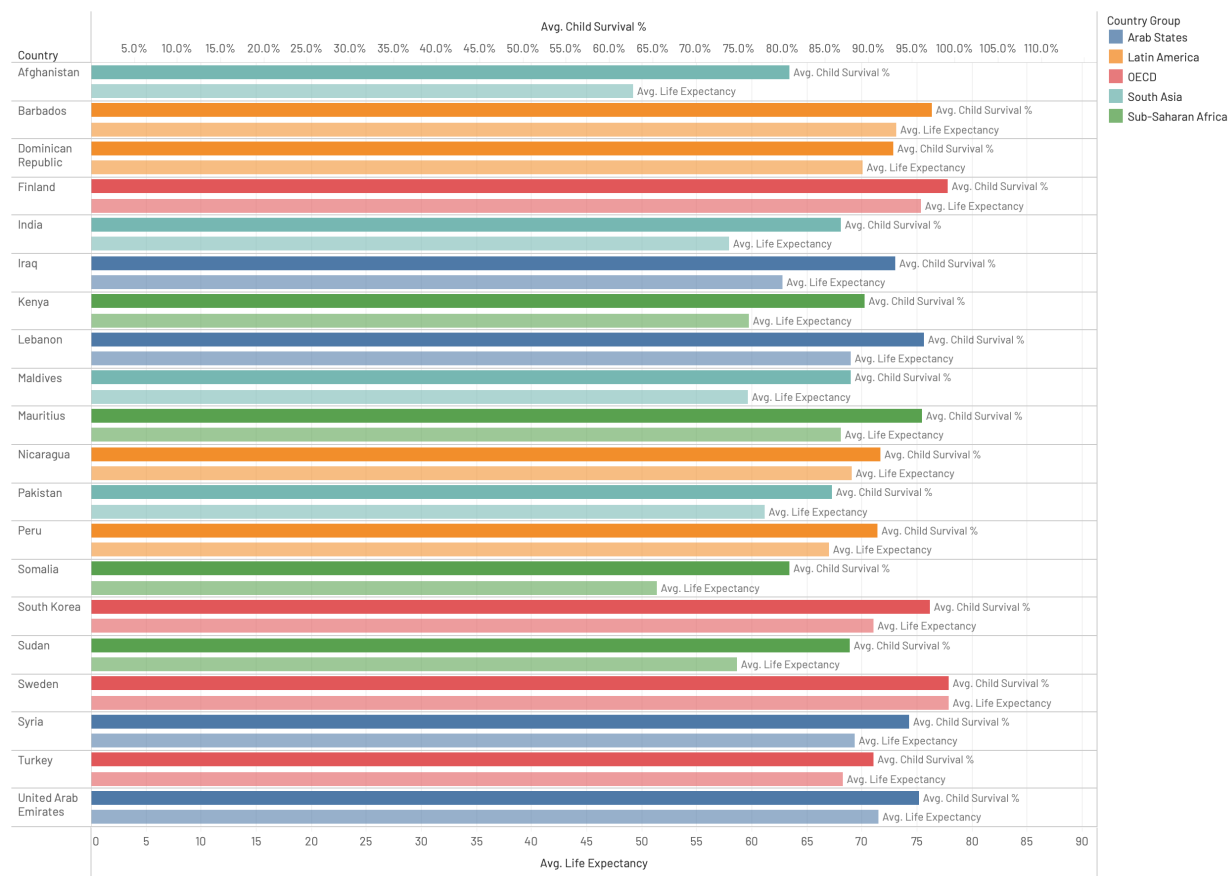
Imagine you are a team of demographers, studying the human population. Please help your team members understand some specific social and economic problems by answering the following series of questions as quickly and accurately as possible.

The next 5 questions are in the form of tasks. The time for completion will be measured for each task. Each task consists of a question belonging to a visualization about various population data. Below the visualization you can choose between 7 answer options, only 1 is correct.

At the end of this survey you will see how many tasks you got right!

The timer starts as soon as you click on 'Next' below.

What is the average Life Expectancy for the 4 Countries belonging to *Arab States* below?

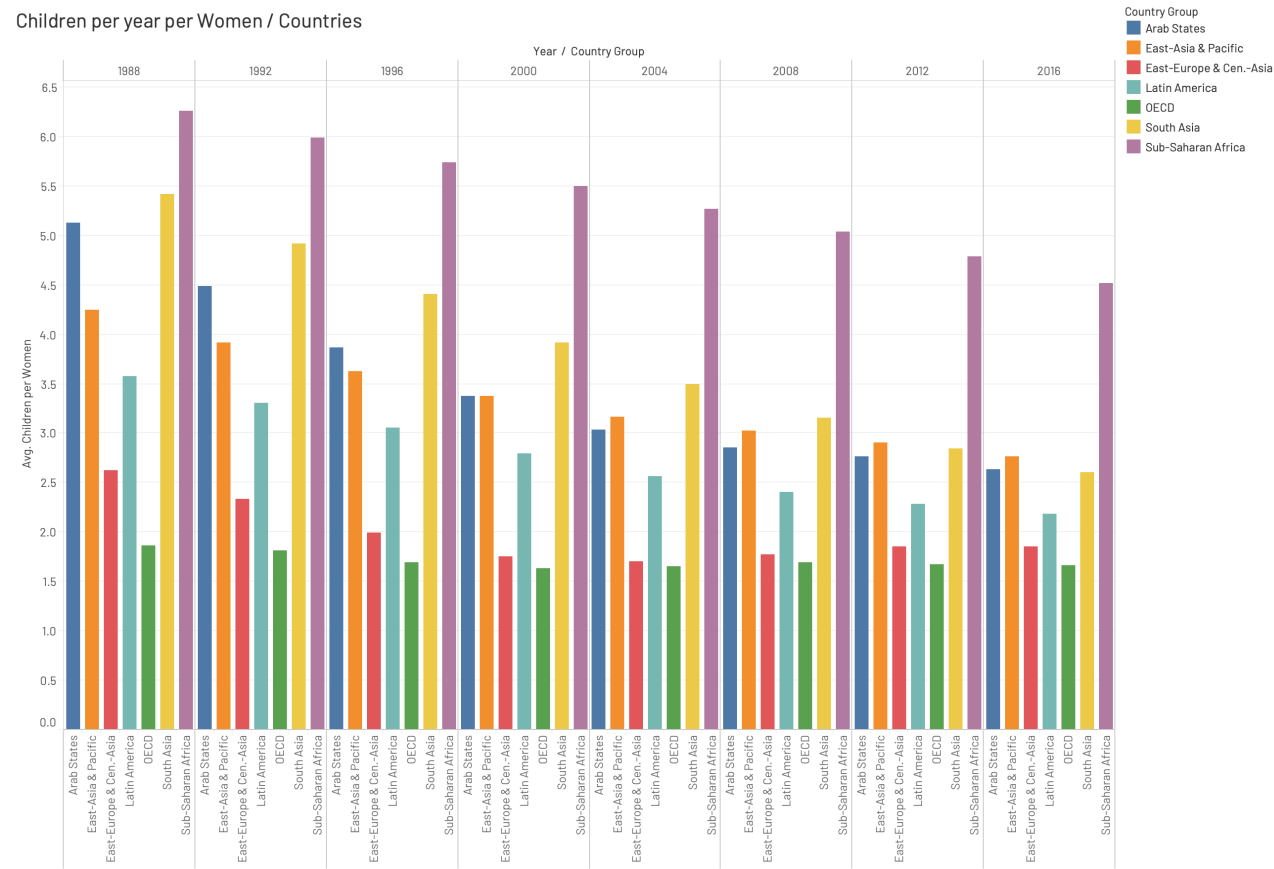


★

Please choose **only one** of the following:

- ☐ 62.6
- ☐ 68.1
- ☐ 69.2
- ☐ 72.4
- ☐ 66.1
- ☐ 64.3
- ☐ 75.5

What is the Range of values for Children per Women in South Asian Countries?

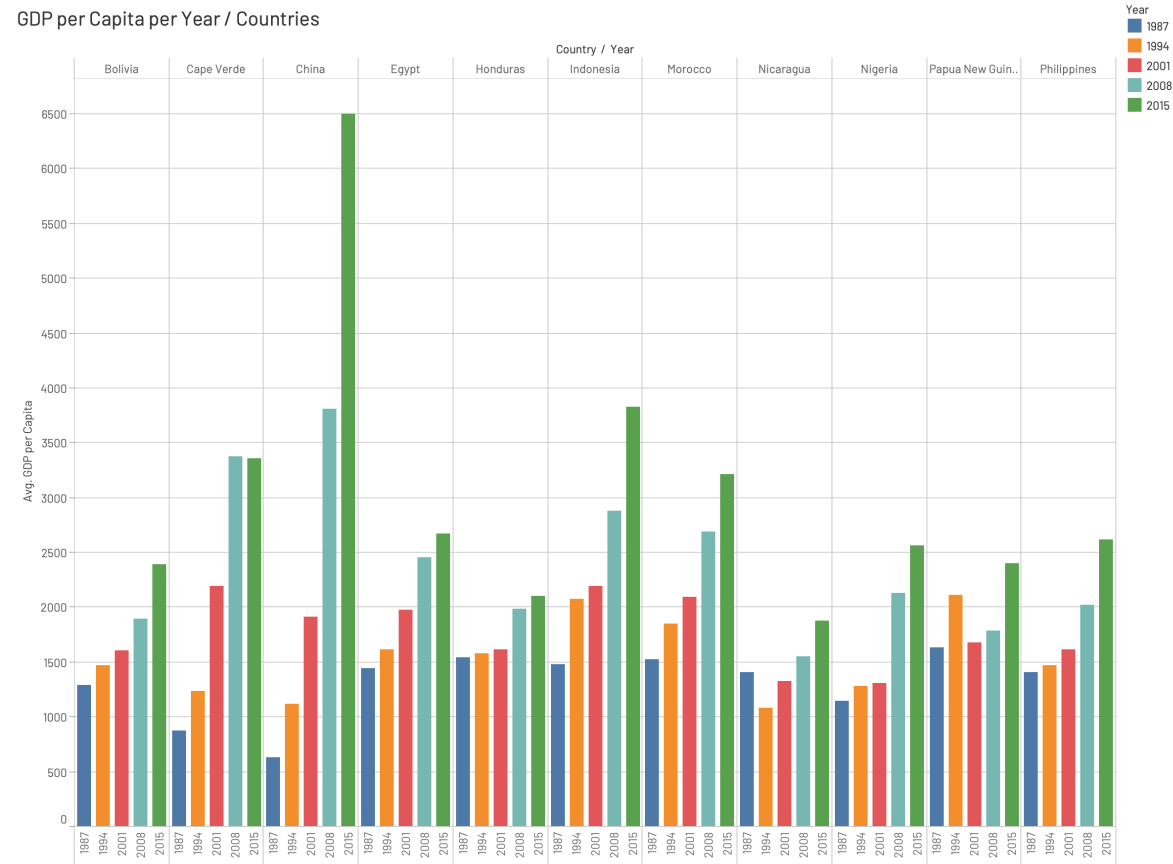


*

Please choose **only one** of the following:

- ☐ 2.4 - 2.8
- ☐ 2.0 - 5.9
- ☐ 1.2 - 5.4
- ☐ 2.6 - 5.4
- ☐ 1.9 - 3.6
- ☐ 2.4 - 5.1
- ☐ 2.2 - 3.6

What is the sum of *GDP per Capita* for all Countries with a *GDP per Capita* above 3000 in the year 2015?



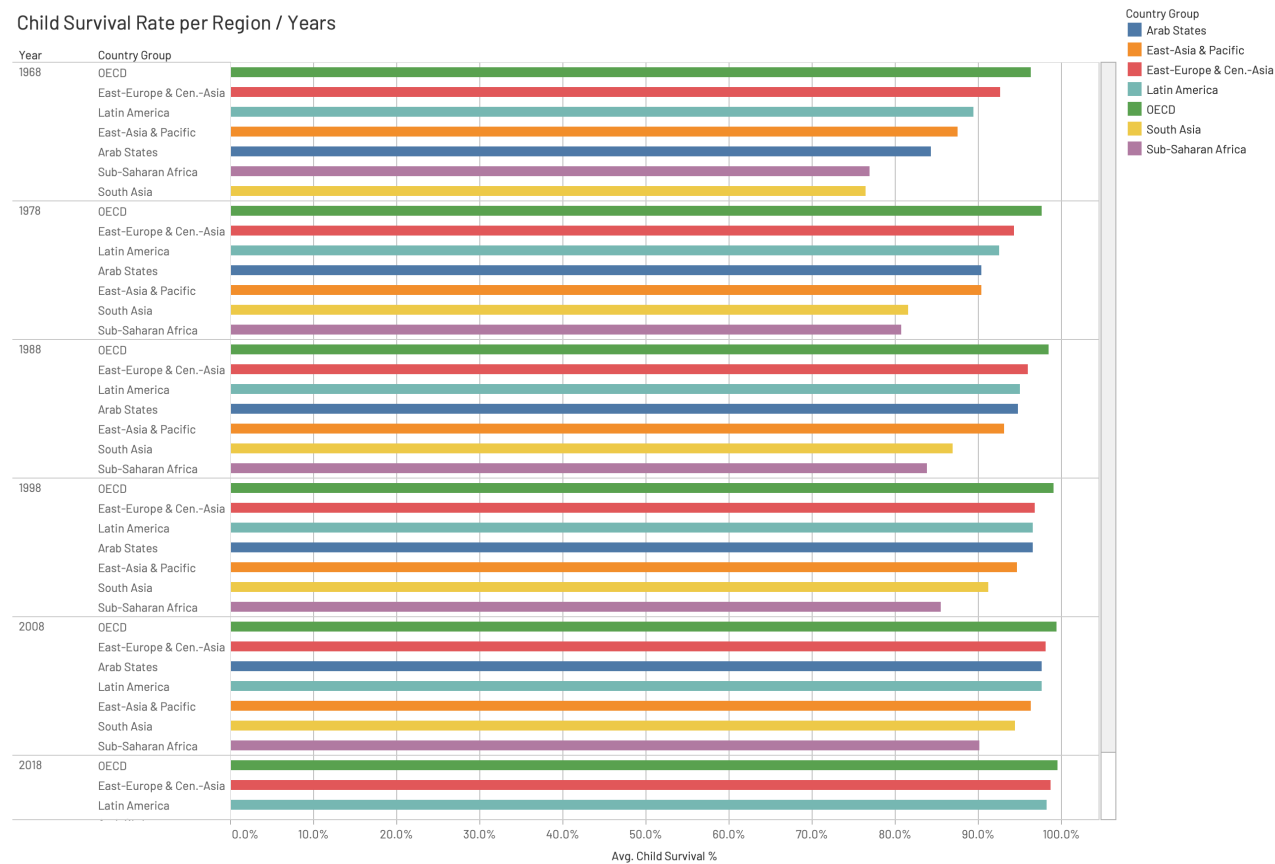
(/umfragen/limesurvey/upload/surveys/187677/images/bosnia.png)

*

Please choose **only one** of the following:

- ☐ 13100
- ☐ 22400
- ☐ 16900
- ☐ 46200
- ☐ 18300
- ☐ 11400
- ☐ 28900

What is the average Child Survival Rate for South Asian Countries?

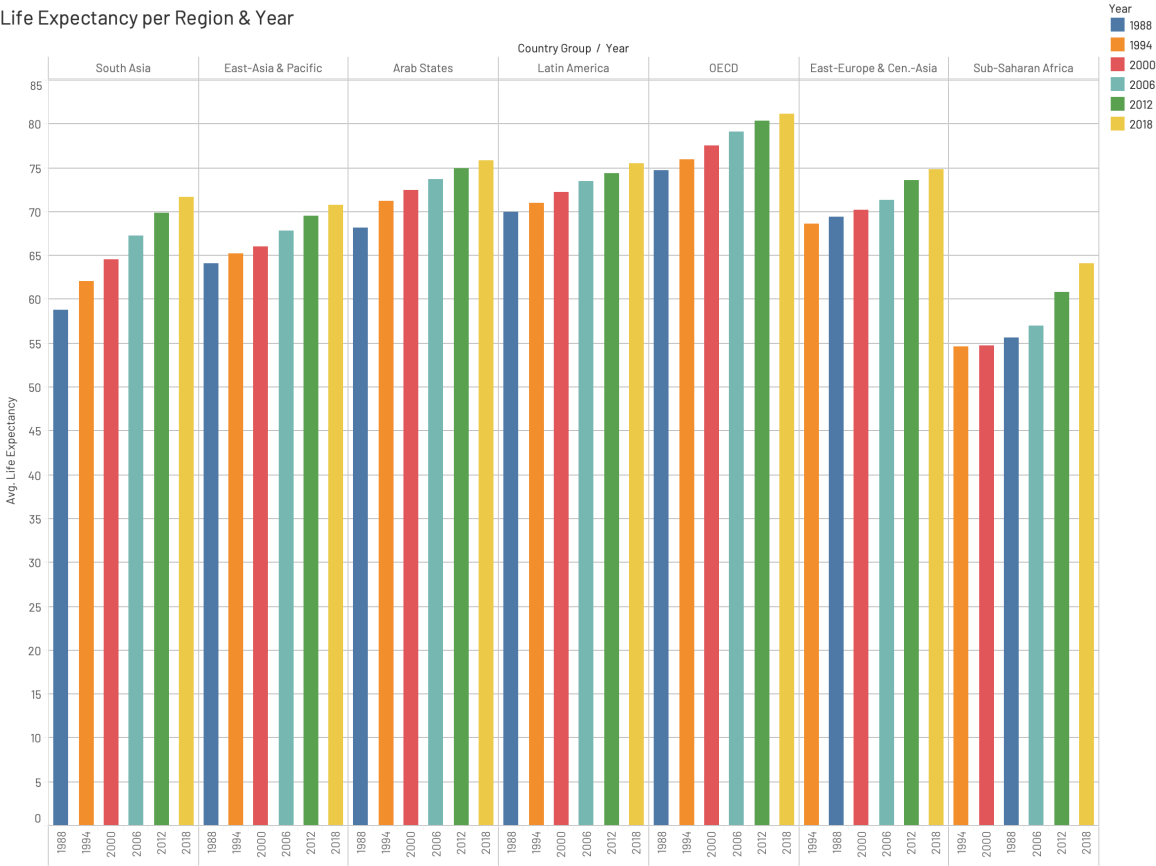


★

Please choose **only one** of the following:

- ☐ 97.2%
- ☐ 72.5%
- ☐ 85.4%
- ☐ 87.8%
- ☐ 93.1%
- ☐ 82.0%
- ☐ 90.1%

In how many regions is the Life Expectancy of 2006 above 70 years?



★
Please choose **only one** of the following:

- ☐ 3
- ☐ 4
- ☐ 5
- ☐ 6
- ☐ 2
- ☐ 1

20

Please let us have your assessment of the visualizations you just used: move the sliders to indicate your level of agreement with the individual terms.

Try to make a spontaneous decision! There are no "right" or "wrong" answers. Your personal opinion is all that counts!

Answered on the presented 7 point rating scale.

While using the visualization I perceived it as|unpredictable|predictable

While using the visualization I perceived it as|obstructive|supportive

While using the visualization I perceived it as|not secure|secure

While using the visualization I perceived it as|not meeting expectations|meeting expectations

I consider the visualization as|useless|useful

I consider the visualization as|not helpful|helpful

I consider the visualization as|not beneficial|beneficial

I consider the visualization as|not rewarding|rewarding

In my opinion, using the visualization is|difficult|easy

In my opinion, using the visualization is|illogical|logical

In my opinion, using the visualization is|not plausible|plausible

In my opinion, using the visualization is|inconclusive|conclusive

It is important not to think too long about the terms to reach a direct assessment.

Understanding Human Population:

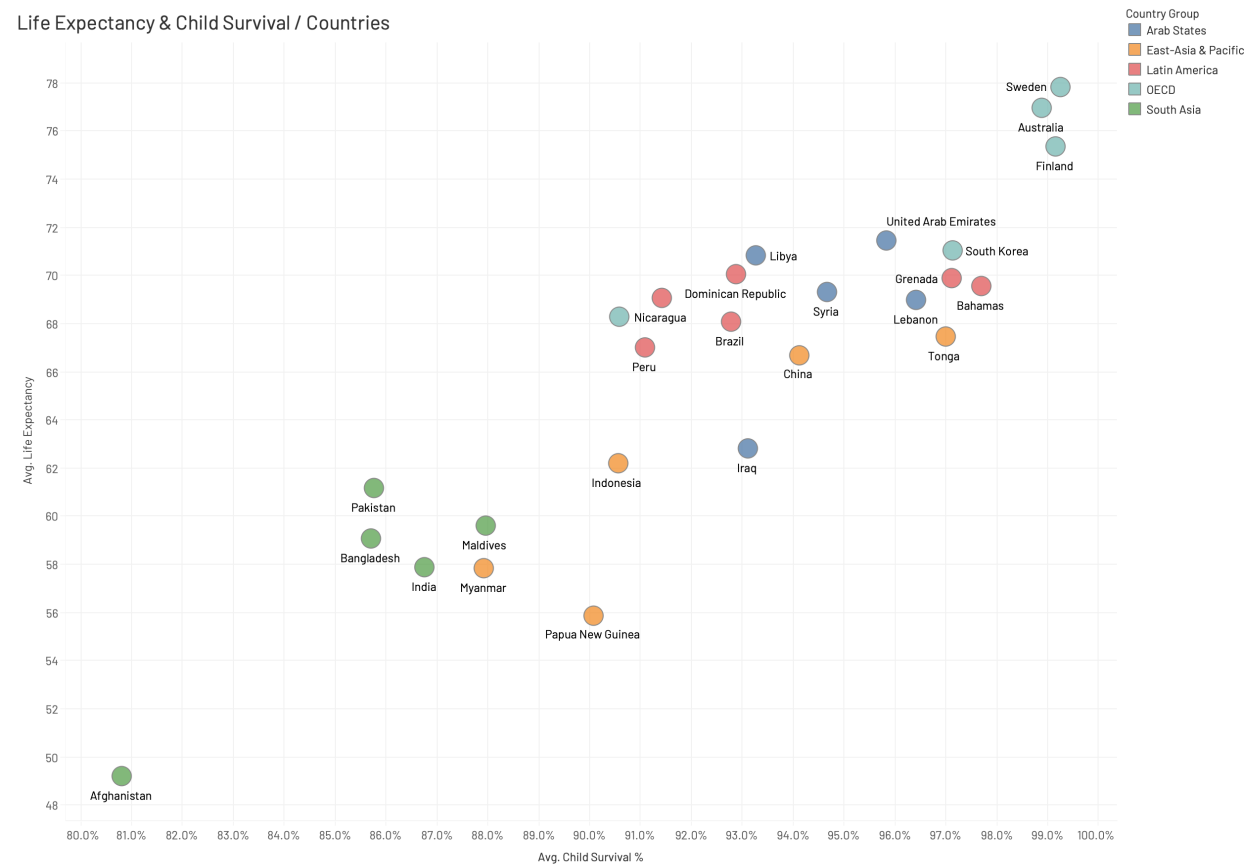
Imagine you are a team of demographers, studying the human population. Please help your team members understand some specific social and economic problems by answering the following series of questions as quickly and accurately as possible.

The next 5 questions are in the form of tasks. The time for completion will be measured for each task. Each task consists of a question belonging to a visualization about various population data. Below the visualization you can choose between 7 answer options, only 1 is correct.

At the end of this survey you will see how many tasks you got right!

The timer starts as soon as you click on 'Next' below.

What is the average Life Expectancy for the 5 *East-Asia & Pacific* Countries below?



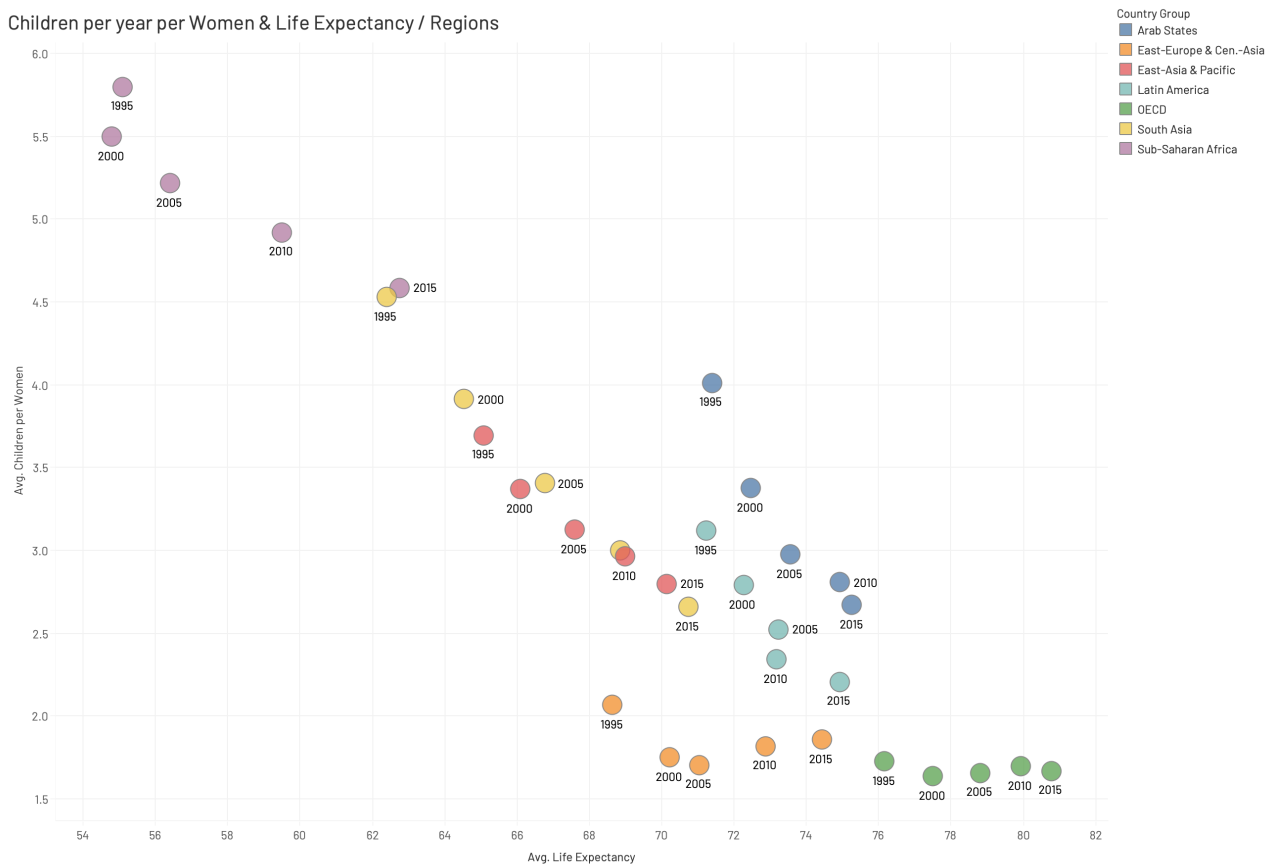
★

Please choose **only one** of the following:

- ☐ 91.2
- ☐ 55.8
- ☐ 57.2
- ☐ 71.1
- ☐ 62.0
- ☐ 63.8
- ☐ 61.1

What is the Range of Values for Children per Women in OECD Countries?

Children per year per Women & Life Expectancy / Regions



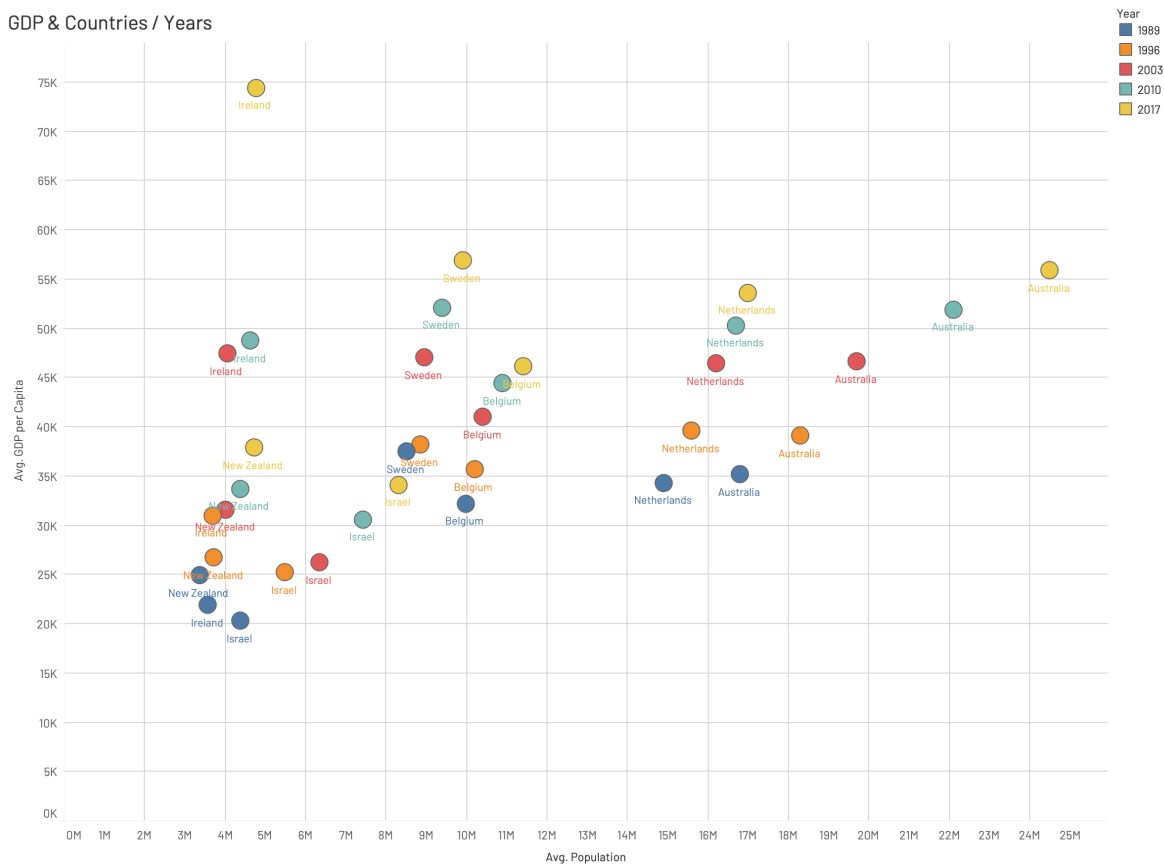
*

Please choose **only one** of the following:

- ☐ 2.7 - 2.9
☐ 1.4 - 3.0
☐ 2.6 - 5.4
☐ 1.7 - 2.8
☐ 1.7 - 1.7
☐ 1.6 - 2.1
☐ 1.5 - 1.8

What is the sum of *GDP per Capita* for all Countries with a *GDP per Capita* above 35000 in the year 1996?

GDP & Countries / Years



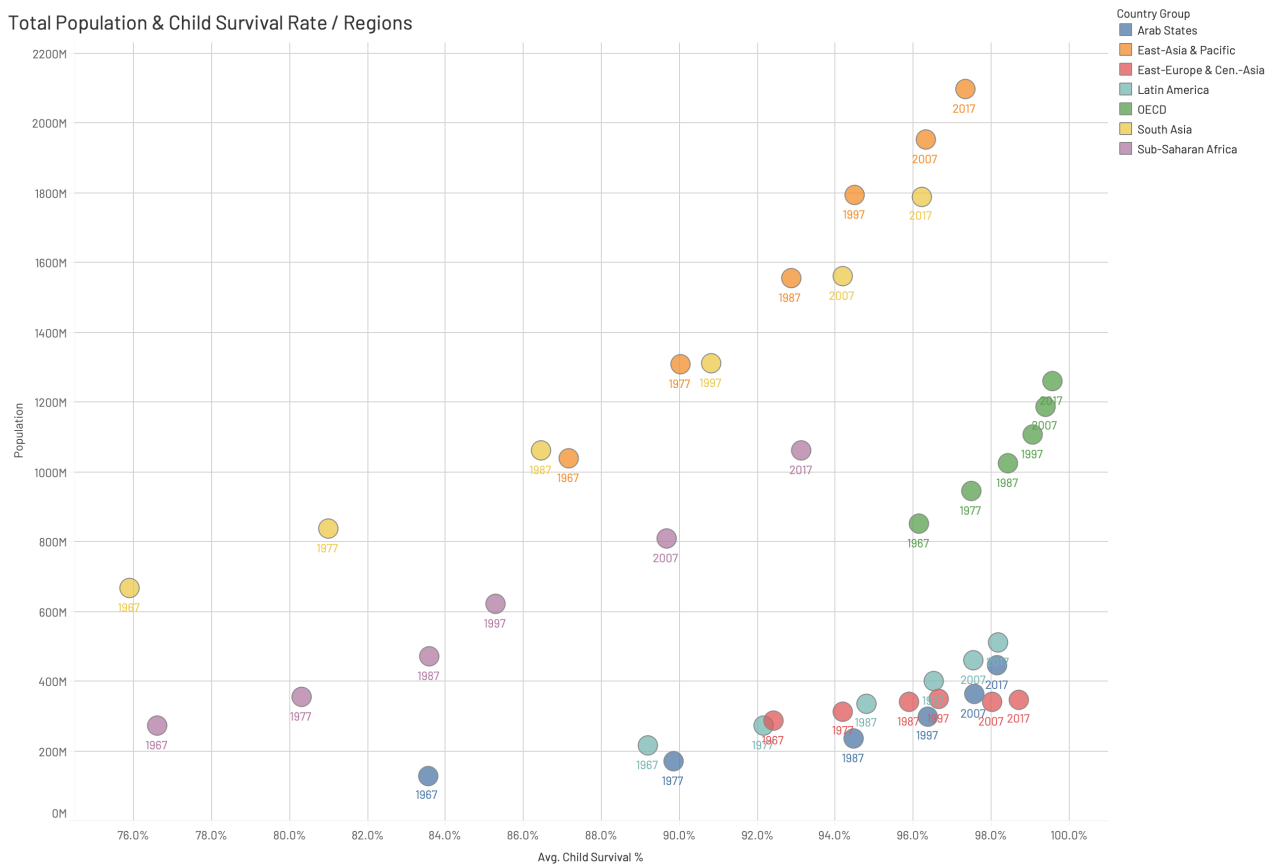
★

Please choose **only one** of the following:

- ☐ 20500
- ☐ 130200
- ☐ 221300
- ☐ 420400
- ☐ 80200
- ☐ 139200
- ☐ 152600

What is the average Child Survival Rate for East-Asian & Pacific Countries?

Total Population & Child Survival Rate / Regions

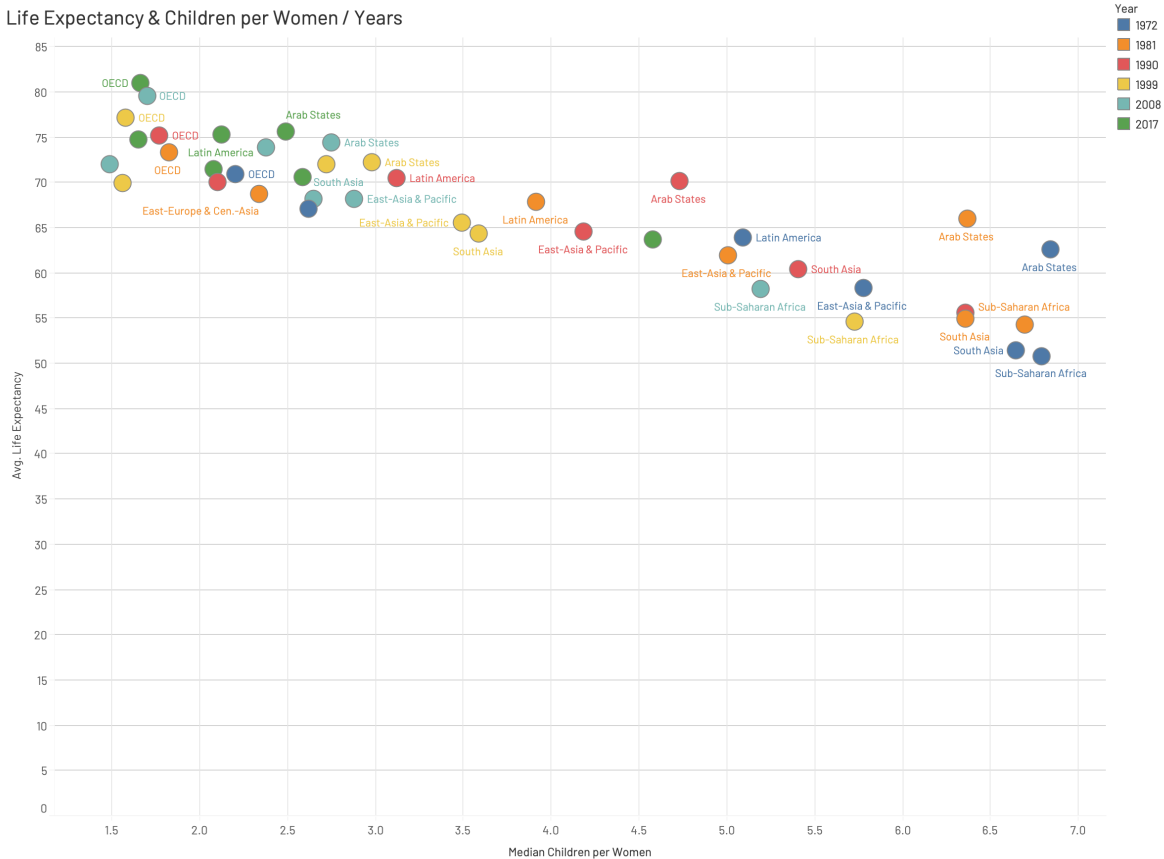


★

Please choose **only one** of the following:

- ☐ 90.0%
☐ 88.3%
☐ 93.0%
☐ 91.1%
☐ 87.2%
☐ 88.9%
☐ 94.1%

In how many Regions is the Life Expectancy of 1990 higher than 65?



*

Please choose **only one** of the following:

- 1
○ 3
○ 5
○ 4
○ 2
○ 6

27

Please let us have your assessment of the visualizations you just used: move the sliders to indicate your level of agreement with the individual terms.

Try to make a spontaneous decision! There are no "right" or "wrong" answers. Your personal opinion is all that counts!

Answered on the presented 7 point rating scale.

While using the visualization I perceived it as|unpredictable|predictable

While using the visualization I perceived it as|obstructive|supportive

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I consider the visualization as|useless|useful

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I consider the visualization as|not beneficial|beneficial

I consider the visualization as|not rewarding|rewarding

In my opinion, using the visualization is|difficult|easy

In my opinion, using the visualization is|illogical|logical

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Understanding Human Population:

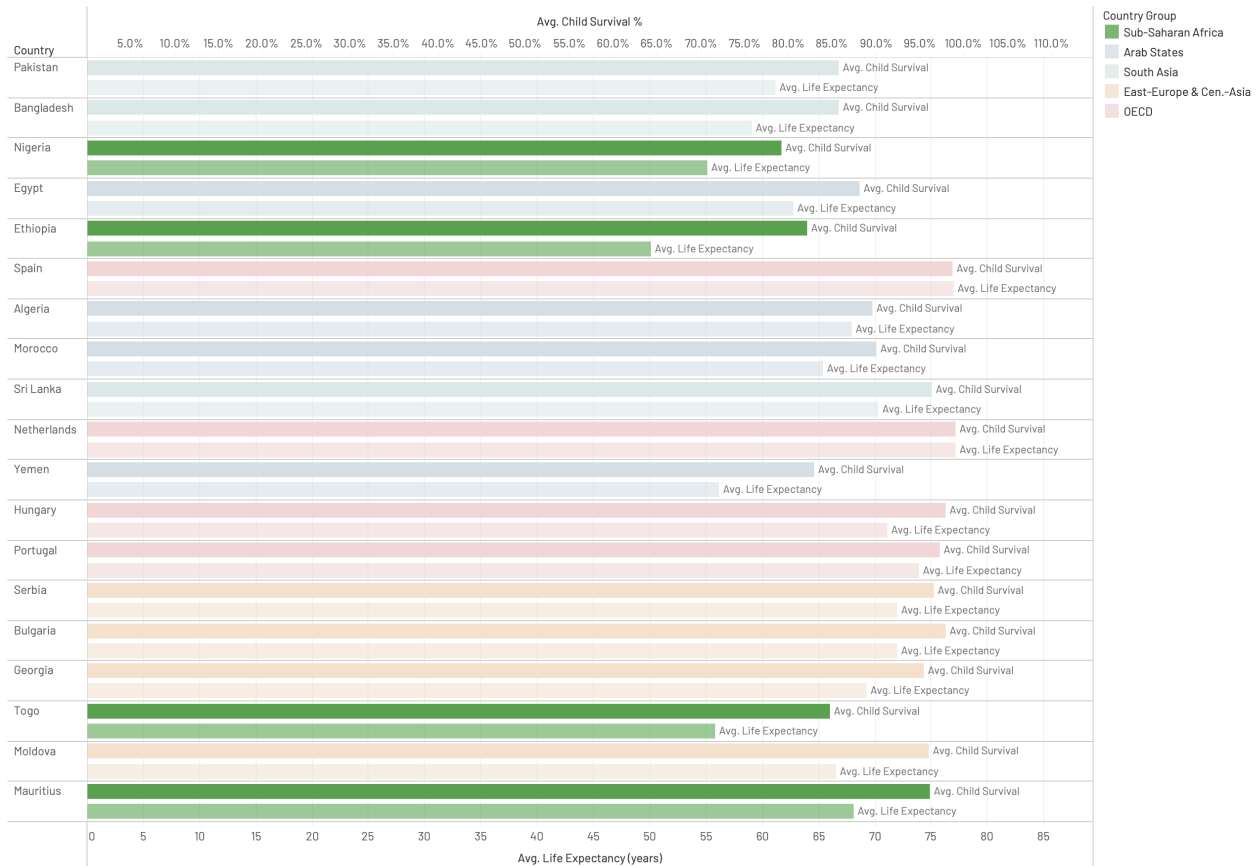
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The timer starts as soon as you click on 'Next' below.

What is the average Life Expectancy for the 4 Sub-Saharan African Countries below?



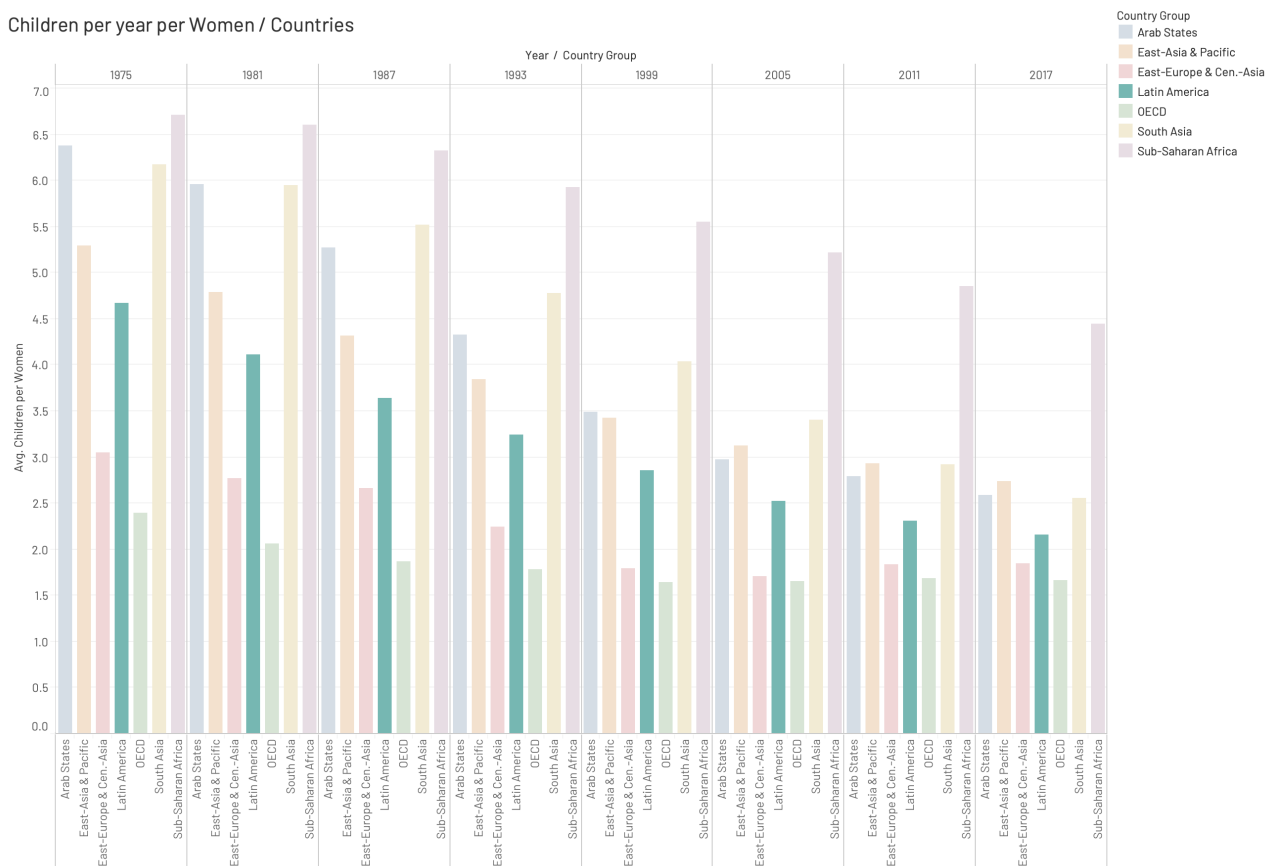
★

Please choose **only one** of the following:

- ☐ 53.4
- ☐ 60.0
- ☐ 62.1
- ☐ 87.8
- ☐ 54.2
- ☐ 57.3
- ☐ 65.8

What is the Range of values for *Children per Women* in Latin American Countries?

Children per year per Women / Countries



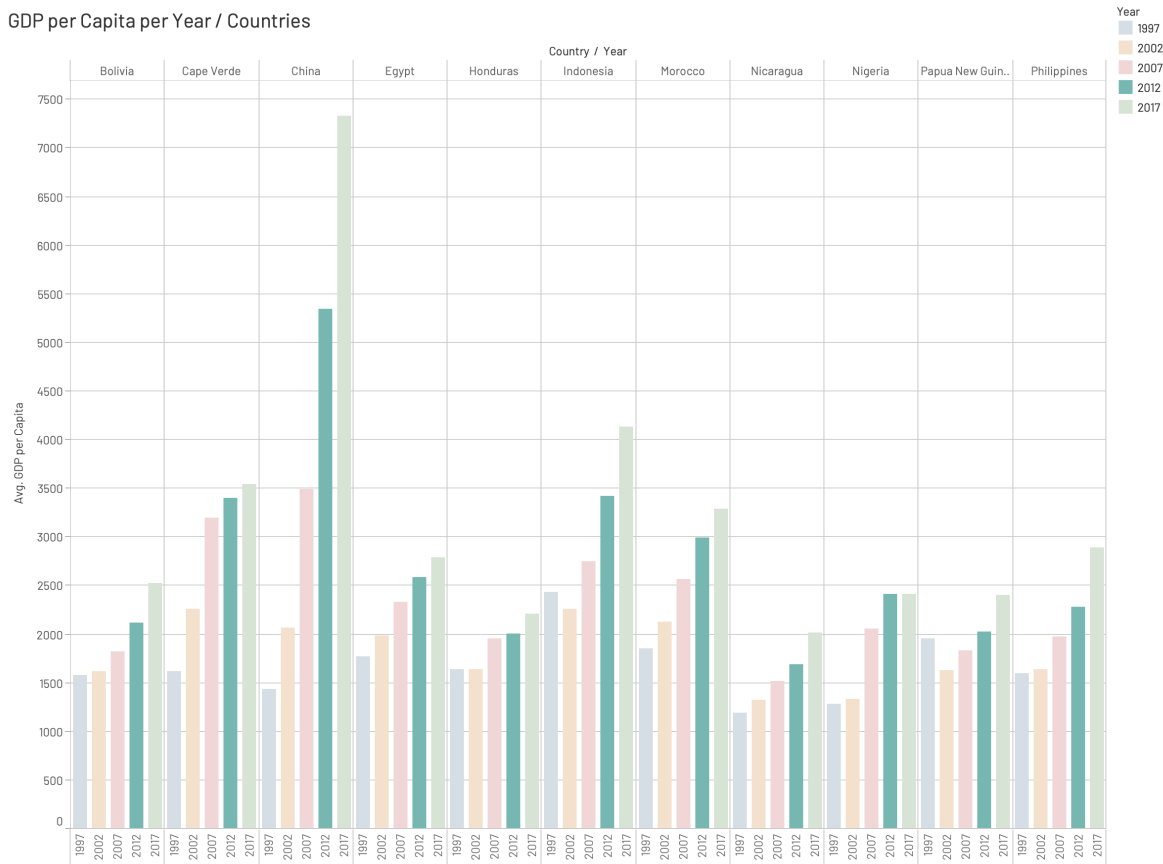
*

Please choose **only one** of the following:

- ☐ 1.9 - 2.5
☐ 1.6 - 6.6
☐ 1.4 - 5.9
☐ 2.2 - 2.9
☐ 3.4 - 5.2
☐ 2.2 - 4.7
☐ 2.0 - 4.5

What is the sum of *GDP per Capita* for all Countries with a *GDP per Capita* above 2500 in the year 2012?

GDP per Capita per Year / Countries



(/umfragen/limesurvey/upload/surveys/187677/images/bosnia.png)

★

Please choose **only one** of the following:

- ☐ 12300
- ☐ 9400
- ☐ 90200
- ☐ 17740
- ☐ 23500
- ☐ 13300
- ☐ 44000

What is the average *Child Survival Rate* for East-European & Centr.-Asian Countries?

Child Survival Rate per Region / Years

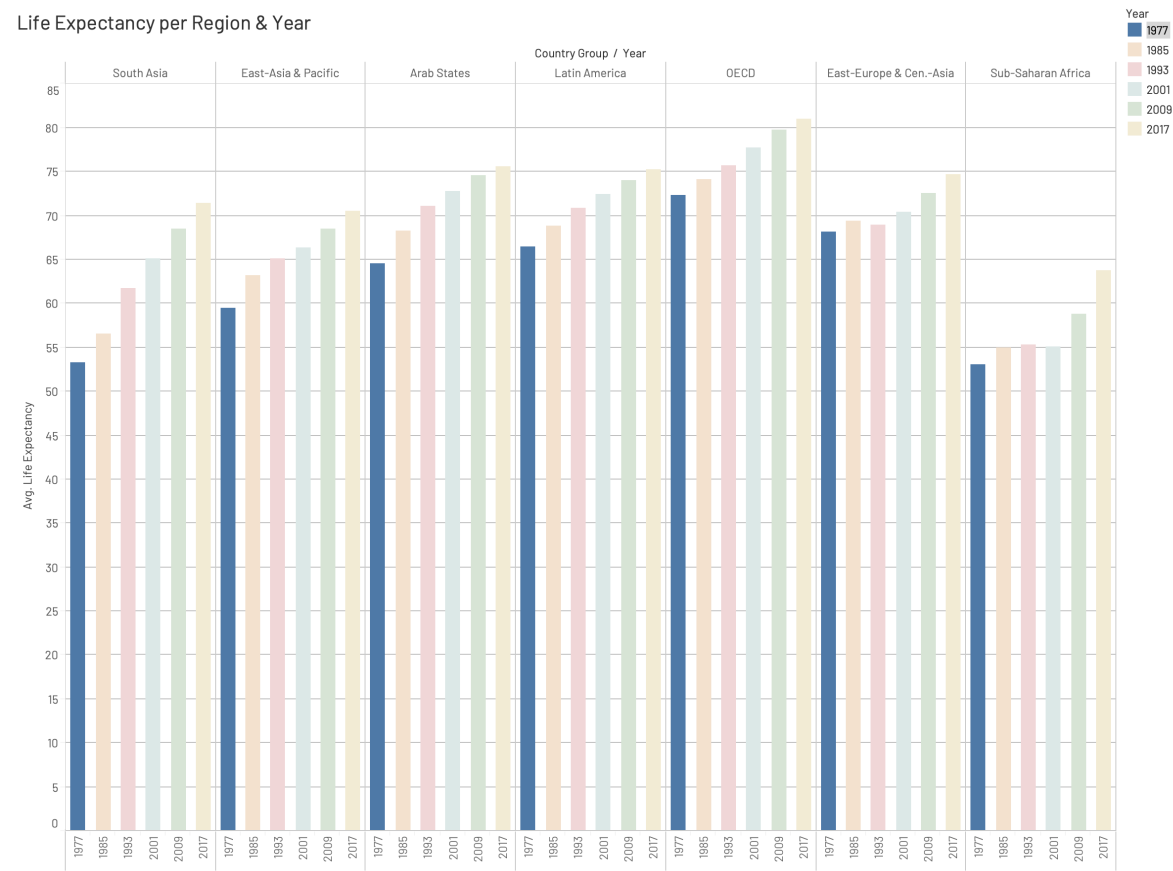


★

Please choose **only one** of the following:

- ☐ 96.7%
☐ 91.2%
☐ 86.7%
☐ 81.3%
☐ 93.0%
☐ 99.1%
☐ 93.2%

In how many regions is the Life Expectancy of 1977 below 60 years?



*

Please choose **only one** of the following:

- ☐ 1
- ☐ 6
- ☐ 2
- ☐ 5
- ☐ 4
- ☐ 3

34

Please let us have your assessment of the visualizations you just used: move the sliders to indicate your level of agreement with the individual terms.

Try to make a spontaneous decision! There are no "right" or "wrong" answers. Your personal opinion is all that counts!

Answered on the presented 7 point rating scale.

While using the visualization I perceived it as|unpredictable|predictable

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While using the visualization I perceived it as|not secure|secure

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I consider the visualization as|not beneficial|beneficial

I consider the visualization as|not rewarding|rewarding

In my opinion, using the visualization is|difficult|easy

In my opinion, using the visualization is|illogical|logical

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Understanding Human Population:

Imagine you are a team of demographers, studying the human population. Please help your team members understand some specific social and economic problems by answering the following series of questions as quickly and accurately as possible.

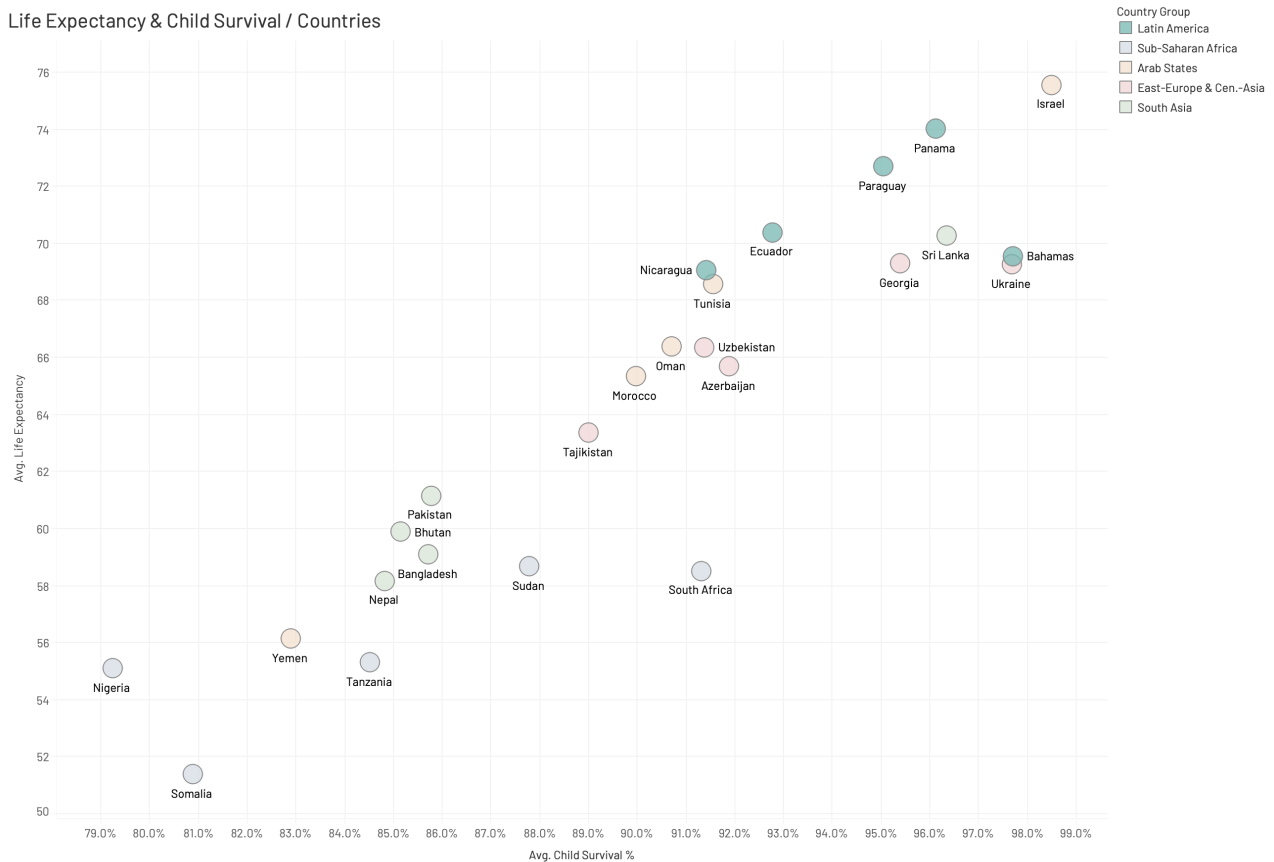
The next 5 questions are in the form of tasks. The time for completion will be measured for each task. Each task consists of a question belonging to a visualization about various population data. Below the visualization you can choose between 7 answer options, only 1 is correct.

At the end of this survey you will see how many tasks you got right!

The timer starts as soon as you click on 'Next' below.

What is the average Life Expectancy for the 5 Latin American Countries below?

Life Expectancy & Child Survival / Countries



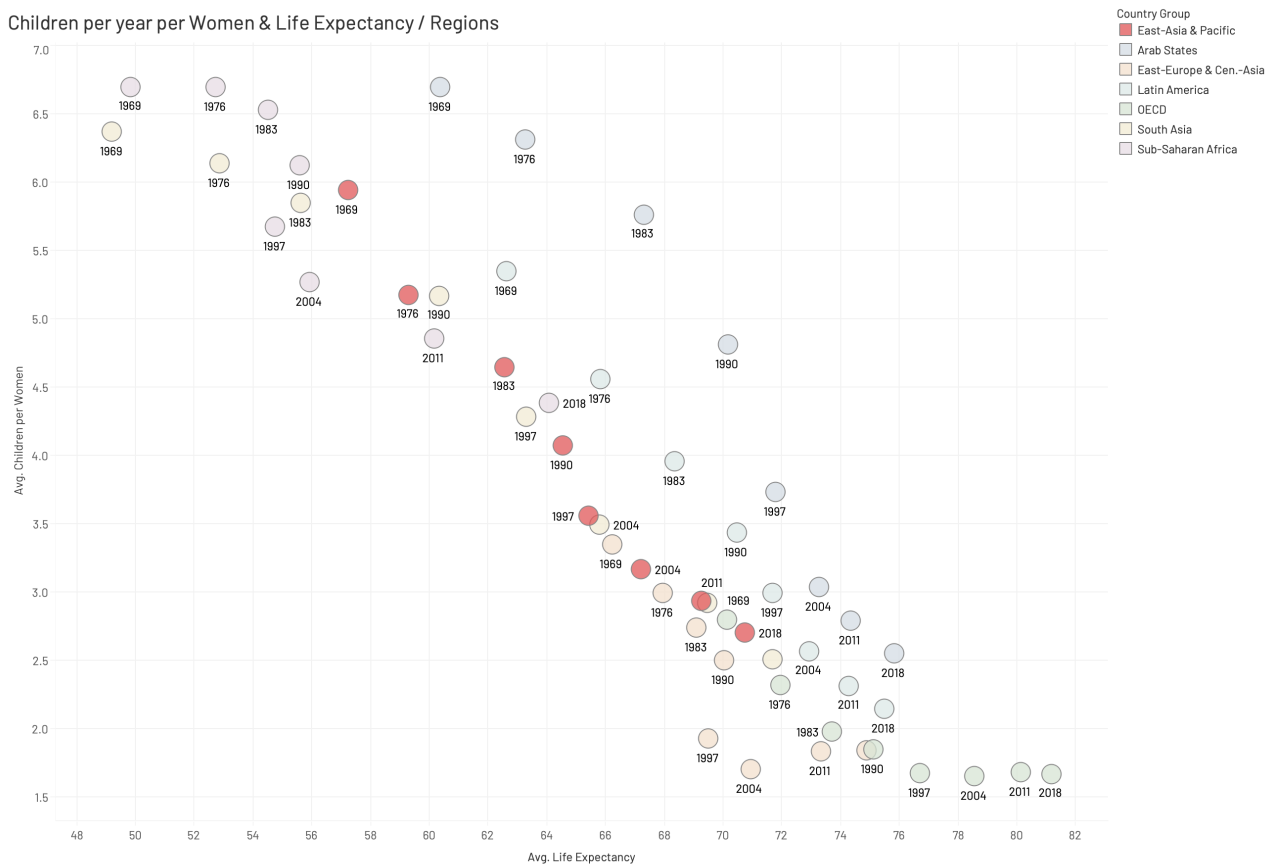
★

Please choose **only one** of the following:

- ☐ 75.4
☐ 63.1
☐ 72.2
☐ 91.1
☐ 95.1
☐ 69.4
☐ 71.1

What is the Range of Values for *Children per Women* in East-Asian & Pacific Countries?

Children per year per Women & Life Expectancy / Regions



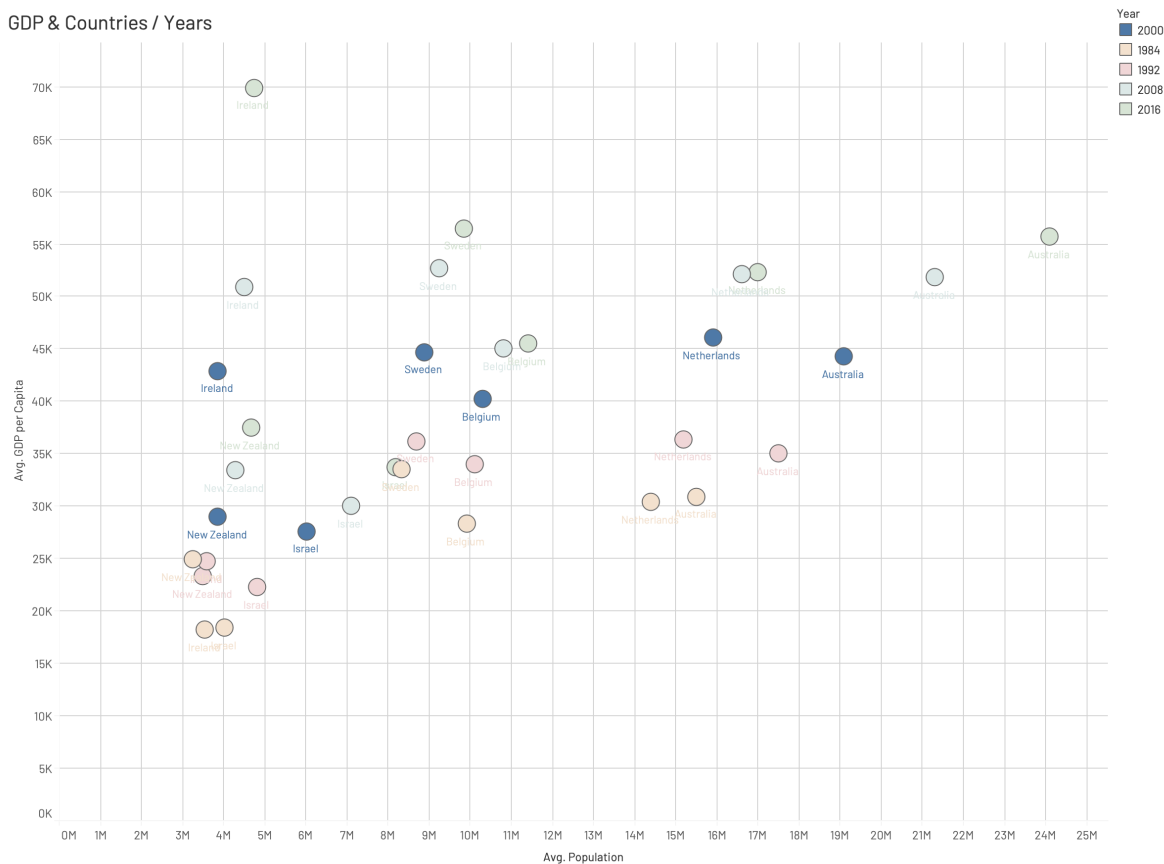
*

Please choose **only one** of the following:

- ☐ 4.0 - 5.9
☐ 1.6 - 6.6
☐ 2.2 - 3.4
☐ 2.7 - 5.9
☐ 1.2 - 3.4
☐ 2.8 - 5.7
☐ 2.5 - 4.1

What is the sum of *GDP per Capita* for all Countries with a *GDP per Capita* below 30000€ in the year 2000?

GDP & Countries / Years



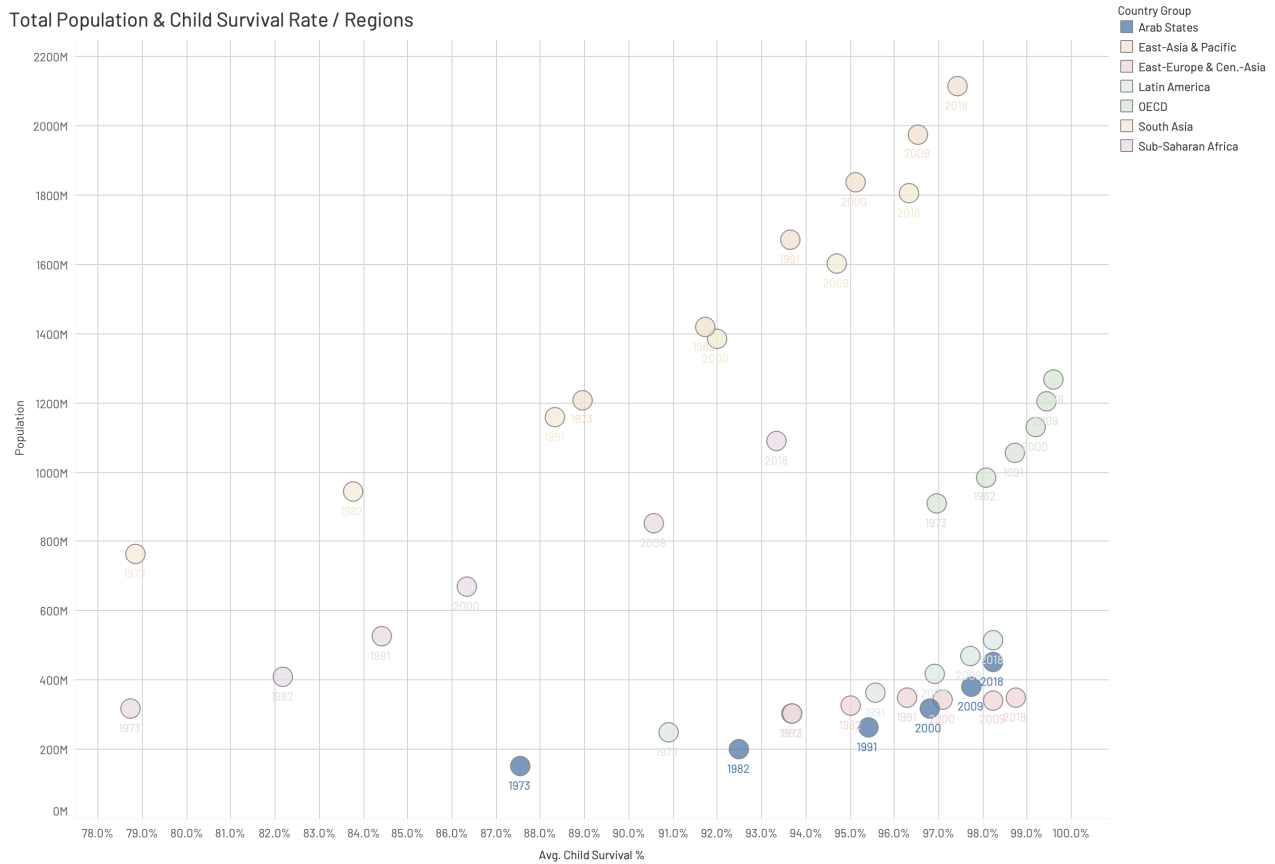
★

Please choose **only one** of the following:

- ☐ 80400
☐ 43200
☐ 234000
☐ 20900
☐ 68300
☐ 217000
☐ 56600

What is the average Child Survival Rate for Arab States?

Total Population & Child Survival Rate / Regions



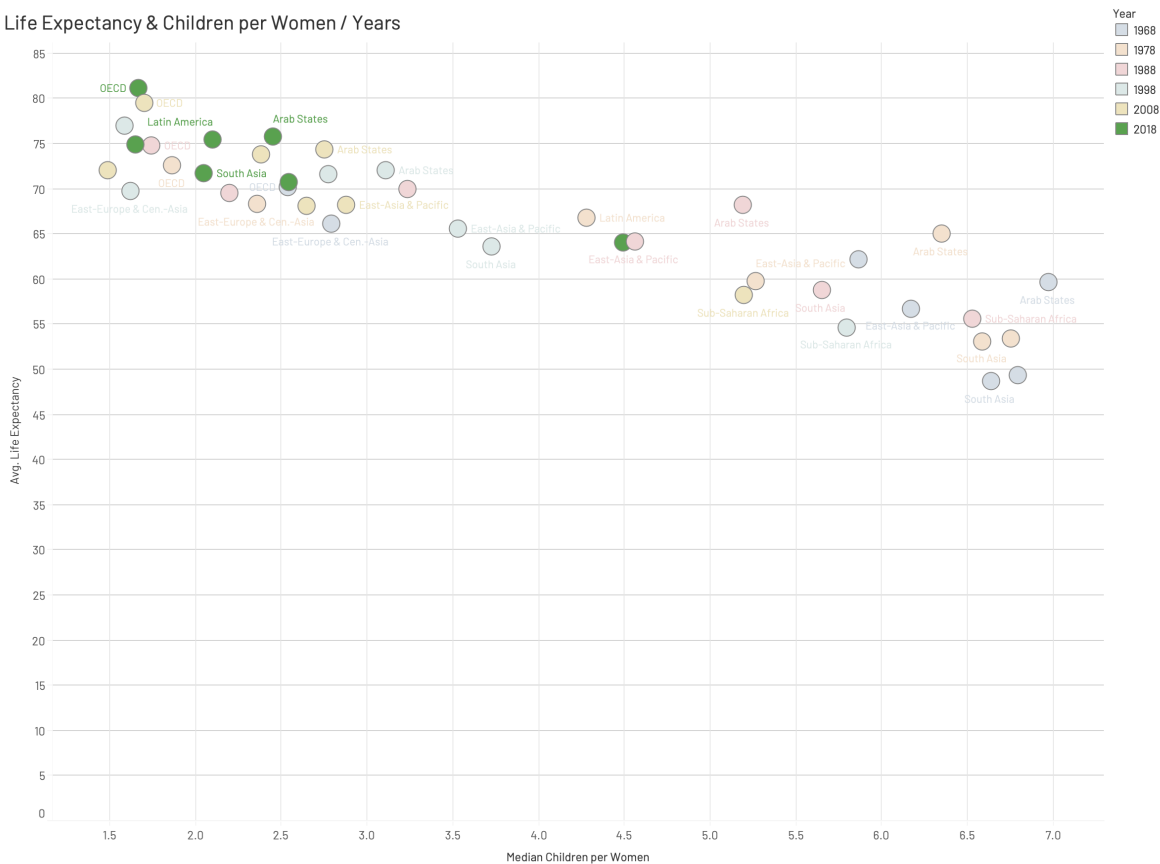
★

Please choose **only one** of the following:

- ☐ 94.7%
☐ 85.0%
☐ 89.2%
☐ 98.4%
☐ 91.1%
☐ 97.1%
☐ 92.0%

In how many Regions is the Life Expectancy of 2018 higher than 70?

Life Expectancy & Children per Women / Years



★

Please choose **only one** of the following:

- ☐ 6
- ☐ 1
- ☐ 5
- ☐ 4
- ☐ 7
- ☐ 2
- ☐ 3

41

Please let us have your assessment of the visualizations you just used: move the sliders to indicate your level of agreement with the individual terms.

Try to make a spontaneous decision! There are no "right" or "wrong" answers. Your personal opinion is all that counts!

Answered on the presented 7 point rating scale.

While using the visualization I perceived it as|unpredictable|predictable

While using the visualization I perceived it as|obstructive|supportive

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I consider the visualization as|useless|useful

I consider the visualization as|not helpful|helpful

I consider the visualization as|not beneficial|beneficial

I consider the visualization as|not rewarding|rewarding

In my opinion, using the visualization is|difficult|easy

In my opinion, using the visualization is|illogical|logical

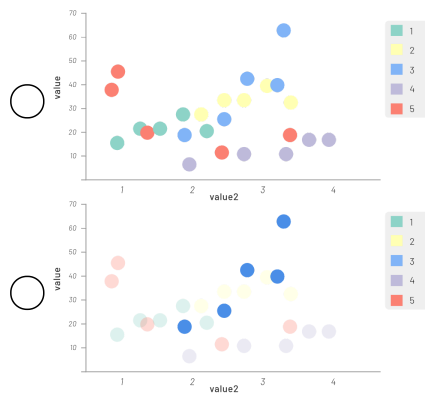
In my opinion, using the visualization is|not plausible|plausible

In my opinion, using the visualization is|inconclusive|conclusive

It is important not to think too long about the terms to reach a direct assessment.

42 Which scatterplot do you prefer? *

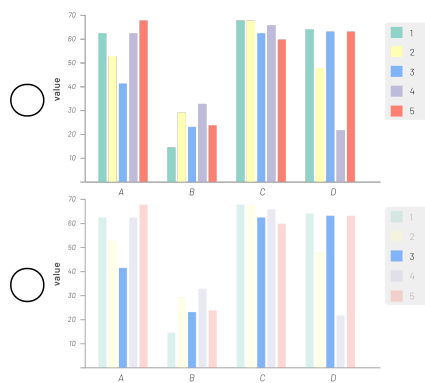
Please choose **only one** of the following:



Make a comment on your choice here:

43 Which barchart do you prefer? *

Please choose **only one** of the following:



Make a comment on your choice here:

44 What frustrated you most during these tasks? *

Please write your answer here:

45 What did you like most about the barchart/scatterplot visualizations or their parts? (e.g. Labels, Legend, Tasks) *

Please write your answer here:

think about usability, colors, highlights etc.

46 Do you have any additional critique or comments?

Please write your answer here:

