Dr. Zakir Husain College

PG Department of Mathematics

Tracing the Growth of the Global community: A Population Forecasting Analysis

Submitted by,

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Project Report Template

1 Introduction

1.1 Overview

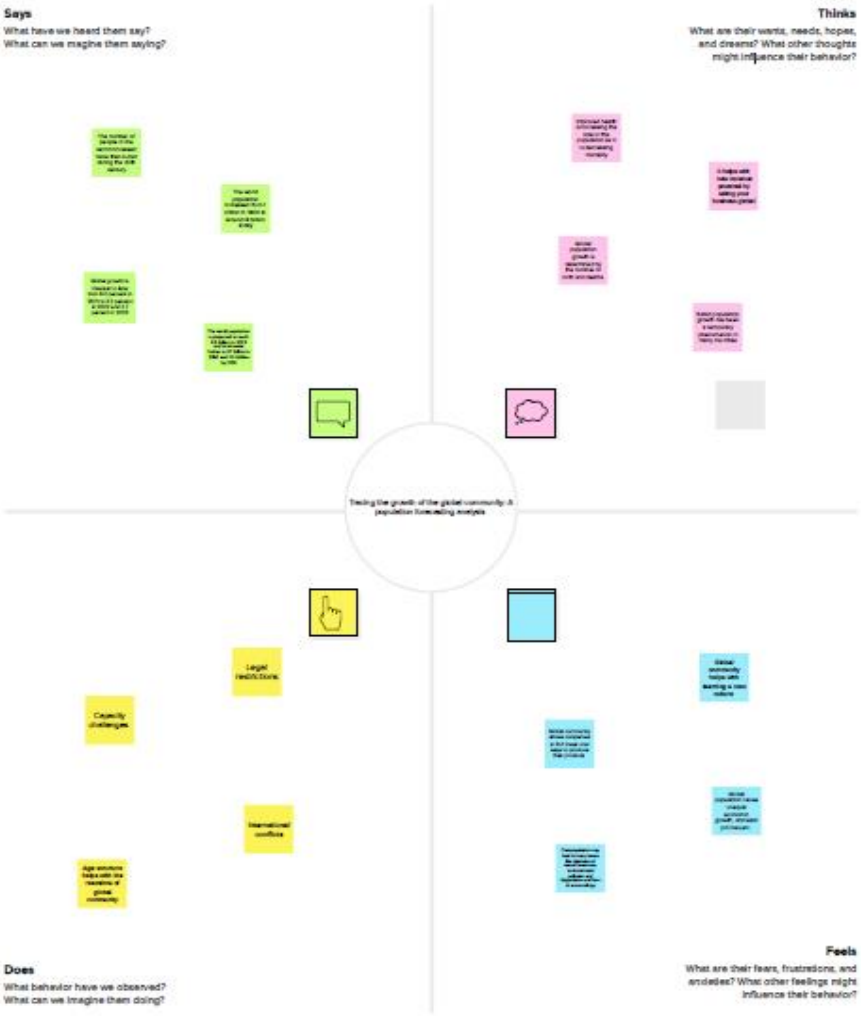
The world's population is more than three times larger than it was in the mid-twentieth century. The global human population reached 8.0 billion in mid-November 2022 from an estimated 2.5 billion people in 1950, adding 1 billion people since 2010 and 2 billion since 1998. The world's population is expected to increase by nearly 2 billion persons in the next 30 years, from the current 8 billion to 9.7 billion in 2050 and could peak at nearly 10.4 billion in the mid 2080s.

1.2 Purpose

Population forecasting is very important to know the growth rate and to estimate future population of particular area. On the basis of assumptions concerning the future of these factors, and of other factor that are just emerging in the community, projections of fertility, mortality and migration trends are made. Population forecasting can alert policymakers to major trends that may affect economic development.

2 Problem Definition & Design Thinking

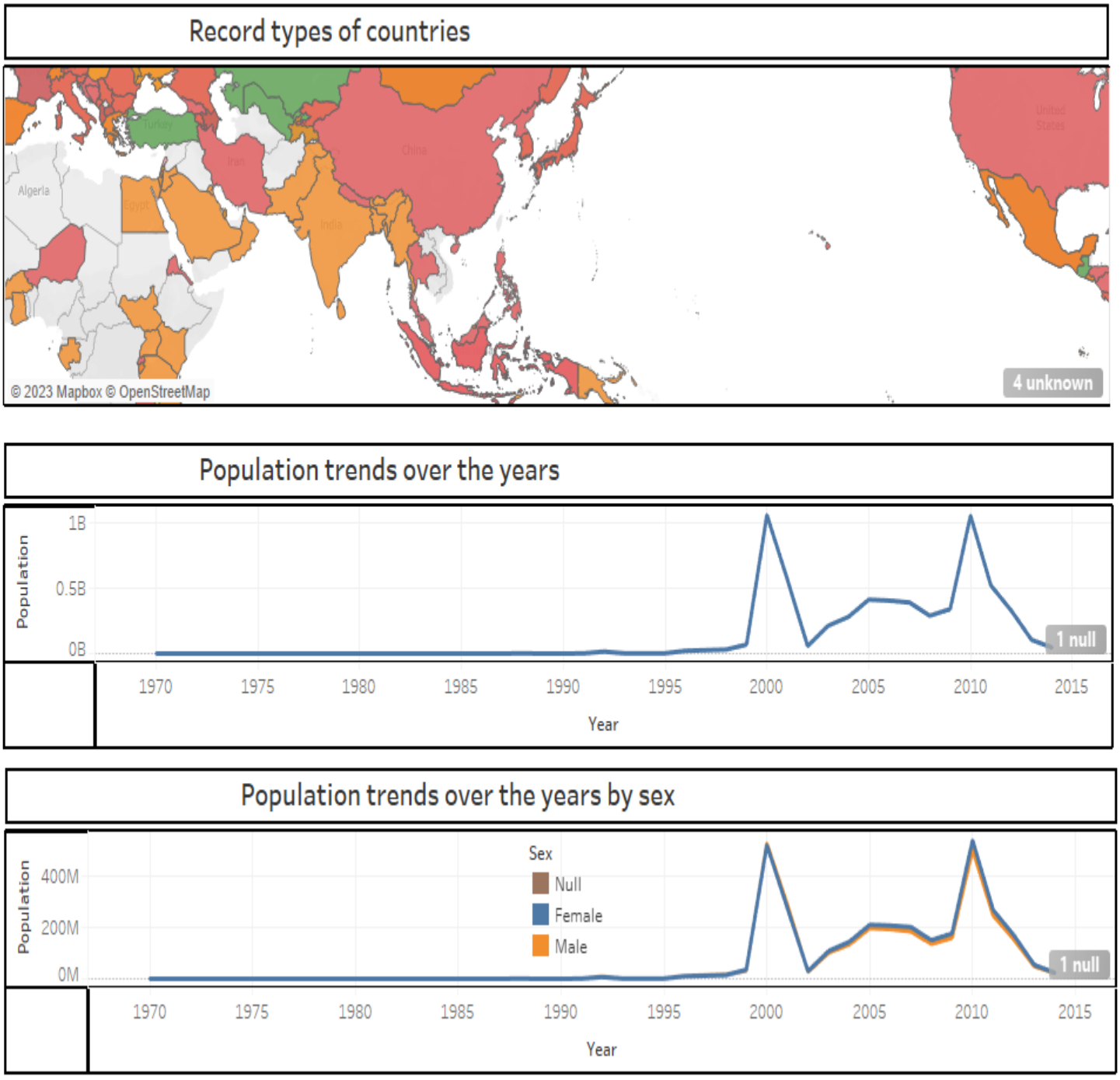
2.1 Empathy Map



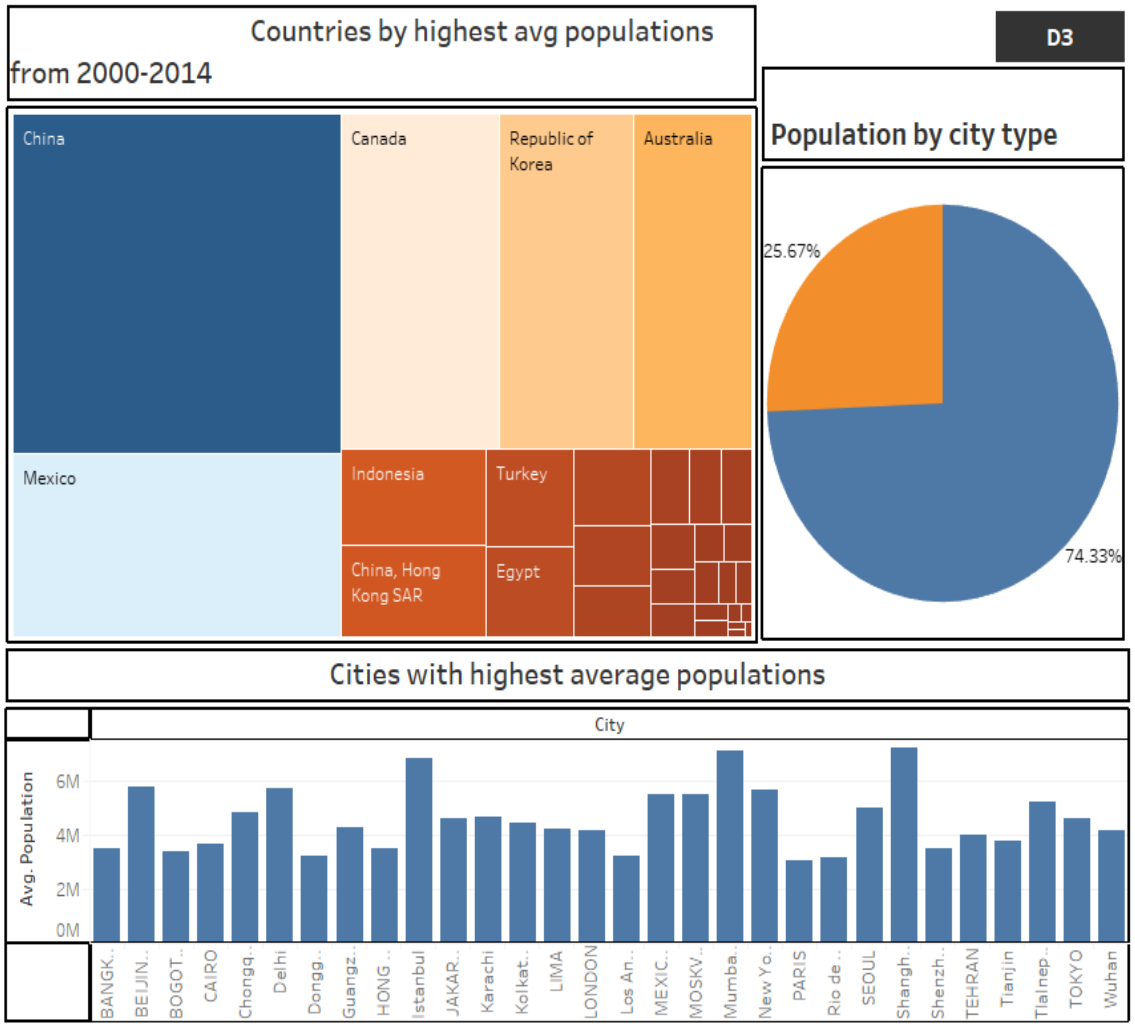
2.2 Ideation & Brainstorming Map

3 RESULT

Dashboard 1


Record types of countries
Turkey
Iran
China
United States
Algeria
Egypt
India
© 2023 Mapbox © OpenStreetMap
4 unknown
Population trends over the years
Population
1B
0.5B
0B
1 null
1970
1975
1980
1985
1990
1995
2000
2005
2010
2015
Year
Population trends over the years by sex
Sex
Null
Female
Male
Population
400M
200M
0M
1 null
1970
1975
1980
1985
1990
1995
2000
2005
2010
2015
Year

Dashboard 2


Countries by highest avg populations from 2000-2014
D3
China
Canada
Republic of Korea
Australia
Mexico
Indonesia
Turkey
China, Hong Kong SAR
Egypt
Population by city type
25.67%
74.33%
Cities with highest average populations
City
Avg. Population
6M
4M
2M
0M
BANGK..
BEIJIN..
BOGOT..
CAIRO
Chongq..
Delhi
Dongg..
Guangz..
HONG ..
Istanbul
JAKAR..
Karachi
Kolkat..
LIMA
LONDON
Los An..
MEXIC..
MOSKV..
Mumba..
New Yo..
PARIS
Rio de ..
SEOUL
Shangh..
Shenzh..
TEHRAN
Tianjin
Tianjin..
TOKYO
Wuhan

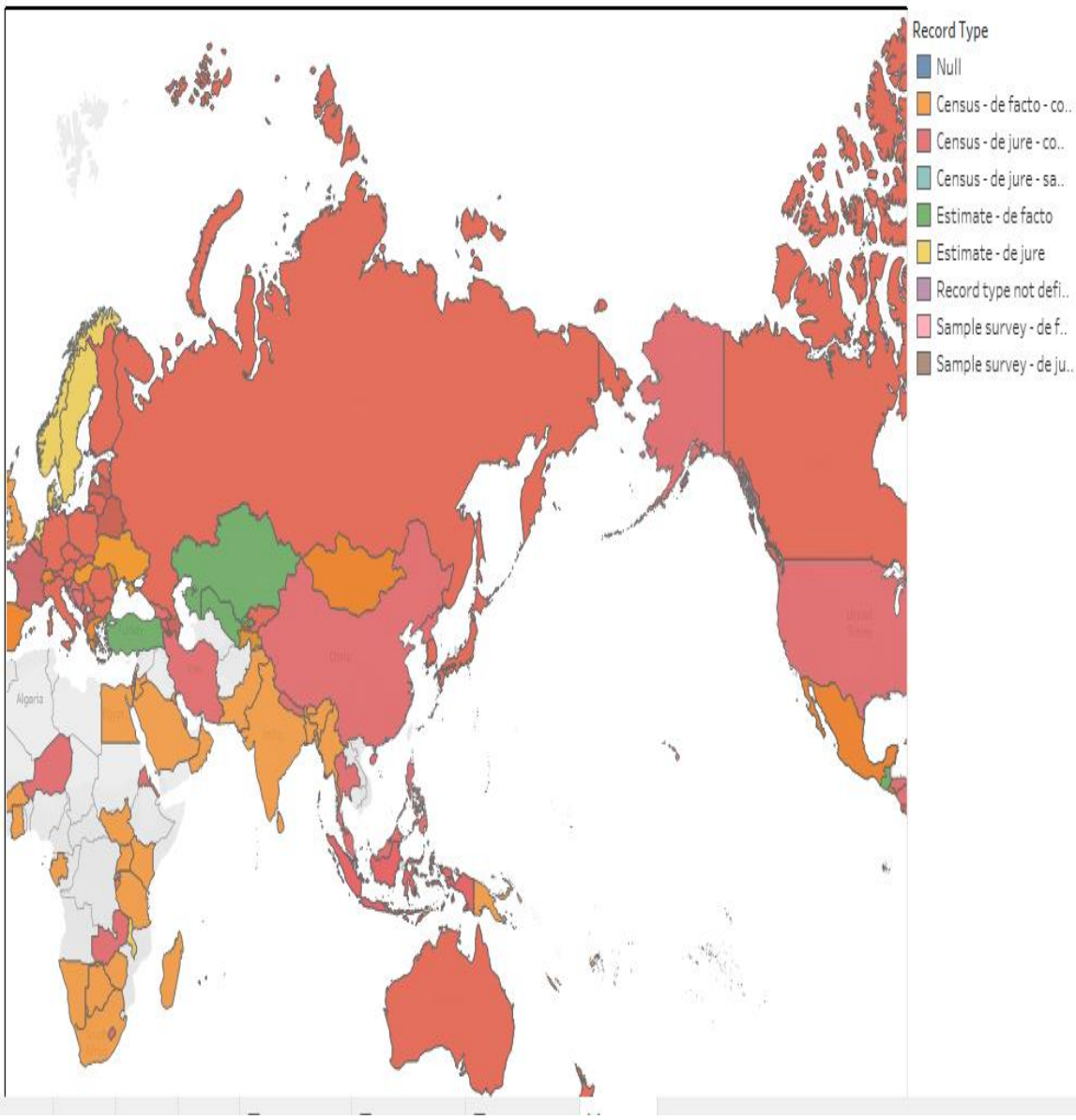
Dashboard 3

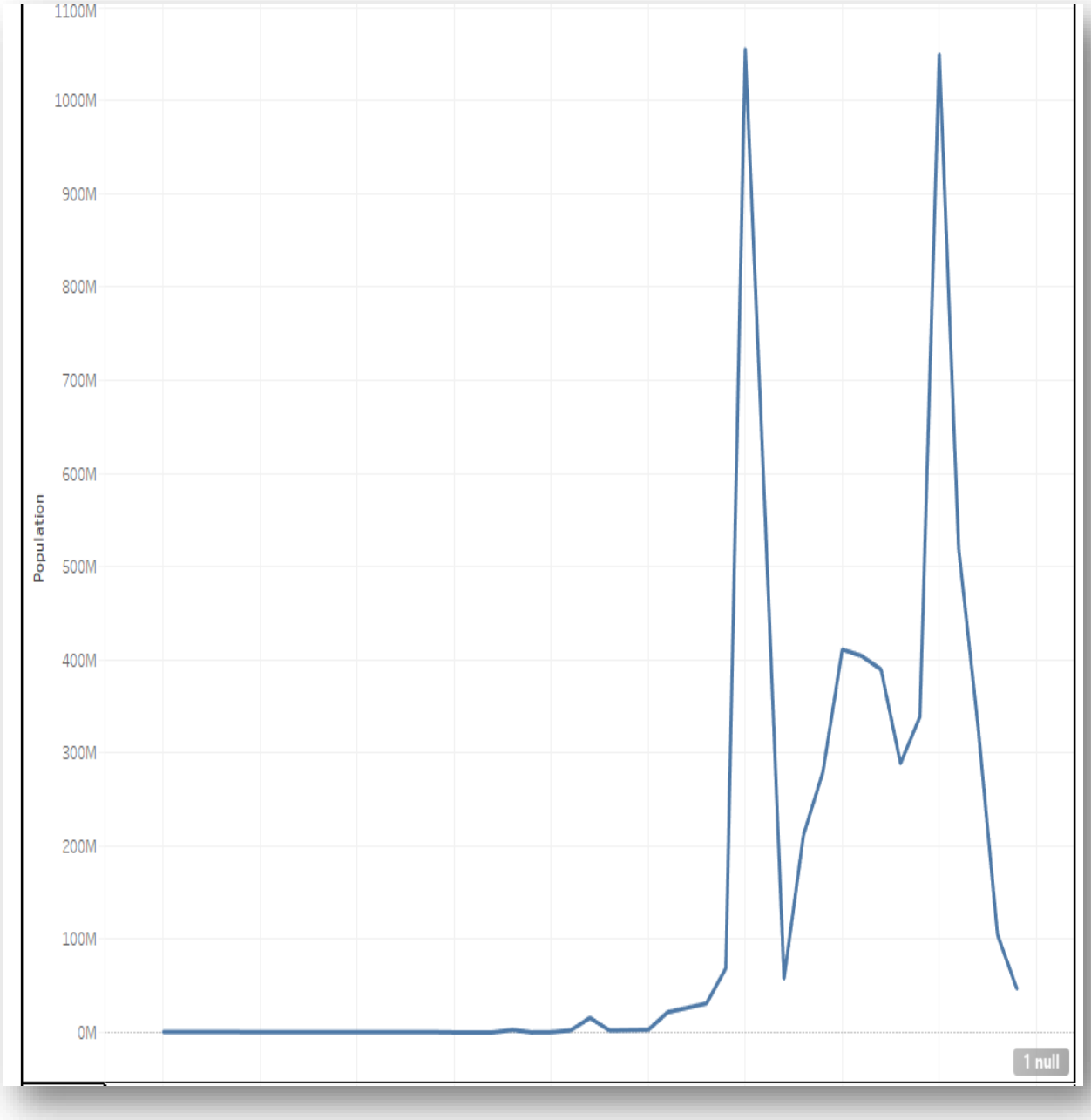
Population of cities by year

City	Country or Area									
	Brazil	China	Egypt	India	Indonesia	Japan	Pakistan	Republic of ...	United King...	United Stat...
6th of October City			154,093							
Abaeteluba	163,802									
Abbotabad							106,101			
Aberdeen									212,125	
Aberdeenshire									226,871	
Abiko						654,213				
Abilene (TX)										232,993
Abo Keber			103,175							
Abohar				124,339						
Açailândia	156,474									
Achalpur				107,316						
Acheng		638,894								
Adilabad				238,932						
Adityapur				119,233						
Adoni				319,763						
Agartala				189,998						
Ageo						1,093,308				
Agra				2,606,473						
Aguas Lindas de Goiás	318,276									
Ahmedabad				8,045,098						
Ahmednagar				655,164						
Aizawl				228,280						
Aizuwakamatsu						599,503				
Ajmer				976,095						
Akashi						1,459,302				
Akeshu		561,822								
Akhmim			101,509							
Akishima						548,294				
Akita						1,610,514				
Akola				400,520						
Akron (OH)										986,399
Al Orizah			100,482							
Alagoinhas	246,366									

Story 1

This map shows the countries and their population recordina	This line graph shows the population trends over the years	This line graph compares the trends of male and female	The column chart shows the average population of the cities	The tree map shows highest average populatin of the cities	The wh poc




1100M
1000M
900M
800M
700M
600M
500M
400M
300M
200M
100M
0M
Population
1 null

Story 1

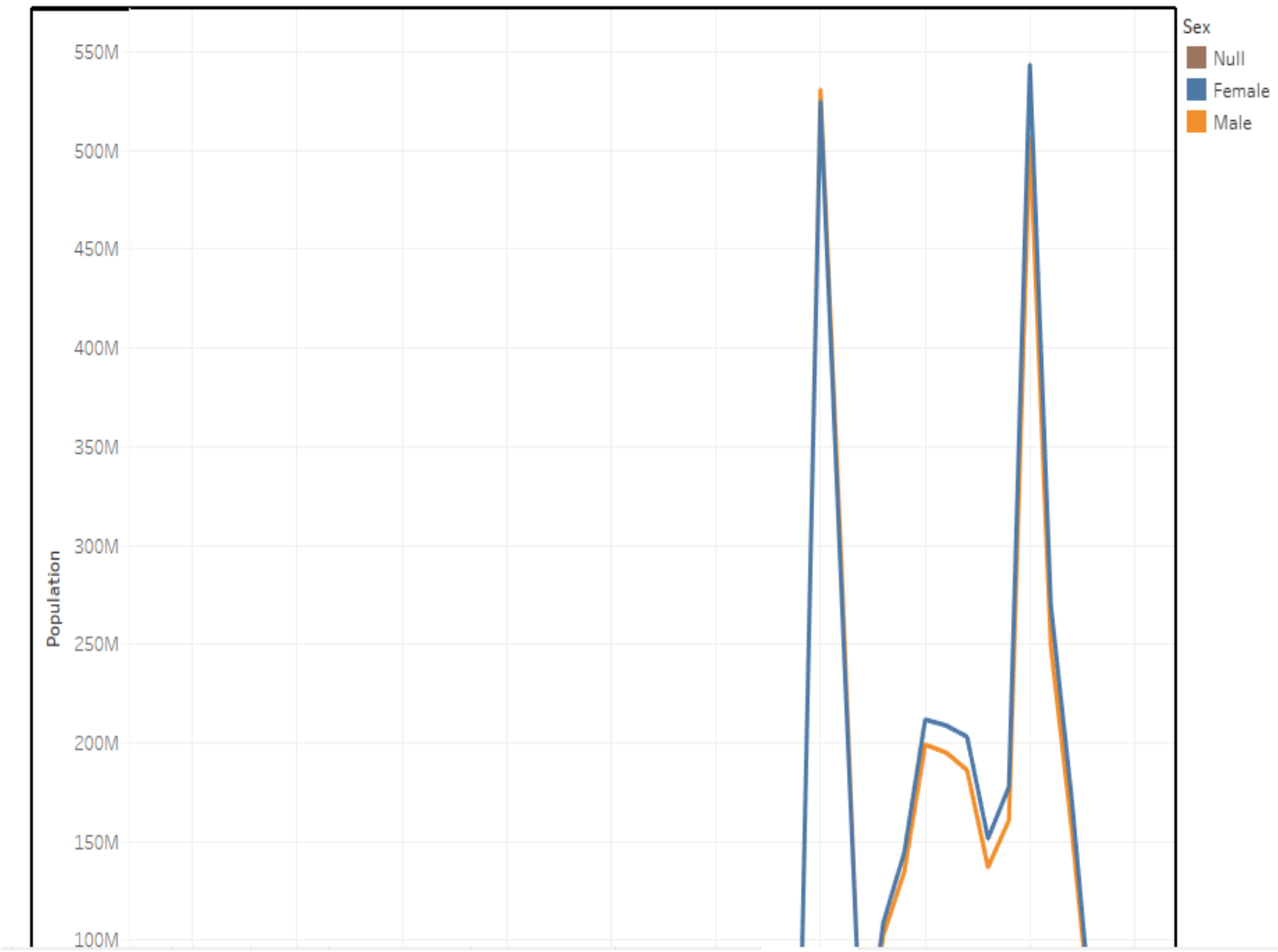
This map shows the countries and their population recordina

This line graph shows the population trends over the vears

This line graph compares the trends of male and female

The column chart shows the average population of the cities

The tree map shows hig average populatin of the cities



Story 1

This map shows the countries and their population recording

This line graph shows the population trends over the years

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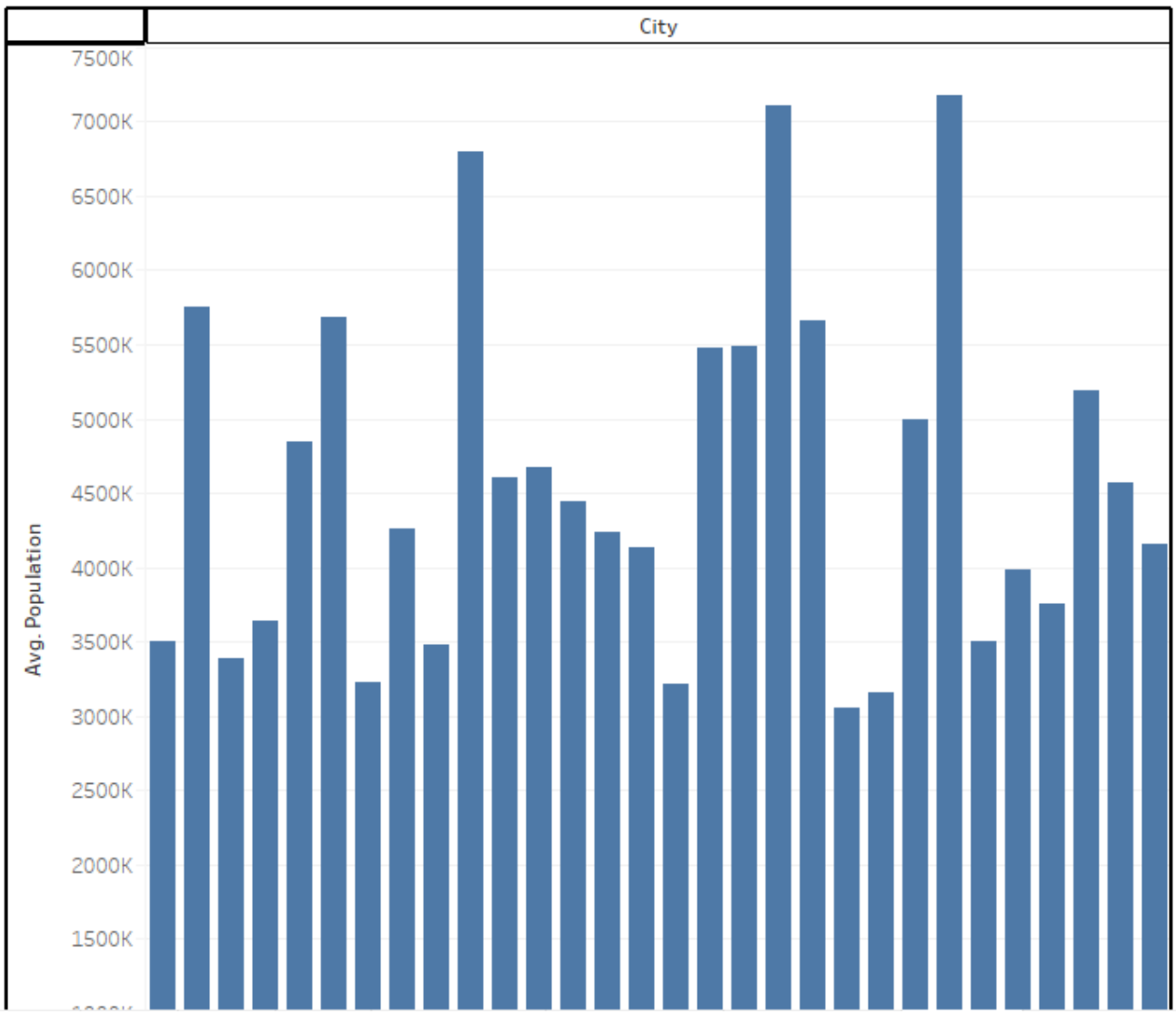
The column chart shows t average population of the cities



Story 1

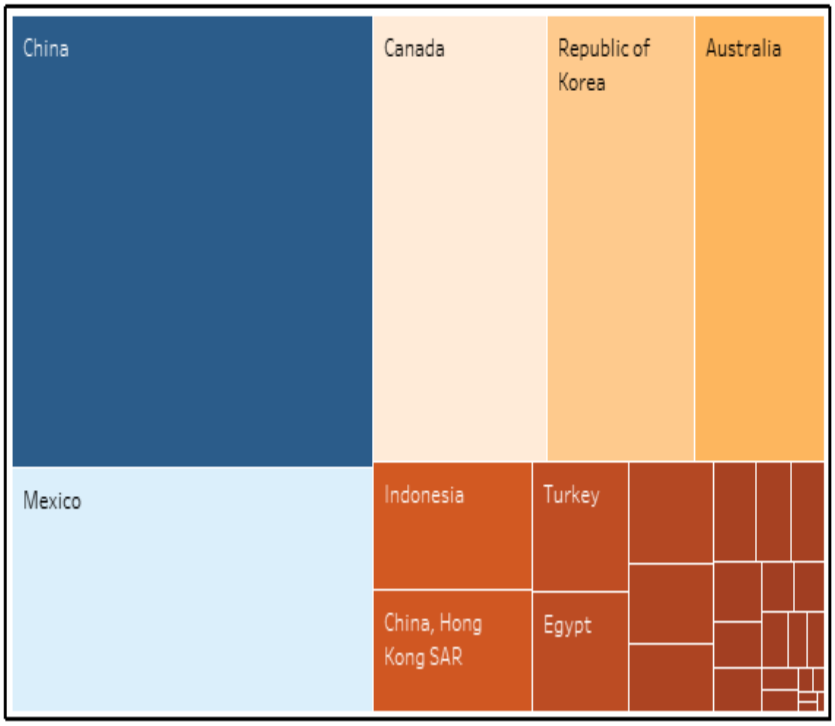
This map shows the countries and their population recordina

This line graph shows the population trends over the vears

This line graph compares the trends of male and female

The column chart shows the average population of the cities

The tree map shows highest average populatin of the cities

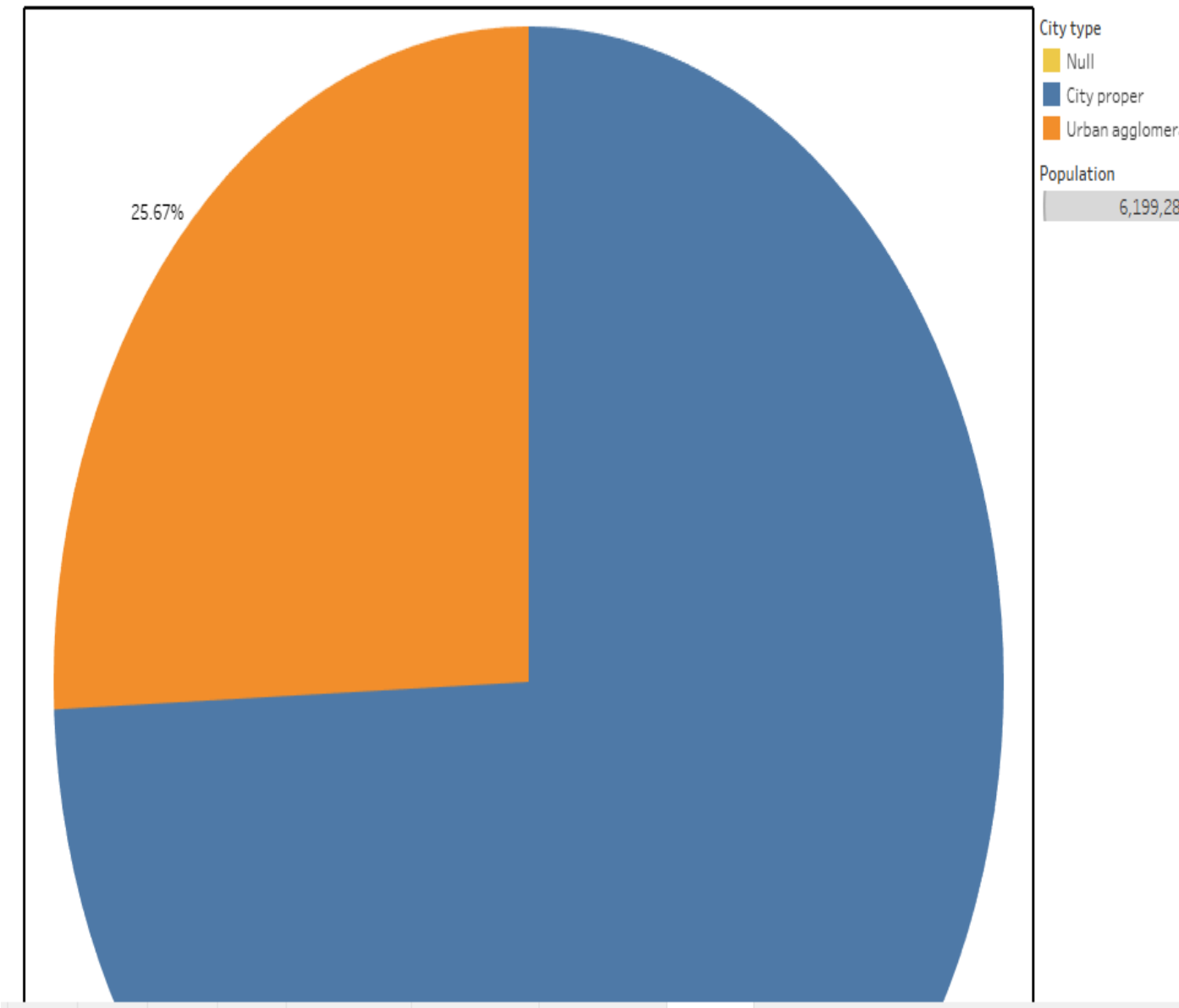


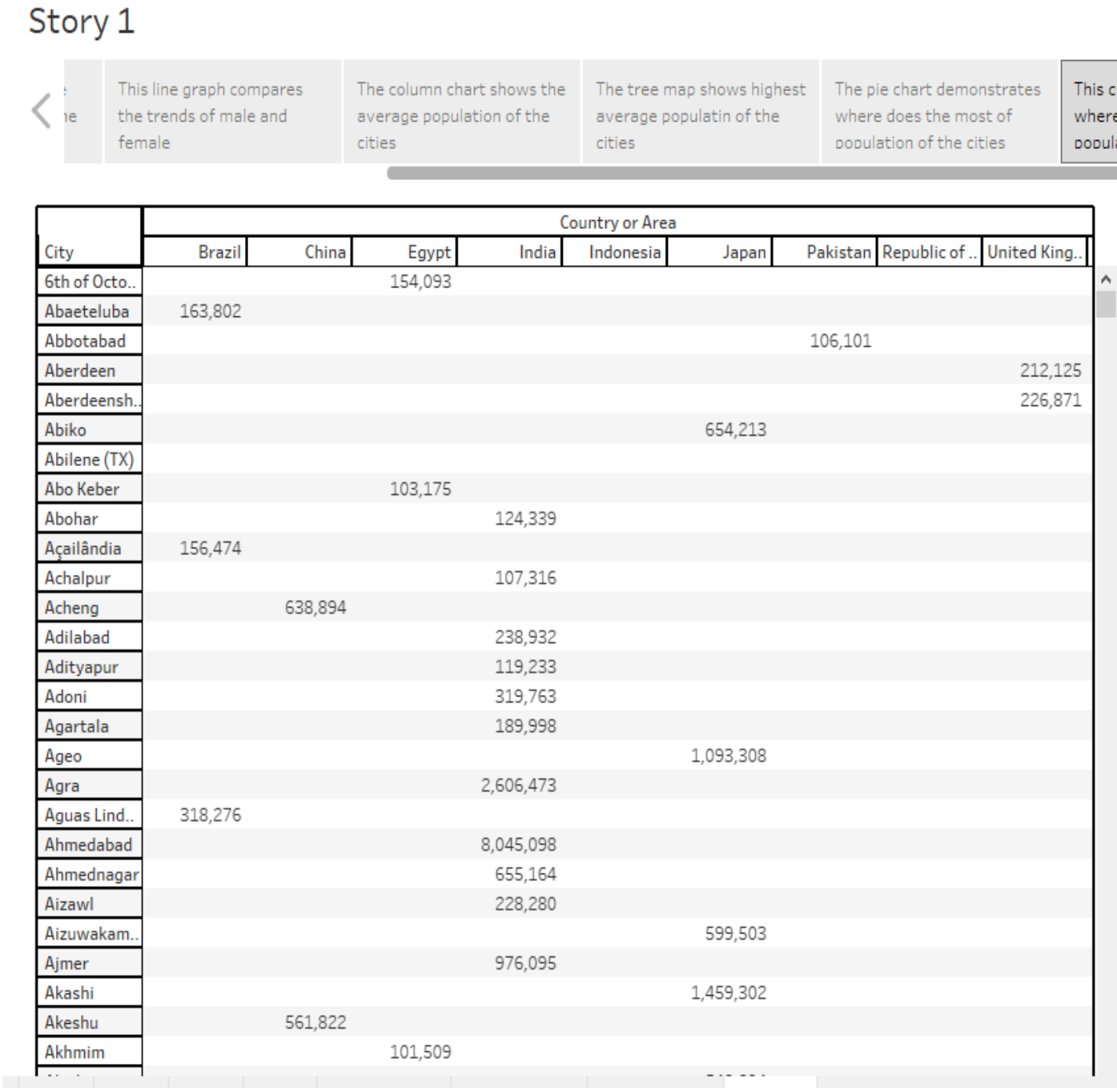
Population

558,195

Story 1

‹	his line graph shows the opulation trends over the ears	This line graph compares the trends of male and female	The column chart shows the average population of the cities	The tree map shows highest average populatin of the cities	The pie chart demonstrates where does the most of population of the cities	Thi wh poc





City	Country or Area								
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6th of Octo..			154,093						
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Adilabad				238,932					
Adityapur				119,233					
Adoni				319,763					
Agartala				189,998					
Ageo						1,093,308			
Agra				2,606,473					
Aguas Lind..	318,276								
Ahmedabad				8,045,098					
Ahmednagar				655,164					
Aizawl				228,280					
Aizuwakam..						599,503			
Ajmer				976,095					
Akashi						1,459,302			
Akeshu		561,822							
Akhmim			101,509						

4 ADVANTAGES & DISADVANTAGES

ADVANTAGES

Estimate the basic need for human, such as demand for food, water, power, transportations. Plan constructions such as housing, highways etc. Estimate the labor forces in various places. Estimate the potential consumptions in various regions. Benefit sociological research, such as providing data about sex ratio or age ratio

DISADVANTGES

The reliability of projections decreases over time, and projections tend to be less reliable in periods of rapid change. population forecasts try to estimate the rate of population growth. However, unpredictable factors can change fertility rates, mortality rates, or migration rates, which can cause difficulty in forecasting.

5 APPLICATIONS

The main purpose of producing population projections is to provide an estimate of the future population as a common framework for use in planning, policy formation and decision making in a number of different fields. In statistics, a population is a representative sample of a larger group of people with one or more characteristics in common.

6 CONCLUSION

In this project gives a picture of what the future size and structure of the population by sex and age might look like. It is based on knowledge of past trends, and for the future, on assumptions made for three components fertility, mortality and migration.

7 FUTURE SCOPE

To improve population forecasting in the future, demographers should conduct more though assessments of the accuracy of past projections. Research should also focus on making greater use of models that take account of economic, social, and environmental dynamics, including integrated structural models and models with constraints. Finally, new ways need to be developed for distributing software for making population forecasts and for disseminating the result of alternative forecasts.

8 APPENDIX

A. Source Code

```
      <!DOCTYPE html>

<html lang="en">

<head>
    <meta charset="utf-8">
    <meta http-equiv="X-UA-Compatible" content="IE=edge">
    <!-- Tell the browser to be responsive to screen width -->
    <meta name="viewport" content="width=device-width, initial-scale=1">
    <meta name="keywords"
        content="wrappixel, admin dashboard, html css dashboard, web
dashboard, bootstrap 5 admin, bootstrap 5, css3 dashboard, bootstrap 5
dashboard, Ample lite admin bootstrap 5 dashboard, frontend, responsive
bootstrap 5 admin template, Ample admin lite dashboard bootstrap 5 dashboard
template">
    <meta name="description"
        content="Ample Admin Lite is powerful and clean admin dashboard
template, inpired from Bootstrap Framework">
```

```
    <meta name="robots" content="noindex,nofollow">
    <title>Ample Template by WrapPixel</title>
    <link rel="canonical" href="https://www.wrappixel.com/templates/ample-
admin-lite/" />
    <!-- Favicon icon -->
    <link rel="icon" type="image/png" sizes="16x16"
href="plugins/images/favicon.png">
    <!-- Custom CSS -->
    <link href="https://wrappixel.com/demos/free-admin-templates/all-lite-
landing-pages/dist/css/style.css"
        rel="stylesheet">
    <!-- HTML5 Shim and Respond.js IE8 support of HTML5 elements and media
queries -->
    <!-- WARNING: Respond.js doesn't work if you view the page via file:// -->
    <!--[if lt IE 9]>
    <script
src="https://oss.maxcdn.com/libs/html5shiv/3.7.0/html5shiv.js"></script>
    <script
src="https://oss.maxcdn.com/libs/respond.js/1.4.2/respond.min.js"></script>
<![endif]-->
</head>

<body>
    <!-- ============================================================== -->
    <!-- Main wrapper -->
    <!-- ============================================================== -->
    <div id="main-wrapper">
        <!-- ============================================================== --
>
        <!-- Header part -->
        <!-- ============================================================== --
>
        <header class="py-3 bg-white">
            <div class="container">
                <!-- Start Header -->
                <div class="header">
                    <nav class="navbar navbar-expand-md navbar-light px-0">
                        <a class="navbar-brand" href="#">
                            <img src="https://wrappixel.com/demos/free-admin-
templates/all-lite-landing-pages/assets/images/logos/ample-logo--lp-dark.png"
                                alt="logo">
                            <span>
                                <img src="https://wrappixel.com/demos/free-
admin-templates/all-lite-landing-pages/assets/images/logos/ample-logo-text-lp-
dark.png"
                                    alt="logo">
                            </span>
                        </a>
```

```
                        <button class="navbar-toggler" type="button" data-
toggle="collapse"
                            data-target="#navbarSupportedContent" aria-
controls="navbarSupportedContent"
                            aria-expanded="false" aria-label="Toggle
navigation">
                            <span class="navbar-toggler-icon"></span>
                        </button>
                        <div class="collapse navbar-collapse"
id="navbarSupportedContent">
                            <ul class="navbar-nav ml-auto">
                                <li class="nav-item pr-3">
                                    <a
href="https://wrappixel.com/templates/ample-admin-lite/"
                                        class="btn btn-custom btn-outline-info
btn-lg" target="_blank">Free Download</a>
                                </li>
                                <li class="nav-item">
                                    <a
href="https://www.wrappixel.com/templates/ampleadmin/?ref=33"
                                        class="btn btn-custom btn-info btn-lg"
target="_blank">Check Pro Version</a>
                                </li>
                            </ul>
                        </div>
                    </nav>
                </div>
                <!-- End Header -->
            </div>
        </header>
        <!-- ============================================================== --
>
        <!-- Header part -->
        <!-- ============================================================== --
>

        <!-- ============================================================== --
>
        <!-- Page wrapper part -->
        <!-- ============================================================== --
>
        <div class="content-wrapper">
            <!--
========================================================== -->
            <!-- Demos part -->
            <!--
========================================================== -->
            <section class="spacer bg-light">
```

```
                <div class="container">
                    <div class="row justify-content-md-center pt-5">
                        <div class="col-md-9 text-center">
                            <h2 class="text-dark">Create Userfriendly
Interface for your <span
                                    class="fw-bold">Applications</span> &
<span
                                    class="fw-bold">Products</span> with <span
                                    class="border-bottom border-dark"> Ample
Admin</span></h2>
                        </div>
                    </div>
                    <div class="row py-5">
                        <!--
============================================================== -->
                        <!-- Lite Demo -->
                        <!--
============================================================== -->
                        <div class="col-md-6">
                            <div class="card p-2 me-1">
                                <div class="card-body p-4">
                                    <div class="text-center">
                                        <h2 class="text-dark font-weight-
medium">Lite Version</h2>
                                        <h4 class="text-success">Free
Forever</h4>
                                    </div>
                                    <div class="live-box text-center mt-4">
                                        <img class="img-fluid"
src="https://wrappixel.com/demos/free-admin-templates/all-lite-landing-
pages/assets/images/screenshots/ample-lite-lp-img.jpg"
                                            alt="Lite version">
                                        <div class="overlay">
                                            <a class="btn btn-danger live-btn"
href="https://wrappixel.com/demos/admin-templates/ampleadmin/ample-admin-
lite/dashboard.html"
                                                target="_blank">Live
Preview</a>
                                        </div>
                                    </div>
                                    <p class="text-muted mt-5 line-h33 font-
16">Ample Admin Lite is basic yet very
                                        useful bootstrap 5 dashbaord template
for your projects.If you are looking for
                                        modern yet clean admin template for
your backend project. Ample Admin is the
```

```
                                        right choice for you. If your
application requires more options. We like to
                                        suggest you the pro version.</p>
                                    <div class="row text-muted  mt-4">
                                        <div class="col-md-6">
                                            <ul class="list-unstyled listing">
                                                <li><img
src="https://wrappixel.com/demos/free-admin-templates/all-lite-landing-
pages/assets/images/font-icons/light-circle.jpg"
                                                        class="img-fluid mr-
2">1 Basic Dashboard</li>
                                                <li><img
src="https://wrappixel.com/demos/free-admin-templates/all-lite-landing-
pages/assets/images/font-icons/light-circle.jpg"
                                                        class="img-fluid mr-
2">7+ Pages Template</li>
                                                <li><img
src="https://wrappixel.com/demos/free-admin-templates/all-lite-landing-
pages/assets/images/font-icons/light-circle.jpg"
                                                        class="img-fluid mr-
2">10+ UI Components</li>
                                                <li><img
src="https://wrappixel.com/demos/free-admin-templates/all-lite-landing-
pages/assets/images/font-icons/light-circle.jpg"
                                                        class="img-fluid mr-
2">Bootstrap 5 Version</li>
                                                <li><img
src="https://wrappixel.com/demos/free-admin-templates/all-lite-landing-
pages/assets/images/font-icons/light-circle.jpg"
                                                        class="img-fluid mr-
2">Font Awesome Icons</li>
                                                <li><img
src="https://wrappixel.com/demos/free-admin-templates/all-lite-landing-
pages/assets/images/font-icons/light-circle.jpg"
                                                        class="img-fluid mr-
2">Fully Responsive Pages</li>
                                                <li class="text-dark"><img

src="https://wrappixel.com/demos/free-admin-templates/all-lite-landing-
pages/assets/images/font-icons/dark-circle.jpg"
                                                        class="img-fluid mr-
2">No Support Provided</li>
                                            </ul>
                                        </div>
                                        <div class="col-md-6">
                                            <ul class="list-unstyled listing">
```

```
                                                <li><img
src="https://wrappixel.com/demos/free-admin-templates/all-lite-landing-
pages/assets/images/font-icons/light-circle.jpg"
                                                        class="img-fluid mr-
2">SCSS Base CSS</li>
                                                <li><img
src="https://wrappixel.com/demos/free-admin-templates/all-lite-landing-
pages/assets/images/font-icons/light-circle.jpg"
                                                        class="img-fluid mr-
2">Easy To Customize</li>
                                                <li><img
src="https://wrappixel.com/demos/free-admin-templates/all-lite-landing-
pages/assets/images/font-icons/light-circle.jpg"
                                                        class="img-fluid mr-
2">Basic Table Examples</li>
                                                <li><img
src="https://wrappixel.com/demos/free-admin-templates/all-lite-landing-
pages/assets/images/font-icons/light-circle.jpg"
                                                        class="img-fluid mr-
2">Profile Page Included</li>
                                                <li><img
src="https://wrappixel.com/demos/free-admin-templates/all-lite-landing-
pages/assets/images/font-icons/light-circle.jpg"
                                                        class="img-fluid mr-
2">Google Map</li>
                                                <li class="text-dark "><img

src="https://wrappixel.com/demos/free-admin-templates/all-lite-landing-
pages/assets/images/font-icons/dark-circle.jpg"
                                                        class="img-fluid mr-
2">No Documentation</li>
                                                <li class="text-dark"><img

src="https://wrappixel.com/demos/free-admin-templates/all-lite-landing-
pages/assets/images/font-icons/dark-circle.jpg"
                                                        class="img-fluid mr-
2">Backlink Required</li>
                                            </ul>
                                        </div>
                                    </div>
                                    <div class="text-center mt-4 mb-3">
                                        <a
href="https://wrappixel.com/templates/ample-admin-lite/"
                                            class="btn btn-custom btn-outline-
info btn-lg" target="_blank">Free

                                            Download</a>
                                    </div>
                                </div>
```

```
                        </div>
                    </div>
                    <!--
================================================================= -->
                    <!-- Pro Demo -->
                    <!--
================================================================= -->
                    <div class="col-md-6">
                        <div class="card pro-demo p-2 ms-1">
                            <div class="card-body p-4">
                                <div class="text-center">
                                    <h2 class="text-info font-weight-
medium">Pro Version</h2>
                                    <h4 class="text-dark">$39 Only</h4>
                                </div>
                                <div class="live-box text-center mt-4">
                                    <img class="img-fluid"

src="https://wrappixel.com/demos/free-admin-templates/all-lite-landing-
pages/assets/images/screenshots/ample-pro-lp-img.jpg"
                                        alt="Pro version">
                                    <div class="overlay">
                                        <a class="btn btn-danger live-btn"
href="https://wrappixel.com/ampleadmin/"
                                            target="_blank">Live
Preview</a>
                                    </div>
                                </div>
                                <div class="row text-dark mt-5">
                                    <div class="col-md-6">
                                        <ul class="list-unstyled listing">
                                            <li><img
src="https://wrappixel.com/demos/free-admin-templates/all-lite-landing-
pages/assets/images/font-icons/blue-circle.jpg"
                                                    class="img-fluid mr-
2">3+ Stunning Dashboards</li>
                                            <li><img
src="https://wrappixel.com/demos/free-admin-templates/all-lite-landing-
pages/assets/images/font-icons/blue-circle.jpg"
                                                    class="img-fluid mr-
2">600+ Page Templates</li>
                                            <li><img
src="https://wrappixel.com/demos/free-admin-templates/all-lite-landing-
pages/assets/images/font-icons/blue-circle.jpg"
                                                    class="img-fluid mr-
2">500+ UI Components</li>
```

```
                                                <li><img
src="https://wrappixel.com/demos/free-admin-templates/all-lite-landing-
pages/assets/images/font-icons/blue-circle.jpg"
                                                        class="img-fluid mr-
2">100+ Integrated Plugins</li>
                                                <li><img
src="https://wrappixel.com/demos/free-admin-templates/all-lite-landing-
pages/assets/images/font-icons/blue-circle.jpg"
                                                        class="img-fluid mr-
2">Front-end Landing Page</li>
                                                <li><img
src="https://wrappixel.com/demos/free-admin-templates/all-lite-landing-
pages/assets/images/font-icons/blue-circle.jpg"
                                                        class="img-fluid mr-
2">6 Months Premium Support</li>
                                                <li><img
src="https://wrappixel.com/demos/free-admin-templates/all-lite-landing-
pages/assets/images/font-icons/blue-circle.jpg"
                                                        class="img-fluid mr-
2">Right-to-Left(RTL) Verion</li>
                                                <li><img
src="https://wrappixel.com/demos/free-admin-templates/all-lite-landing-
pages/assets/images/font-icons/blue-circle.jpg"
                                                        class="img-fluid mr-
2">Unlimited Colors</li>
                                                <li><img
src="https://wrappixel.com/demos/free-admin-templates/all-lite-landing-
pages/assets/images/font-icons/blue-circle.jpg"
                                                        class="img-fluid mr-
2">3000+ Font Icons</li>
                                                <li><img
src="https://wrappixel.com/demos/free-admin-templates/all-lite-landing-
pages/assets/images/font-icons/blue-circle.jpg"
                                                        class="img-fluid mr-
2">Lots of Chart Options</li>
                                                <li><img
src="https://wrappixel.com/demos/free-admin-templates/all-lite-landing-
pages/assets/images/font-icons/blue-circle.jpg"
                                                        class="img-fluid mr-
2">Bootstrap 5 Version</li>
                                                <li><img
src="https://wrappixel.com/demos/free-admin-templates/all-lite-landing-
pages/assets/images/font-icons/blue-circle.jpg"
                                                        class="img-fluid mr-
2">Fully Responsive Pages</li>
                                            </ul>
                                        </div>
                                        <div class="col-md-6">
```

```
                                        <ul class="list-unstyled listing">
                                            <li><img
src="https://wrappixel.com/demos/free-admin-templates/all-lite-landing-
pages/assets/images/font-icons/blue-circle.jpg"
                                                    class="img-fluid mr-
2">7+ Unique Demos</li>
                                            <li><img
src="https://wrappixel.com/demos/free-admin-templates/all-lite-landing-
pages/assets/images/font-icons/blue-circle.jpg"
                                                    class="img-fluid mr-
2">3+ Ready to Use App</li>
                                            <li><img
src="https://wrappixel.com/demos/free-admin-templates/all-lite-landing-
pages/assets/images/font-icons/blue-circle.jpg"
                                                    class="img-fluid mr-
2">Light and Dark Sidebar</li>
                                            <li><img
src="https://wrappixel.com/demos/free-admin-templates/all-lite-landing-
pages/assets/images/font-icons/blue-circle.jpg"
                                                    class="img-fluid mr-
2">Dashboard PSD Files</li>
                                            <li><img
src="https://wrappixel.com/demos/free-admin-templates/all-lite-landing-
pages/assets/images/font-icons/blue-circle.jpg"
                                                    class="img-fluid mr-
2">Documentation Provided</li>
                                            <li><img
src="https://wrappixel.com/demos/free-admin-templates/all-lite-landing-
pages/assets/images/font-icons/blue-circle.jpg"
                                                    class="img-fluid mr-
2">Lots of Widgets</li>
                                            <li><img
src="https://wrappixel.com/demos/free-admin-templates/all-lite-landing-
pages/assets/images/font-icons/blue-circle.jpg"
                                                    class="img-fluid mr-
2">Tons of Table Example</li>
                                            <li><img
src="https://wrappixel.com/demos/free-admin-templates/all-lite-landing-
pages/assets/images/font-icons/blue-circle.jpg"
                                                    class="img-fluid mr-
2">Variety of Forms Included</li>
                                            <li><img
src="https://wrappixel.com/demos/free-admin-templates/all-lite-landing-
pages/assets/images/font-icons/blue-circle.jpg"
                                                    class="img-fluid mr-
2">SCSS Base CSS</li>
```

```
                                                <li><img
src="https://wrappixel.com/demos/free-admin-templates/all-lite-landing-
pages/assets/images/font-icons/blue-circle.jpg"
                                                                class="img-fluid mr-
2">Easy to Customize</li>
                                                <li><img
src="https://wrappixel.com/demos/free-admin-templates/all-lite-landing-
pages/assets/images/font-icons/blue-circle.jpg"
                                                                class="img-fluid mr-
2">& lots more..</li>
                                            </ul>
                                        </div>
                                    </div>
                                    <div class="text-center mt-4 mb-3">
                                        <a
href="https://www.wrappixel.com/templates/ampleadmin/?ref=33"
                                            class="btn btn-custom btn-info
btn-lg" target="_blank">Buy Pro Version</a>
                                    </div>
                                </div>
                            </div>
                        </div>
                    </div>
                </section>
        </div>
        <!-- ============================================================== --
>
        <!-- End page wrapperHeader part -->
        <!-- ============================================================== --
>
        <footer class="text-center p-4"> All Rights Reserved by Ample Admin.
Designed and Developed by <a
                href="https://wrappixel.com">WrapPixel.com</a></footer>
    </div>
</body>
<!-- ============================================================== -->
<!-- All Jquery -->
<!-- ============================================================== -->
<script
    src="https://wrappixel.com/demos/free-admin-templates/all-lite-landing-
pages/assets/plugins/jquery/dist/jquery.min.js"></script>
<!-- Bootstrap tether Core JavaScript -->
<script src="bootstrap/dist/js/bootstrap.bundle.min.js"></script>

</html>
```