

# CENSUS PROJECT REPORT

The Data is the census of a moderately sized town sandwiched between two (2) much larger communities. This report is to aid the Government in her decision on what should be done with the unoccupied land in town as well as what aspect of the community would require an investment.

The census data provided has been cleaned from several flaws such as missing values, amending incorrect data/mis-spellings, removing duplicates to mention a few after which our now cleaned data was analysed using various techniques and methods to provide insights and aid predictions.

A comprehensive storytelling of every step taking to arrive at my recommendation from Data cleaning through data analysis, interpretation, visualizations and insights have been documented below for your information.

## DATA CLEANING

### Religion:

Thirteen (13) unique entries were inputted in the census. Sith and Jedi which had only one entry each was converted to none as both religion exist in the famous Star wars and not in real life, while housekeeper and private and blanks are assumed to be human errors hence they were also changed to none.

Interestingly, 2,298 entries had NaN out of which 99.7% (2,292) where individuals below 18, these entries were merged with the NaN category as **Article 14** of the UNCRC says that children and young people are free to be of any or no religion.

The entry Quaker was retained as we had 377,557 adult Quakers in 2017 (Quakers, Wikipedia)

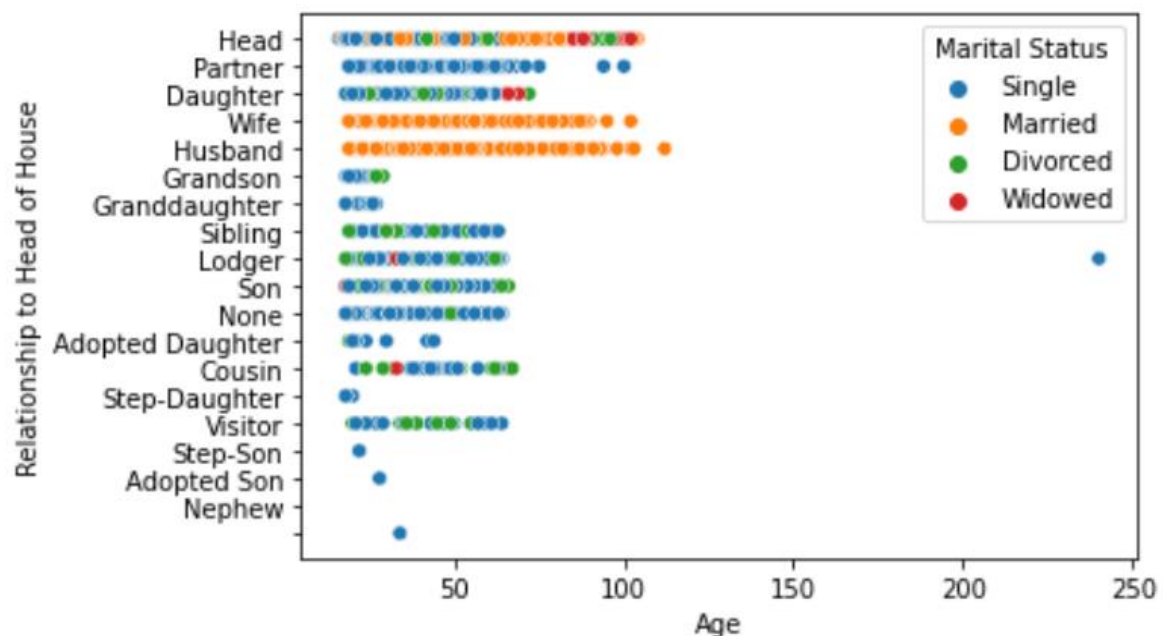
### Age:

Two household had unbelievable age, 240years and -1years respectively. Both were analysed by looking into the age range in the household as well as their relationship to the head of house and they appear to be input error hence the data was changed to 24 and 1year old.

### Relationship to the Head of House:

We had a few blanks in the column and same were converted to None as their surnames do not tally with that of the head of house. The None input in the column were all retained as they appear to be tenants in the house hence no relationship to the head of house is required.

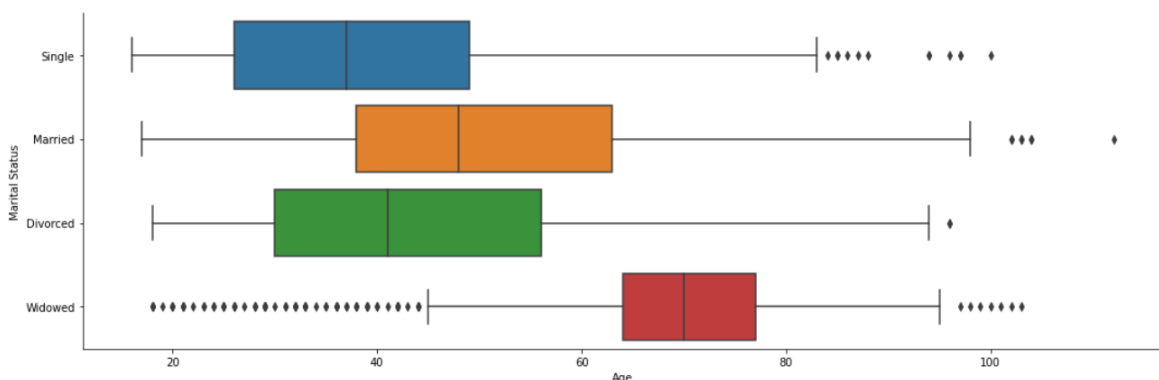
***Below is a picture showing outliers in Relationship to Head of House conditioned by Age;***



### **Marital Status:**

We had 2,243 NaN entries under the column. 90%(2,009) were minor(below 16) while we had 10% individuals between 16 and 20. The entries have been retained as NaN as the [Age of Marriage Act 1929](#) increased the marriageable age to sixteen, however they still need consent to marry up till the age of 21.

***Below is a picture showing outliers in Marital status conditioned by Age;***



Five families had widowed individuals at age 18 which is a strange pattern and this could not be justified from the census without additional information hence they were converted to Single.

### Gender:

Column had several misspellings which has been duly corrected.

### House Numbers:

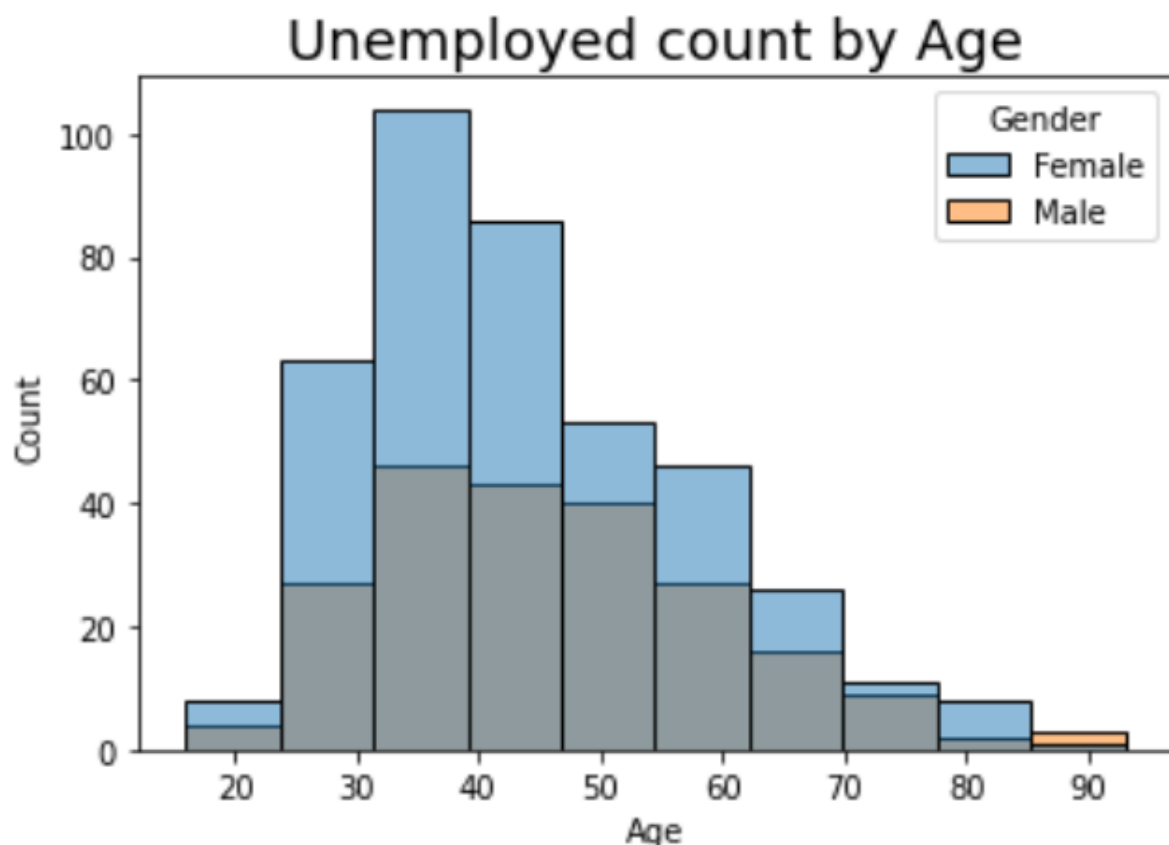
We had 2 houses without numbers but same was easily inferred and replaced as the numbers on each street was arranged alphabetically.

### First Names:

We had 2 individuals without a first name as both first name and surname were merged together in the surname column. This has been split and names placed in the right columns.

### Occupation:

Our focus was on the unemployed individuals in the town. We had no underaged children listed as unemployed but about 61 adults over the age of 65 categorized as unemployed. Going by the information contained in ***Wikipedia, pensions in the United Kingdom***, the default age for pensions is 66years hence our unemployed category 66 and above were moved to the retired bracket.

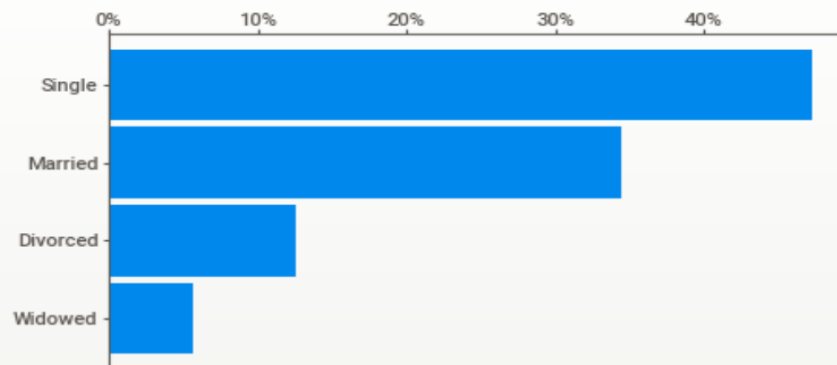


Most of the town are employed, with lots of students and very minute percentage of the population has an infirmity.

## VISUALIZATION OF OUR DATA AFTER CLEANING

### Marital Status

MISSING: 2,243 (23%)



#### TOP CATEGORIES

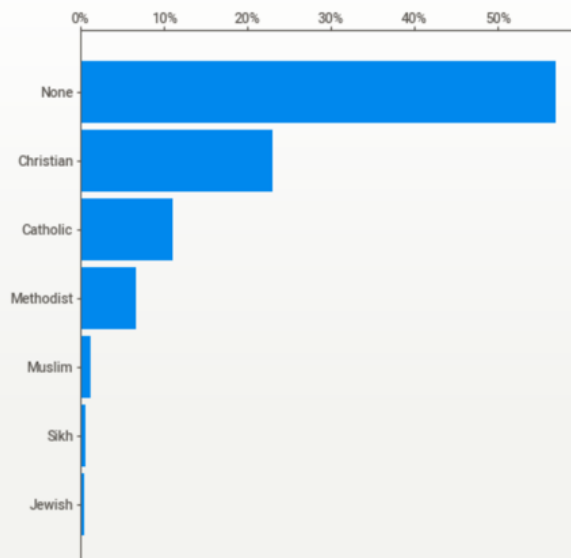
Single	3,639	47%
Married	2,652	34%
Divorced	967	13%
Widowed	436	6%

ALL 7,694 100%

***\*\*The 23% missing represents children below 16 as shown above.***

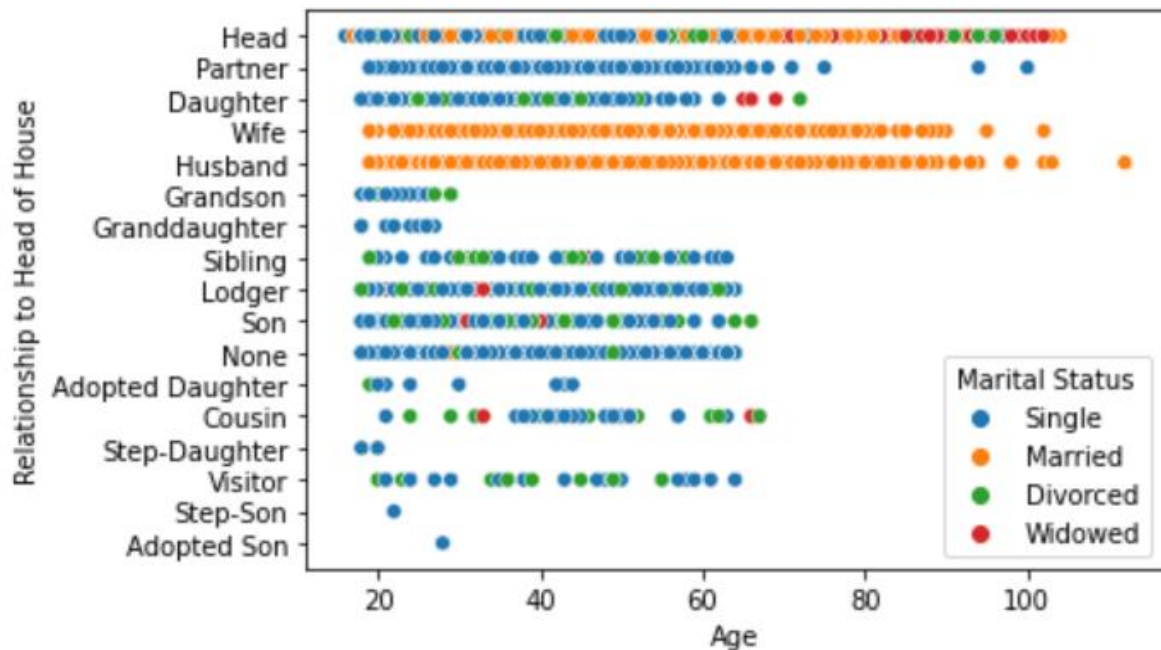
### Religion

MISSING: ---

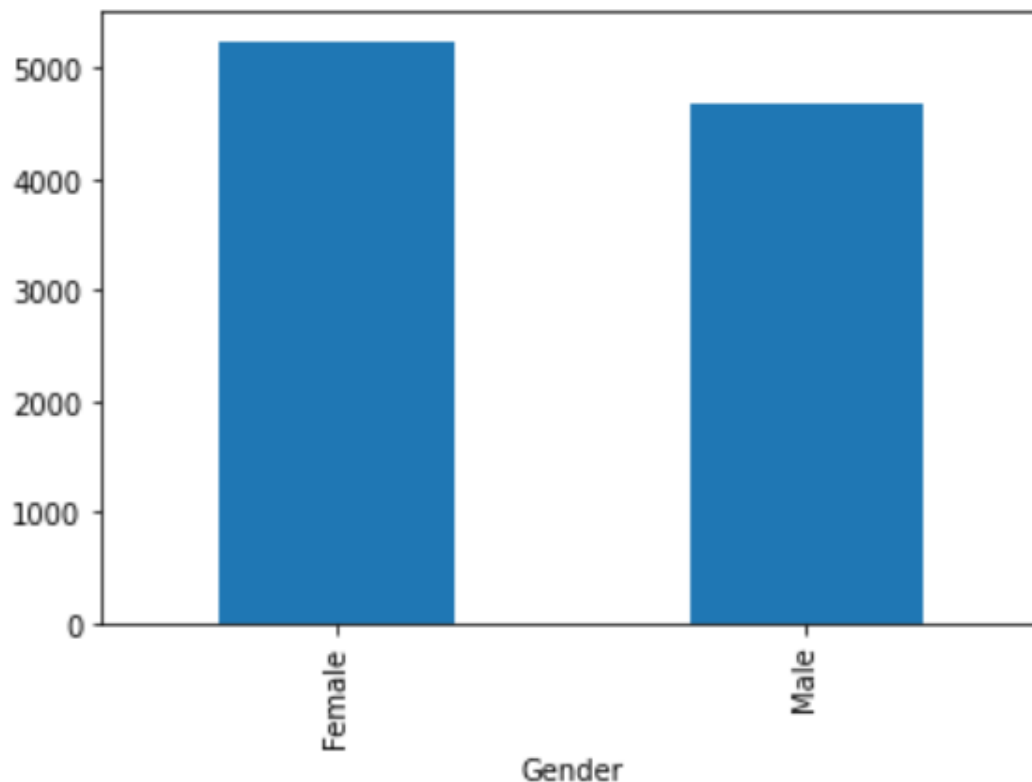


None	5,659	57%
Christian	2,293	23%
Catholic	1,096	11%
Methodist	668	7%
Muslim	116	1%
Sikh	60	<1%
Jewish	43	<1%
Quaker	1	<1%
Pagan	1	<1%

***\*\*Fake religions has been cleaned up while bulk of the none category are underaged children.***



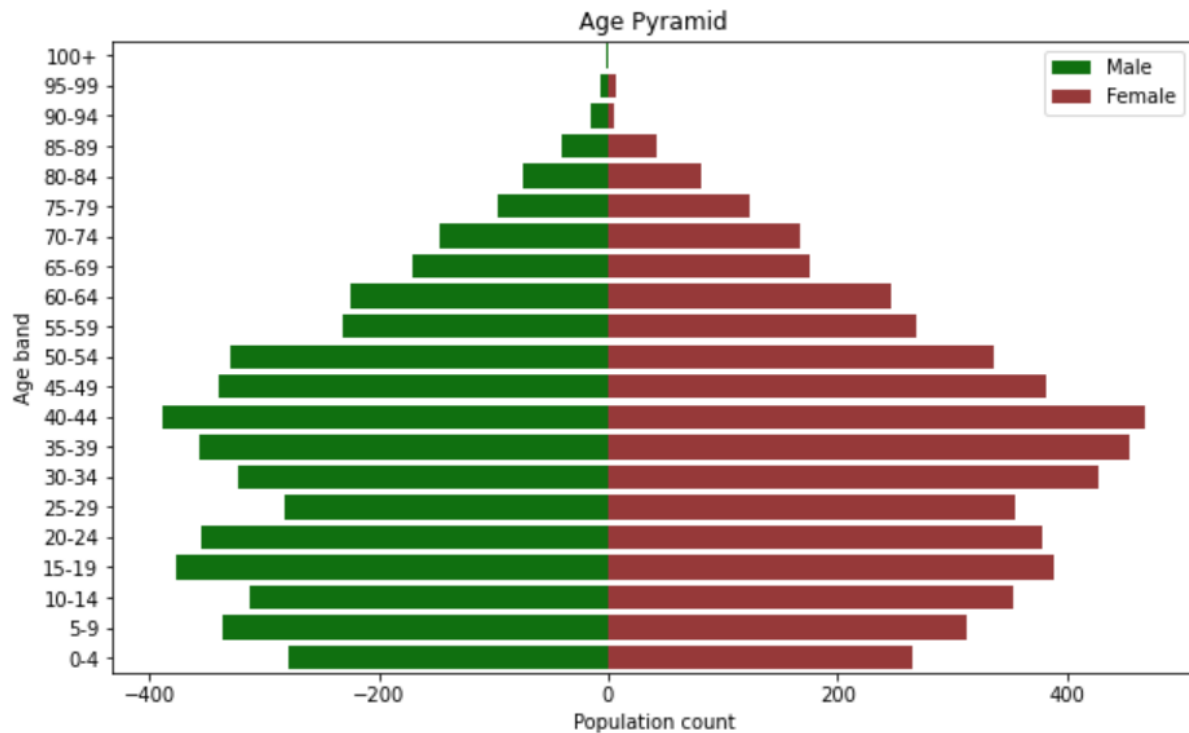
***\*\*Marital status now reduced to 4 categories with the exception of NaN for underaged children, Widowed below 18 no longer exist and the outliers in Age column (-1 and 240) has also been removed.***



***\*\*Male and Female population of the population at a Glance.***

## DATA ANALYSIS

### AGE PYRAMID



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```
count    9937.000000
mean      36.594747
std       21.723136
min        0.000000
25%       19.000000
50%       36.000000
75%       52.000000
max      112.000000
```

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### ANALYSIS OF THE AGE PYRAMID

- **Declining birth rate:** The present crude birth rate which was calculated by dividing the number of livebirths per year by the total population with the ratio multiplied by 1,000 is 10 births per thousand. Five years prior, the crude birth rate was estimated at 13 births per thousand leading to a decline of 3 children per thousand in the last five years.

- **Low death rate:** The death rate was calculated by estimating deaths by difference in age-bands for those over 65 and this shows 13 deaths per 1000.
- **Life expectancy by Gender:** The female dominated the aging population (above 65) with 52% as against 48% by the male. Although the oldest person in town presently is a man, there is a higher possibility more women will attain same age has a higher rate. Its is also note worthy to state that the aging population comprises only 10% of the town's population.
- **Lower dependency ratio:** The town has a high working population and this can be seen from the low dependency ratio of 18 (Child Dependency Ratio: 1.4 and Adult Dependency Ratio: 16.8) This implies that we have sufficient people working who can support the dependent population and a people with less financial stress such as high tax burden.

## RELIGION

- Analysis shows that the Christian population which do not identify as Catholics has a higher membership number while the Methodist also has a sizeable number of members without a place of worship and 3,354 people who do not identify with any fellowship
- There is a likelihood the 2,293 Christian population might be commuting to other towns for fellowship which further puts more pressure on the roads while Lack of a place of worship might be a major reason why 3,354 persons do not identify with any fellowship after all they are not pagans and might decide to move to any fellowship as they deem fit.

## MIGRATION

Emigrants were calculated from unemployed lodgers and divorced lodgers as there is a likelihood the unemployed lodgers will be migrating to greener pastures while the divorced would also move to other locations for a new start. By this method we have 10 emigrants per 1,000 people.

Immigrants on the other hand was calculated from visitors and single lodgers giving us 31 immigrants per 1,000 people.

Students were however exempted from been either immigrants or emigrants as they are temporary residents who would always come-in and exit the town as they commence or complete their studies.

## COMMUTERS

Going by the nature of jobs of the citizens such as (Medical physicist, Armed forces logistics/support/administrative officer, Trading standards officer, Civil engineer, contracting; Agricultural engineer, Animal technologist, Technical sales engineer, Engineer, technical sales), one would assume these jobs are present in the much larger towns hence the workers would be commuting.

70% of the working population was assumed to be commuters in addition to all University and PhD Students giving us 433 commuters per thousand people.

## HOUSEHOLD OCCUPANCY

count	3718.000000
mean	2.672136
std	1.908827
min	1.000000
25%	1.000000
50%	2.000000
75%	4.000000
max	22.000000

The mean occupancy rate of the town is approximately three and the median two as shown above. Although we are unable to determine the number of rooms available per house, we are jolted towards identifying over-population per house.

Several Houses in a few streets such as Runnymede Dive, Tannery Street and First Overpass had very high occupancy rate (10+) per house with residents having no relationship to the head of house and most were working population. These could be attributed to Landlords with blocks of flats having several tenants especially workers in the two much larger cities and students.

38% of the towns population are concentrated in these areas with high occupancy rate.

## RECOMMENDATIONS

Given the rate of decline in birth rate as well as low number of immigrants in town, it's evident that the town is not expanding at an alarming rate which would require an immediate investment in housing, although 38% of the population resides in high density houses/location, the bulk of the po



pulation still reside in low density homes and do not appear over-populated going by the mean & median values.

From the census, all University students , PhD Students and 70% of the working population commute to work in the surrounding cities with about 433 commuters per thousand, a train station would be beneficial to this teeming population as not only will the road pressure be reduced, this will serve as a means of employment to several of the 6% unemployed population in the town and eventually begin to lure business owners from the much larger cities to also consider investments in town due to easy and speedy transportation system. This however should be for future consideration.

The town however needs to urgently focus on the need to provide another religious centre. Religious affiliations are important as it affects every public facing aspect of society such as health care, social services, education e.t.c.

The 2,293 Christians who do not identify as Catholics have a population which doubles that of the Catholics, we have a growing Methodist population, while we also have 3,354 persons who are not pagans; that is, they might decide to join a fellowship if they have easy access to fellowshiping. It is important to immediately provide a religious centre in which any of the religions can access with emphasis on the huge population of the Christians to prevent religious rivalry which can affect the peace and stability of the town and to also enable other religion have a place to gather and communicate with their heads who in turn act as bridges between the citizens and the Government.

It is noteworthy to mention that religious centres are not just buildings to the worshippers, but a place to recover from the face of disaster to some, a homeless shelter to others and much more. "Rodney Stark In Psychopathology and Religious Commitment," *Review of Religious Research*, Vol. 12 (1971), stated that the higher the level of religious attendance, the less stress suffered when adversity had to be endured while other scholars also believe that regular religious attendance led to much less psychological distress. "

In essence, building a religious centre will not only avert religious issues but also build people who have hope which will ultimately lead to reduction in mental health issues, a raging pandemic globally.

In conclusion, as shown in the age pyramid and the census, the town has less than 1% population with infirmity, however it has a high life expectancy ratio hence an investment in care homes/facilities in readiness for the future aging population should be considered.

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