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COS20031: Computing Technology Design Project

Stream 22

**Major-specific contribution work: AI/Data science/IoT major – AI Database**

I (Mai An) did an AI database and specifically analyzed the archers, one of the main stakeholders, especially their gender and age.

I have used Workbook to create a Project AI Database. After getting all the information on the database result in our project, I have inserted a few SELECT queries to show tables of information. As a result, tables and visualisations (provided by Kinetica) were created, which from there, were used for my analysis.

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-- SQL queries applied in AI database project for analysis
-- Create a new table to divide the age range of Archers
drop table IF exist AgeGroupTable;
create table AgeGroupTable (
    AgeGroupName varchar(255) not null,
    StartDate date,
    EndDate date,
    PRIMARY KEY (AgeGroupName)
);

INSERT INTO AgeGroupTable (AgeGroupName, StartDate, EndDate) VALUES
('Below 14 (U14)', '2010-05-26', '2024-05-26'),
('From 14 to 15 (U16)', '2008-05-26', '2010-05-26'),
('From 16 to 17 (U18)', '2006-05-26', '2008-05-26'),
('From 18 to 20 (U21)', '2003-05-26', '2006-05-26'),
('From 21 to 29 (Open)', '1994-05-26', '2003-05-26'),
('From 30 to 39 (Open)', '1984-05-26', '1994-05-26'),
('From 40 to 49 (Open)', '1974-05-26', '1984-05-26'),
('Over 50 (50+)', '1964-05-26', '1974-05-26'),
('Over 60 (60+)', '1954-05-26', '1964-05-26'),
('Over 70 (70+)', '1800-05-26', '1954-05-26');

-- Show the distribution of gender of archers
SELECT
    ArcherGender as Gender,
    COUNT (*) as Count
FROM ArcherTable
GROUP BY ArcherGender
ORDER BY Gender;

-- Show the distribution of the age range of archers
SELECT
    GroupAge.AgeGroupName as AgeRange,
    count(ArcherInfo.ArcherDOB) as Count
FROM
    ArcherTable ArcherInfo
INNER JOIN
    AgeGroupTable GroupAge
on ((ArcherInfo.ArcherDOB >= GroupAge.StartDate or GroupAge.StartDate = NULL)
and (ArcherInfo.ArcherDOB < GroupAge.EndDate or GroupAge.EndDate = NULL))
GROUP BY
    AgeRange
ORDER BY AgeRange

-- Show the distribution of the age range of archers according to their gender
-- For both gender
SELECT
    ArcherInfo.ArcherGender as Gender,
    GroupAge.AgeGroupName as AgeRange,
    count(ArcherInfo.ArcherGender) as HeadCount
FROM
    ArcherTable ArcherInfo
INNER JOIN
    AgeGroupTable GroupAge
on ((ArcherInfo.ArcherDOB >= GroupAge.StartDate or GroupAge.StartDate = NULL)
and (ArcherInfo.ArcherDOB < GroupAge.EndDate or GroupAge.EndDate = NULL))
GROUP BY
    AgeRange, Gender
ORDER BY
    AgeRange, Gender

-- According to female
SELECT
    GroupAge.AgeGroupName as AgeRange,
    count(ArcherInfo.ArcherGender) as Count
FROM
    ArcherTable ArcherInfo

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INNER JOIN
    AgeGroupTable GroupAge
on ((ArcherInfo.ArcherDOB >= GroupAge.StartDate or GroupAge.StartDate = NULL)
and (ArcherInfo.ArcherDOB < GroupAge.EndDate or GroupAge.EndDate = NULL))
WHERE
    ArcherInfo.ArcherGender = 'Female'
GROUP BY
    AgeRange
ORDER BY AgeRange

-- According to male
SELECT
    GroupAge.AgeGroupName as AgeRange,
    count(ArcherInfo.ArcherGender) as Count
FROM
    ArcherTable ArcherInfo
INNER JOIN
    AgeGroupTable GroupAge
on ((ArcherInfo.ArcherDOB >= GroupAge.StartDate or GroupAge.StartDate = NULL)
and (ArcherInfo.ArcherDOB < GroupAge.EndDate or GroupAge.EndDate = NULL))
WHERE
    ArcherInfo.ArcherGender = 'Male'
GROUP BY
    AgeRange
ORDER BY AgeRange
```

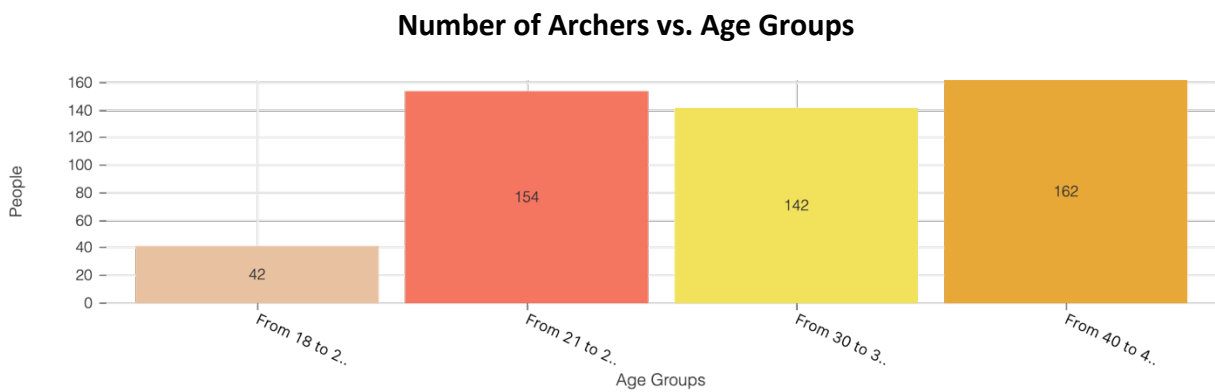
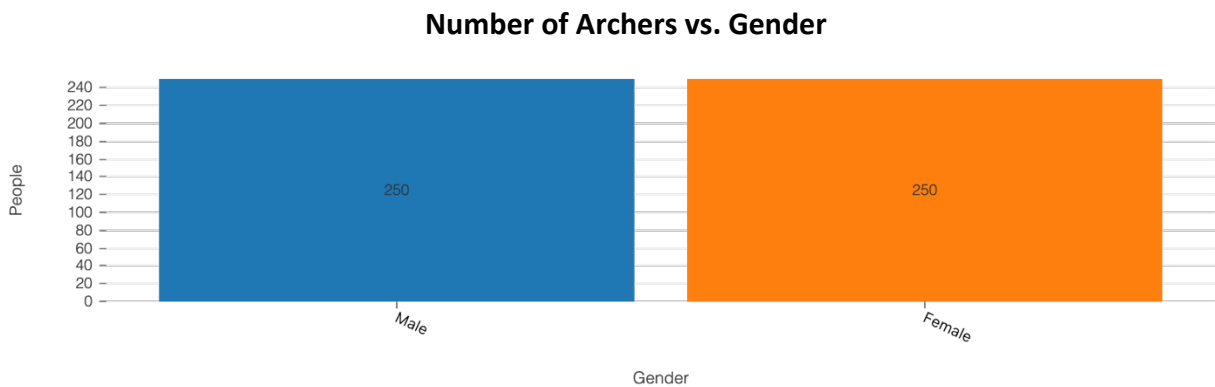
Here are the key findings recorded:

- The number of females and males using this is equal (which is the cause of inserting fake data).
- The archers using this are within the age range of 18 to 50. The number of archers under 21 disregard of gender is the lowest, while archers joined the Open division take the highest proportion. For the age range 21 to 30, 30 to 40, and 40 to 50, which all belong to the open division, the number of people is evenly distributed.
- Regarding each age range
  - Only within the age range 21 to 30, the number of females is more than the number of males (by 10 people).
  - For other ranges, the number of males is more than the number of females (by below 5 people).
- Regarding female archers
  - Archers aged below 21 make up around 7% of all female archers using the site. Archers aged from 21 to 30, 30 to 40, and 40 to 50 make up around 30% each.
  - Archers aged from 21 to 30 are the largest in number among all female archers.
- Regarding male archers
  - Archers aged below 21 make up around 9% of all male archers using the site. Archers aged from 21 to 30, 30 to 40, and 40 to 50 make up around 30% each.
  - Archers aged from 40 to 50 are the largest in number among all female archers.

Dummy data were used, which might cause inaccurate analysis.

The tables and visualisations supporting the analysis (the result of using Kinetica to analyse the database) are displayed below.

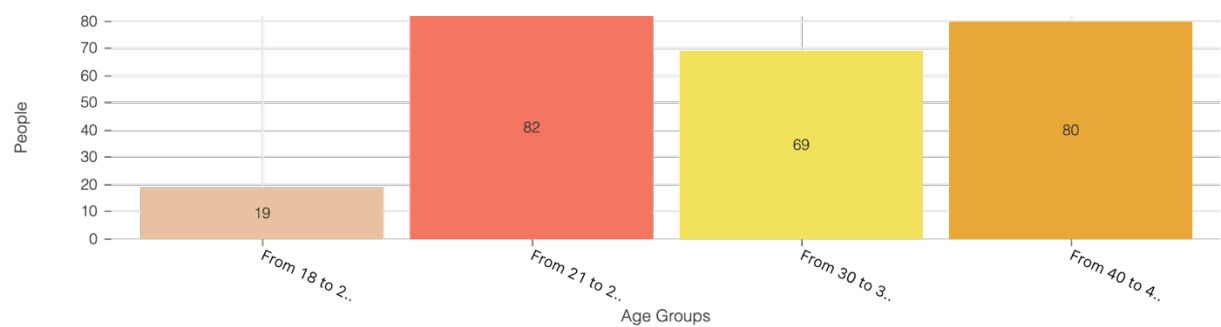
Tables and Visualisations supporting the analysis



**Number of Archers vs. Age Groups Regarding Gender**

Gender	AgeRange	HeadCount
Female	From 18 to 20 (U21)	19
Male	From 18 to 20 (U21)	23
Female	From 21 to 29 (Open)	82
Male	From 21 to 29 (Open)	72
Female	From 30 to 39 (Open)	69
Male	From 30 to 39 (Open)	73
Female	From 40 to 49 (Open)	80
Male	From 40 to 49 (Open)	82

Number of Female Archers vs. Age Groups



Number of Male Archers vs. Age Groups

