ANALYSING LEARNER ARCHETYPES IN CYBER SECURITY COURSE

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CSC8631 - DATA MANAGEMENT AND EXPLORATORY DATA ANALYSIS

CURRENT SITUATION

- Massive Open Online Courses have become popular in recent years.
- There are many MOOC providers such as FutureLearn, edX, Pluralsight
- MOOC providers are an strategic partner to traditional education
- FutureLearn categorised learners in seven archetypes which group people with similar characteristics and behaviours to understand their needs when learning.

STAKEHOLDERS

SCHOOL OF COMPUTING

BUSINESS OBJECTIVES

Understand who are their learners in the FutureLearn platform in order to **design** future cyber security courses for their principal **learner archetypes**. Therefore, they can **maximize engagement**.

INVESTIGATIONS CARRIED OUT

1.

How does the archetype influence in the enrolment and certification purchase of the cyber security course over the different runs?
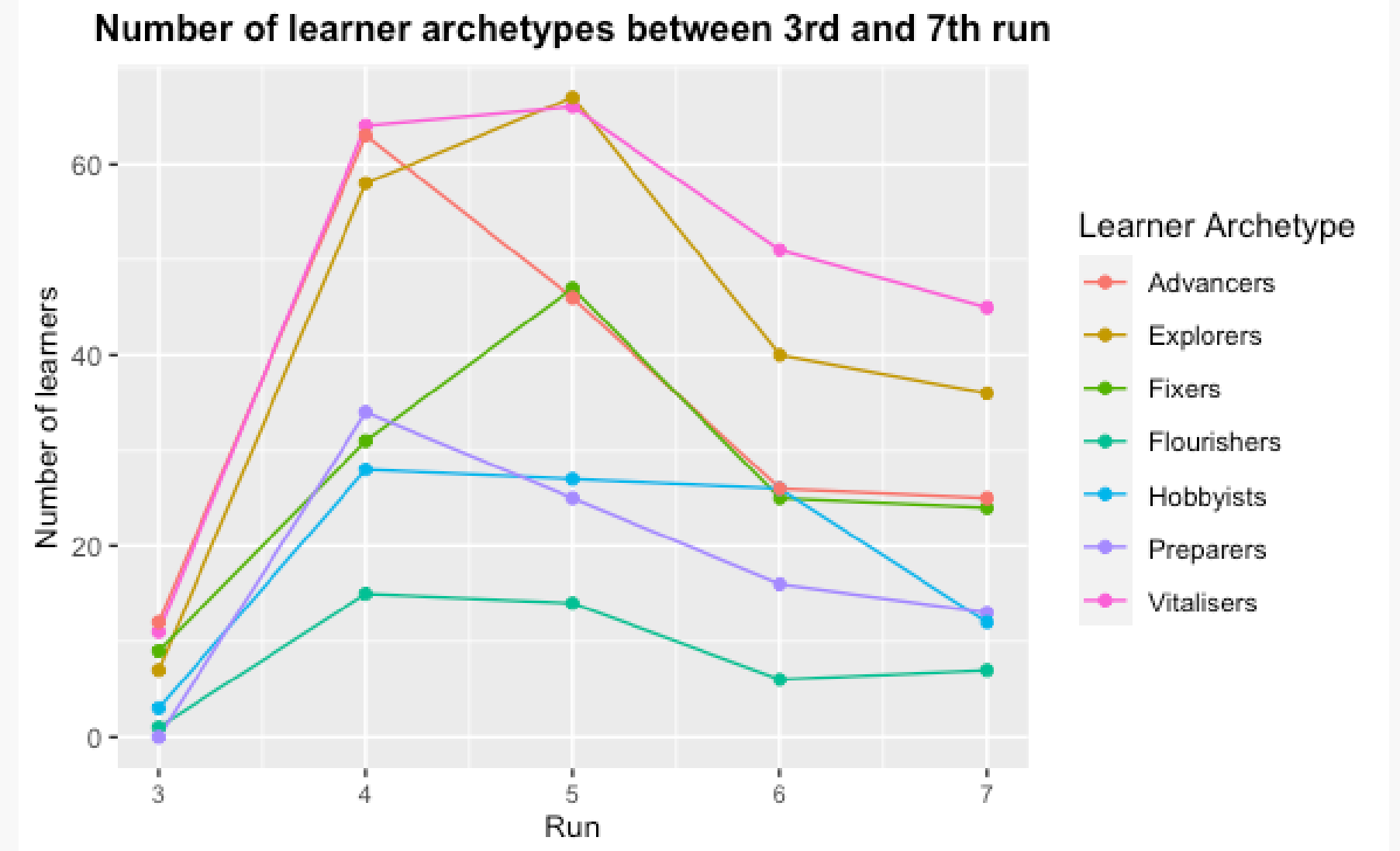
2.

How is the distribution of enrolment of the two most common archetypes against gender, age range, employment status and education level?

FINDINGS OF THE ANALYSIS

1.

Most common archetypes are:

- **Explorers**: Their needs are focused on engaging courses, to reassure their chosen career path, to being able to switch into different topics to see what suits best, offline courses, and to interact with educators to solve their questions.
- **Vitalisers**: Their needs are focused on diverse and interesting courses, to feel stimulated when learning, to have accessible content and good reference materials, and to feel the good use of time.
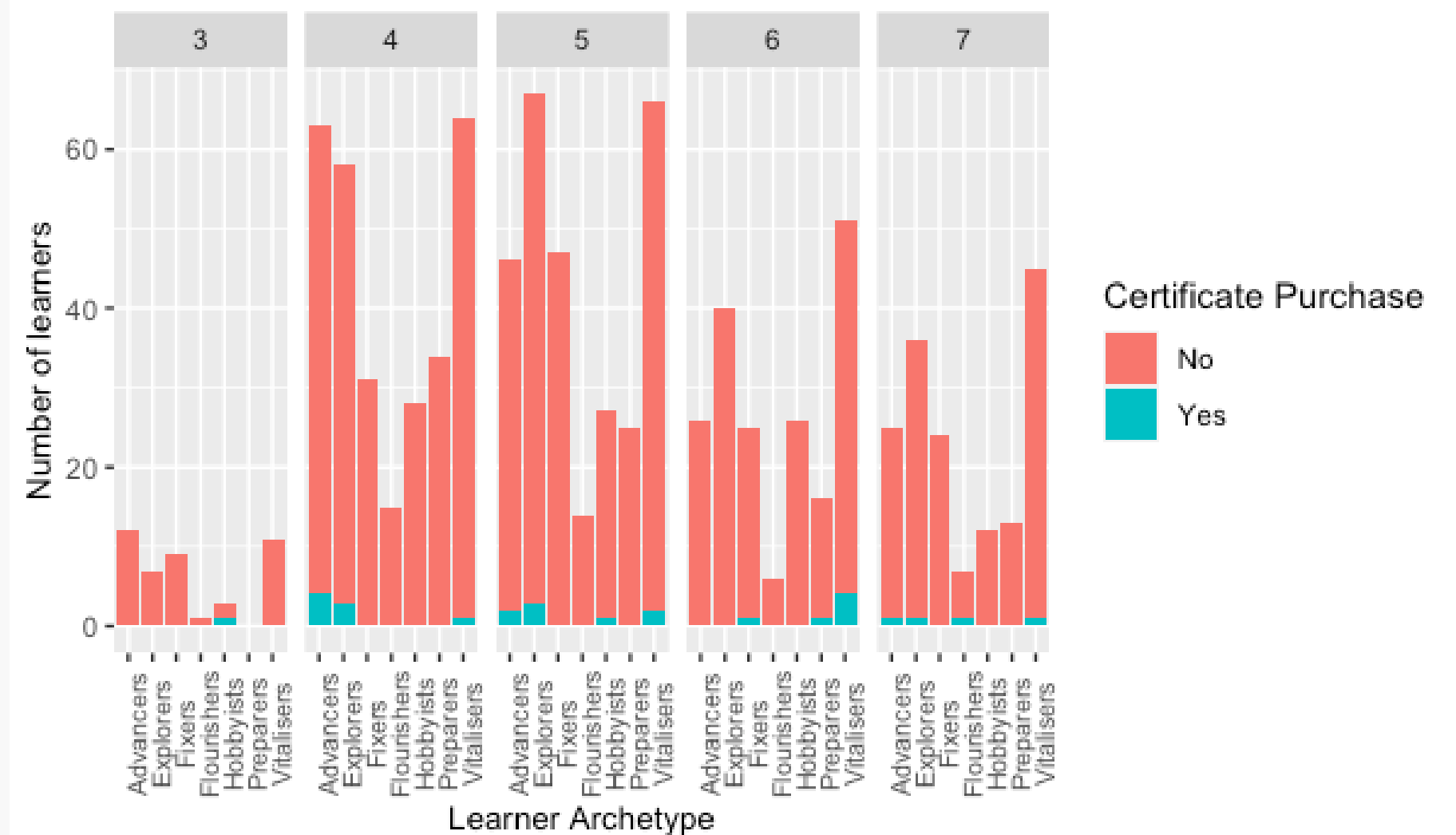

Number of learner archetypes between 3rd and 7th run

FINDINGS OF THE ANALYSIS

2.

- It does not matter what archetype is the learner, in general people were not interested in purchasing a certificate.
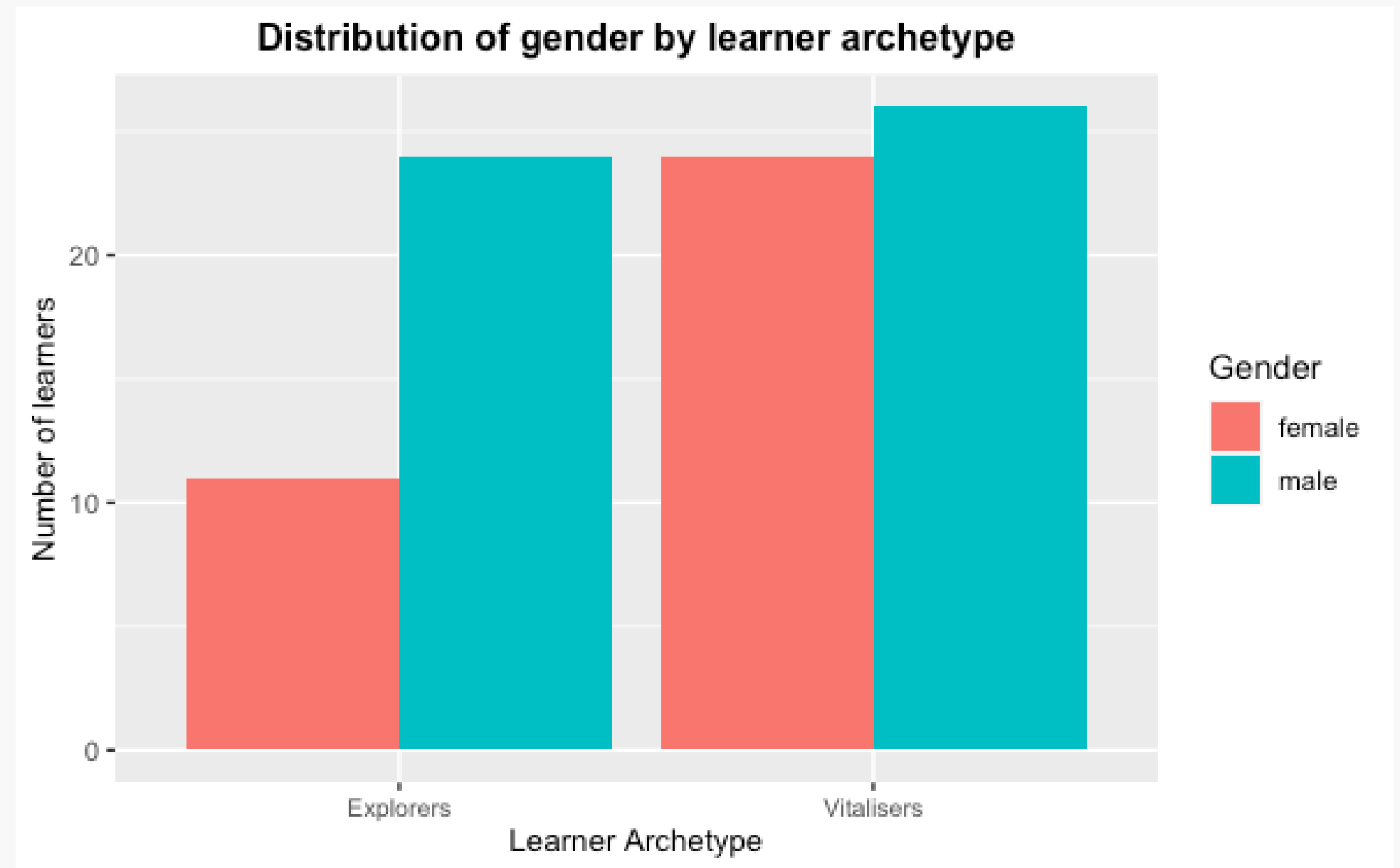

Certificate Purchase by archetype between the 3rd and 7th run
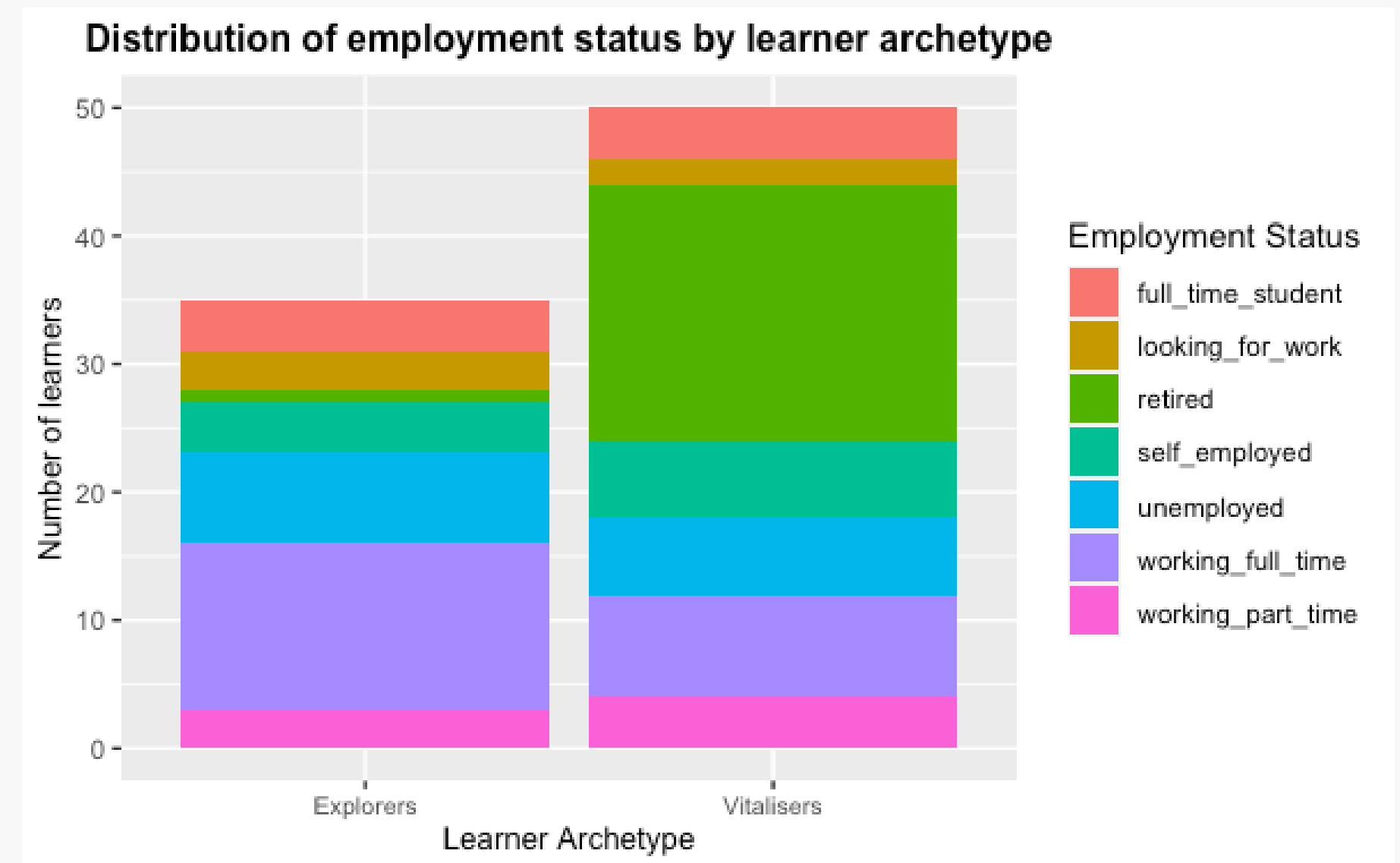
FINDINGS OF THE ANALYSIS

3.

- Males are dominant in both archetypes
- Less females in Explorers than Vitalisers

Distribution of gender by learner archetype
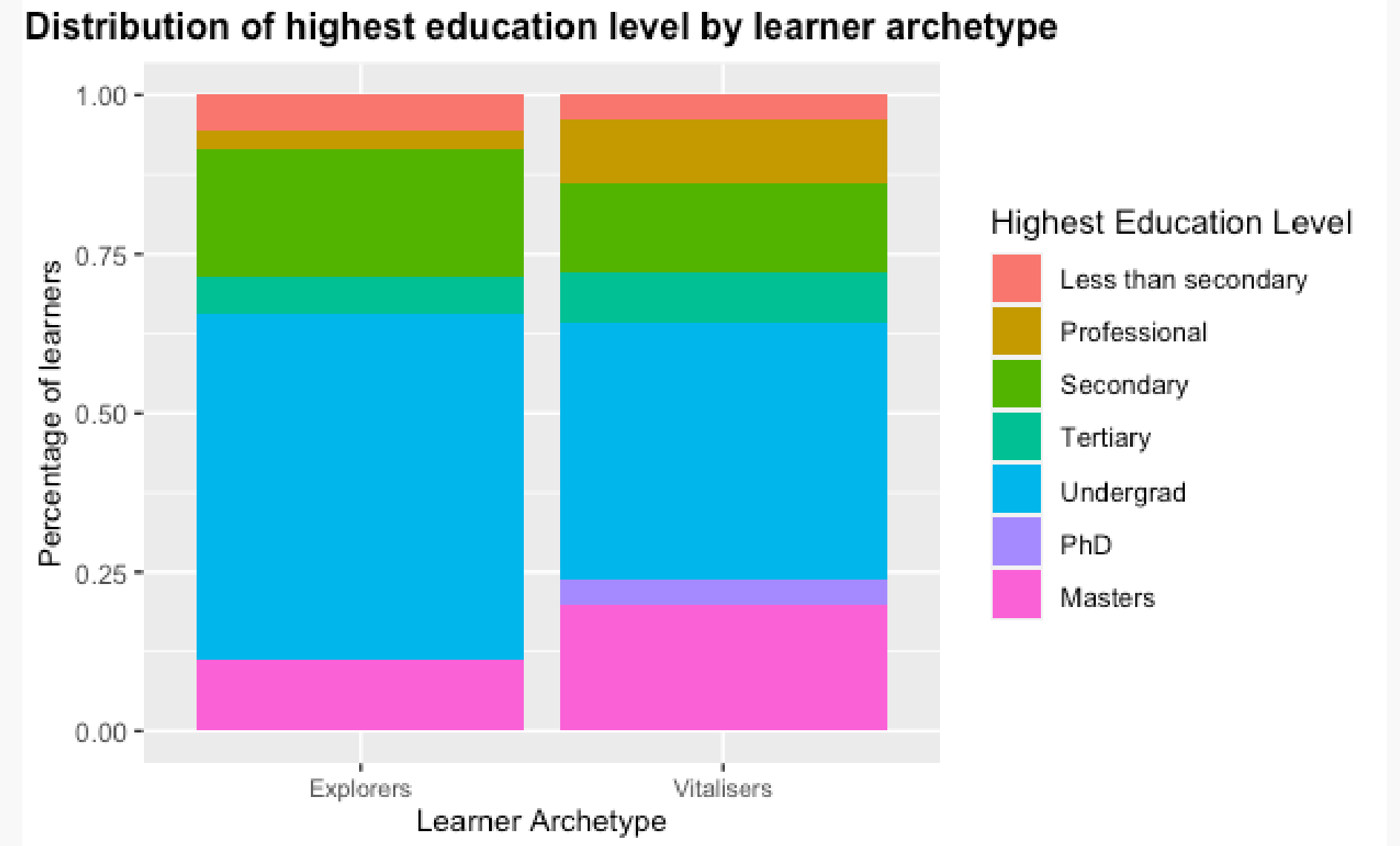
FINDINGS OF THE ANALYSIS

4.

- Largest proportion of the employment status of Vitalisers are retired.
- The retired and self employed people have the smallest proportion in Explorers. People working full time has the largest portion.

Distribution of employment status by learner archetype

Employment Status
- full_time_student
- looking_for_work
- retired
- self_employed
- unemployed
- working_full_time
- working_part_time

Number of learners
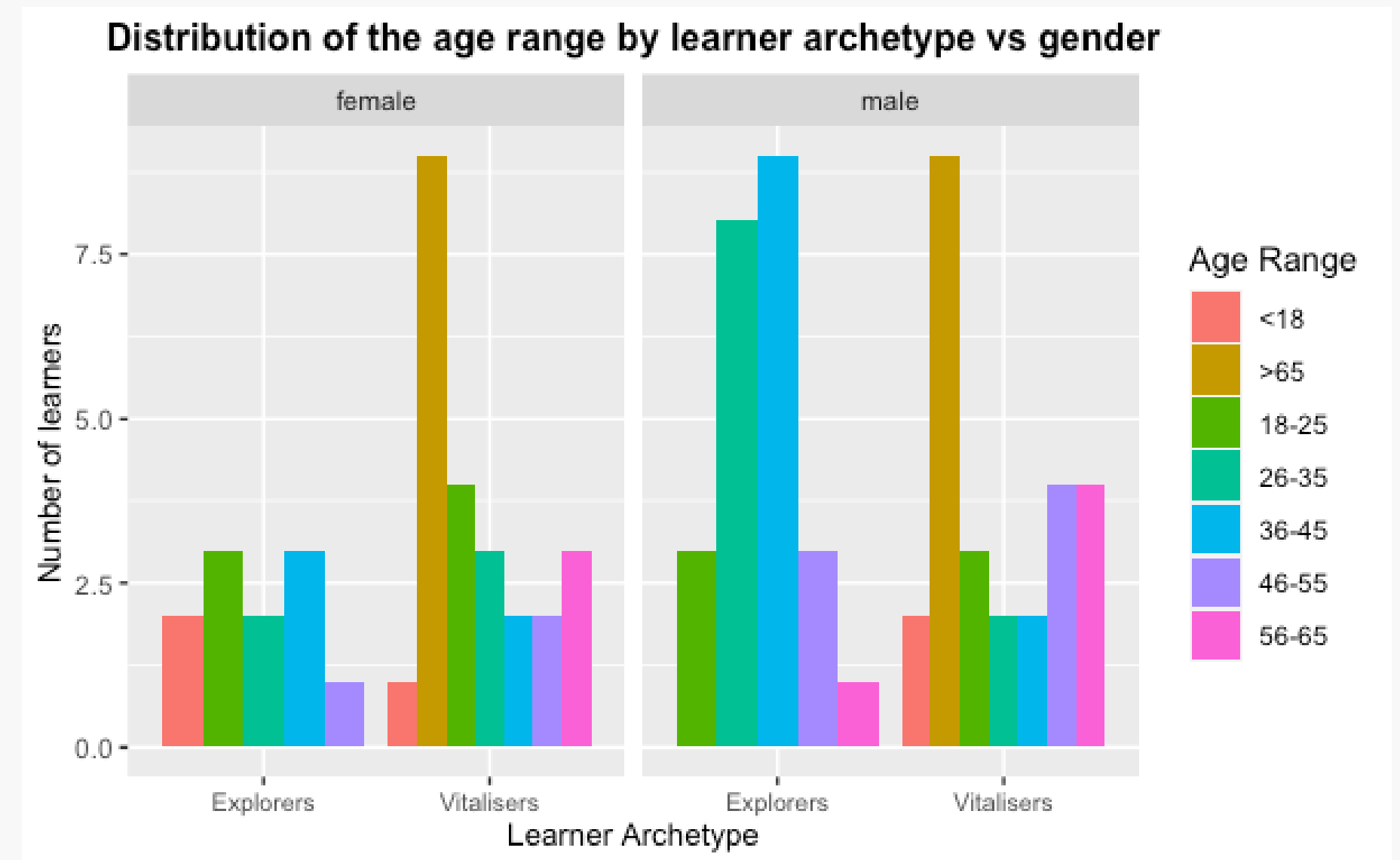
Learner Archetype

FINDINGS OF THE ANALYSIS

5.

- The largest proportion of the highest education level achieved by the learners of this course is an undergraduate degree for both archetypes.

Distribution of highest education level by learner archetype

FINDINGS OF THE ANALYSIS

6.

- For Vitalisers, the largest proportion for both genders is for ages higher than 65. (Retired people).
- For Explorers, the highest bars are for male between 26 and 45. For women, the distribution of ages is similar between 18 and 45 years old.

Distribution of the age range by learner archetype vs gender

DATA USED

Data Source

- Raw data from the Cyber Security course over the seven runs in the FutureLearn provider

Data Size

- More than 30000 enrolments but just 1074 archetype survey responses
- Main issue: Sample size was insufficient to provide strong and accurate conclusions

STEPS TAKEN TO CARRY OUT THE ANALYSIS

1

DATA UNDERSTANDING

Understood our initial data, identified the format of the data frames and variables, the sample size and data quality issues (missing values in the second cycle)

2

DATA PREPARATION

Selected the variables and records, then cleaned, merged and transformed the data to produce the plots. We handled the missing values by removing the rows.

3

MODELING

Produced some visual representations to make conclusions about our data in order to meet the business objectives.

4

EVALUATION

Evaluated our findings for both investigations . Main concern was the limitations of our data.

RESULTS IN THE CONTEXT OF OUR STAKEHOLDERS

- Our business objective was **partially met** because we had **initial findings** that allow our stakeholders to **understand who their learners are.** But, we emphasize that the **sample size was insufficient** to provide strong and accurate conclusions about the learners.
- By **understanding the different learner archetypes** and their needs, Newcastle University and the School of Computing can **design** future cyber security courses to **maximize engagement and improve learner outcomes**.
- Identified **two most common and consistent learner archetypes**: Explorers and Vitalisers.
- Discovered that new features in the course have to be focused on to people who are retired or working full time, with an undergraduate degree, and with an age range between 26 and 45, additionally to people older than 65.
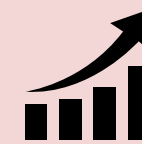
NEXT STEPS

EXPLORE NEW FEATURES TO APPROACH THE LEARNER ARCHETYPES IN THE COURSE DESIGN

RUN NEW COURSES BASED ON THE NEW DESIGN

CONDUCT THE ARCHETYPE SURVEY WITH A LARGER SAMPLE SIZE

EXPAND THE ANALYSIS TO OTHER COURSES AND PLATFORMS

THANK YOU!