



# Perceptions and attitudes toward Science, Technology, Engineering and Mathematics in Western Australia 2023

REPORT

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# EXECUTIVE SUMMARY

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This study was commissioned by the Department of Jobs, Tourism, Science, and Innovation. It offers an unprecedented analysis of STEM engagement in Western Australia, covering the views of 1,247 residents from metro and regional areas.

## AWARENESS, KNOWLEDGE, & INTEREST IN STEM

Approximately two-thirds (66%) of Western Australians demonstrated awareness of the term 'STEM', with 46% accurately identifying all components of the abbreviation. Notably, awareness levels varied by demographics: a higher recognition rate was observed among young adults (80% among 18–24-year-olds) and those with tertiary education (80% correct term associations), with the lowest rates seen in the over-65 age group (57%) and retired populations (56%).

In terms of interest, over half of the respondents (56%) expressed an interest in STEM, driven by factors such as its perceived necessity for the future, importance in education, or an inherent interest in related subjects. Overall, males showed a higher interest (63%) compared to females (49%), with levels varying minimally across different age groups. Education is also correlated with interest, with postgraduate holders showing the highest levels (71%). Only 35% of WA residents display a high awareness of STEM jobs, with the resource sector being the most recognised. Similarly, only 32% could name a local scientist or discovery.

## PERCEPTIONS, ATTITUDES, AND BEHAVIOURS TOWARDS STEM

Over two-thirds (67%) of residents in WA believe there are positive impacts from scientific and technological developments, with this sentiment more pronounced among males, parents, young adults, and those with higher education. STEM is perceived as crucial across various 'everyday life' aspects, particularly by parents and males, and is deemed important for daily life, local communities and families by most residents.

Almost two-thirds (61%) of WA residents trust science, the highest being among those with tertiary education (72%). Significantly lower trust in science can be seen amongst retired populations and those with high school (48%) or vocational training (58%) as their highest attainment.

While discussions of STEM topics in personal conversations are limited, it is widely considered vital for the WA economy, health, well-being, and the environment.

## CAREERS IN STEM

Just over one in four Western Australians (26%) are interested in pursuing a career in STEM-related fields, with 65% believing that studying STEM enables a broad range of job prospects. Learning enjoyment and perceptions of careers in STEM vary, with one in four

also concerned about the impact of scientific and technological developments on future job availability.

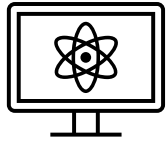
## PARENTING AND STEM

Approximately 75% of parents would encourage their children to pursue STEM-based careers, with higher levels noted from males, working parents, and those with postgraduate qualifications. Similarly, 68% of parents encourage their children to engage in STEM activities outside school. However, only half (54%) feel confident in discussing STEM subjects with their children, with this confidence higher among males, working parents, and those with advanced degrees.

## STEM ACTIVITIES AND EVENTS

The most popular STEM activities over the last 12 months included consuming STEM-related media (52%), visiting museums (50%), and engaging with zoos, animal parks, or aquariums (47%), with participation influenced by various demographic factors like gender, age, and educational level. Participation by children in similar activities was even higher, particularly in visiting zoos or aquariums (71%) and museums (63%). Across WA, there is a strong interest in a diverse range of science-based activities. The participation trends in these activities align with the general patterns observed in STEM awareness and interest, including a consistent demographic influence.

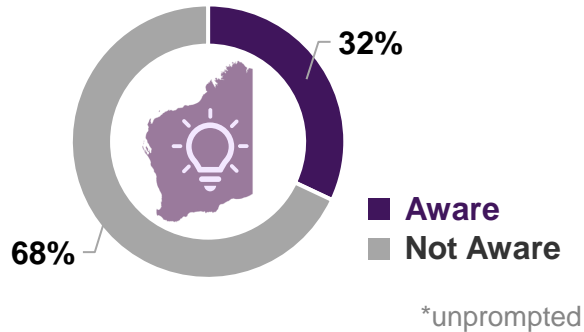
### Awareness in STEM



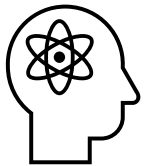
**66%**

knew **some or all of the terms** in STEM abbreviation

#### AWARENESS OF WA SCIENTISTS AND SCIENTIFIC DISCOVERIES



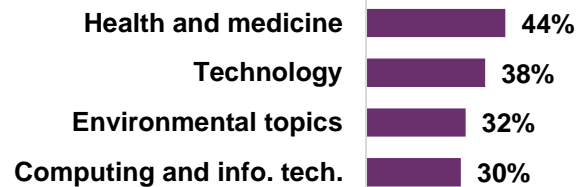
### Interest in STEM



**56%**

are **interested** in STEM (net 4-5 interested/very interested)

#### TOP BROAD AREAS OF INTEREST



### Perceptions, attitudes, and behaviours



**66%**

believe scientific and technological developments have a **positive impact** on society (% impact 4-5)

Importance of STEM	Net importance (4-5)
in your local community/town	59%
to your family in everyday life	53%
to you in everyday life	52%

**60%**

agree with the statement (% agree 4-5)

**“ I trust science ”**



**43%** of 18–24-year-olds are **interested** in pursuing a career in STEM.

**60%**

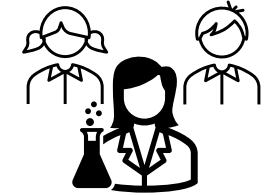
would encourage a family member or friend to upskill in a **STEM-based career.**



### Parenting and STEM

**75%**

of parents **encourage their children** to consider a STEM-based career (% encourage 4-5)



**54%**

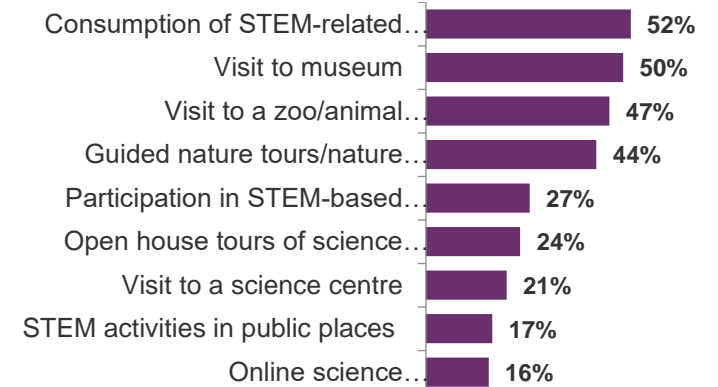
of parents agree with the statement (% agree 4-5)

**“ I feel confident discussing STEM with my child / children ”**

### STEM ACTIVITIES AND EVENTS

#### PARTICIPATION IN STEM-BASED ACTIVITIES

(Top 4 in last 12 months)



# Research Background

## Understanding Western Australians to inspire STEM strategy

The Department of Jobs, Tourism, Science and Innovation (JTSI) drives the creation of local jobs and a stronger, more diverse Western Australian economy. JTSI deliver initiatives on behalf of the WA Government that support the full spectrum of economic activity in WA, from large-scale mining and industrial operations to innovative startups and small to medium businesses across the state. The Department promotes the state nationally and internationally to increase trade, attract investment, and encourage tourists and students to consider WA as their destination of choice. JTSI fosters our already leading science, research and innovation sectors to build a technologically advanced and prosperous future for all Western Australians.

This research study, commissioned by JTSI and conducted by Verian Market Research in Perth, is a pioneering initiative aimed at understanding the current state of STEM awareness, knowledge, interest, perceptions, attitudes, behaviours, and participation in Western Australia. The study encompasses respondents from metropolitan and regional areas, creating a comprehensive snapshot of STEM engagement across the state. This inclusive approach ensures that the unique experiences and perspectives of diverse communities are adequately captured and considered.

Crucially, this research also delves into public participation in STEM activities and events and the general influence of STEM on the daily lives of Western Australians. This holistic view aids in identifying opportunities and areas for intervention and improvement. The results of this survey are also expected to enable JTSI and others to assess the impact and effectiveness of various STEM initiatives and activities across the Western Australian population.

The insights derived from this research support the strategic direction of STEM education and promotion in Western Australia. By aligning policy and practice with the community's needs, interests, and attitudes, the Department can enhance engagement with STEM, inspire future generations of scientists and innovators, and foster a society that appreciates and harnesses the power of STEM for sustainable growth and development.

Public Awareness and Knowledge of STEM

Interest in STEM

Perceptions, Attitudes and Behaviours Towards STEM

STEM in Media

STEM Activities and Events

STEM Education

Demographics

# Research Methodology

Sample	Completes (%)	Completes (n=1,247)
<b>Total</b>	100%	1,247
<b>Male</b>	47%	585
<b>Female</b>	53%	662
<b>18-24</b>	11%	141
<b>25-34</b>	19%	231
<b>35-44</b>	18%	224
<b>45-54</b>	13%	168
<b>55-64</b>	15%	189
<b>65+ years</b>	24%	294
<b>Metro</b>	75%	931
<b>Regional</b>	25%	316
<b>Margin of Error (Total Sample)</b>		<b>± 2.8%</b>

^ (±5.5% at a regional level)

**1,247 Western Australian** residents aged 18 and over participated in this study.



Quotas were set to ensure representation of **Metro and Regional Western Australia**. Soft quotas on gender and age were also used to ensure a good spread of respondents. Data was post-weighted to 2021 ABS Census data to ensure that the sample is representative of the ABS Census population statistics in Western Australia. Weighting was conducted by age, gender and location within Western Australia.

The **15-minute online survey** was scripted and hosted by ORU (The Online Research Unit), who also recruited participants from their panel partners.

The survey was in field from the **27th of September to the 12th of October, 2023**.

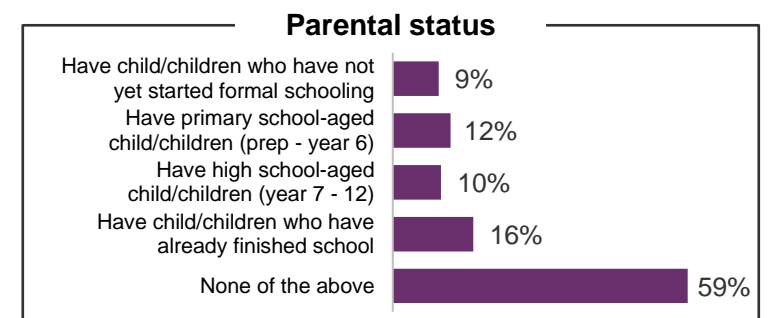
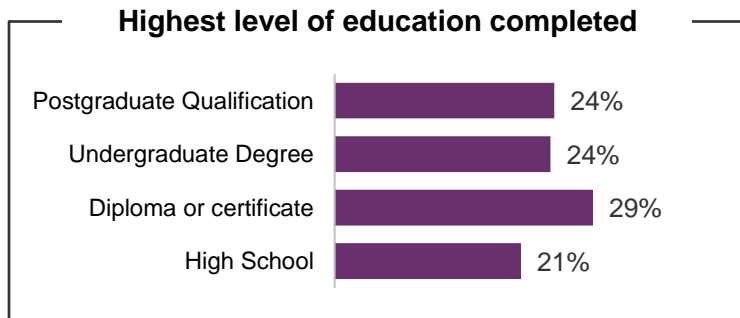
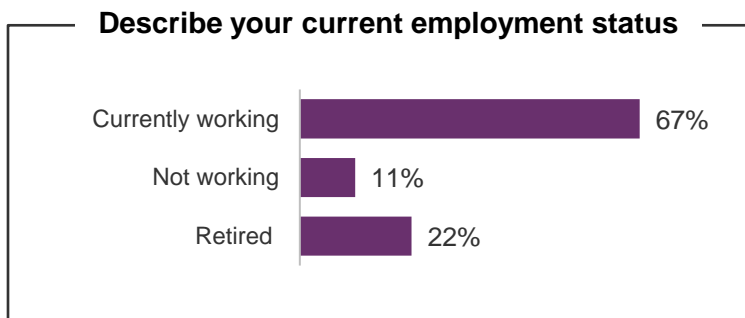
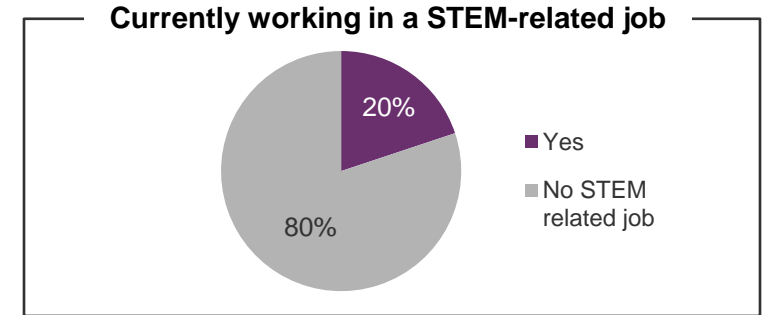
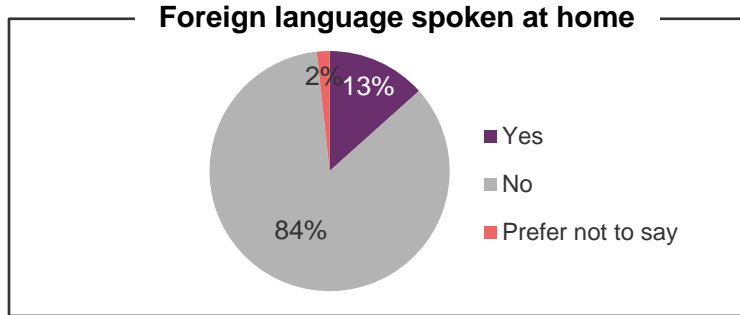
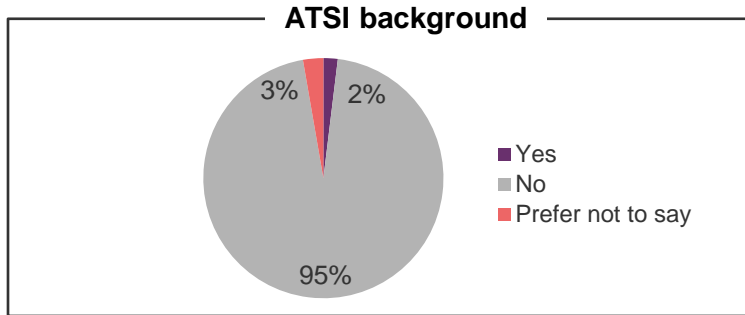
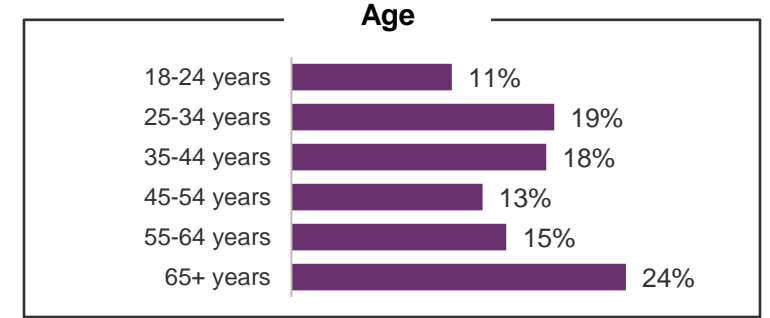
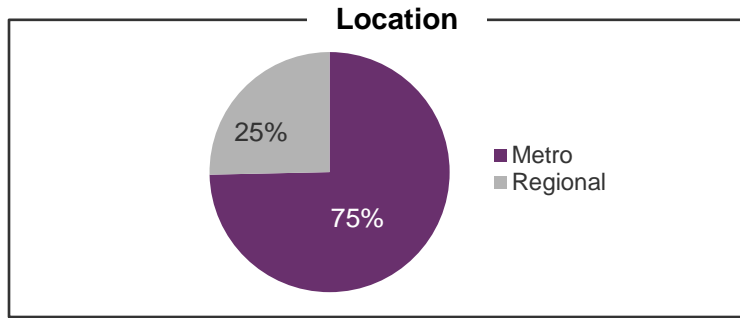
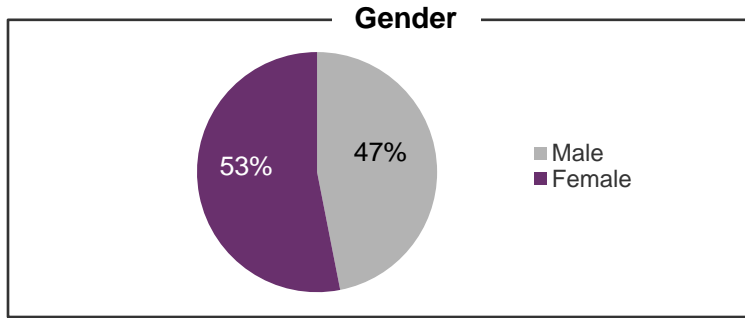
Statistical significance testing has been conducted across the following demographic profile characteristics: gender, age, region, parental status, highest education level and current employment status.

For the purposes of this report, only statistically significant differences of interest are shown, as follows:

 Denotes figure is significantly higher or lower than all other subgroups at 95% CI  


Caution is needed in interpreting data with small base sizes of n=30 and under. The base note on each page throughout the report represents the sample size, i.e., the number of respondents who answered the relevant question. Data shown in graphs and tables are rounded to the nearest whole number, and in some instances where results are summed, there may be a rounding error of ±1%.

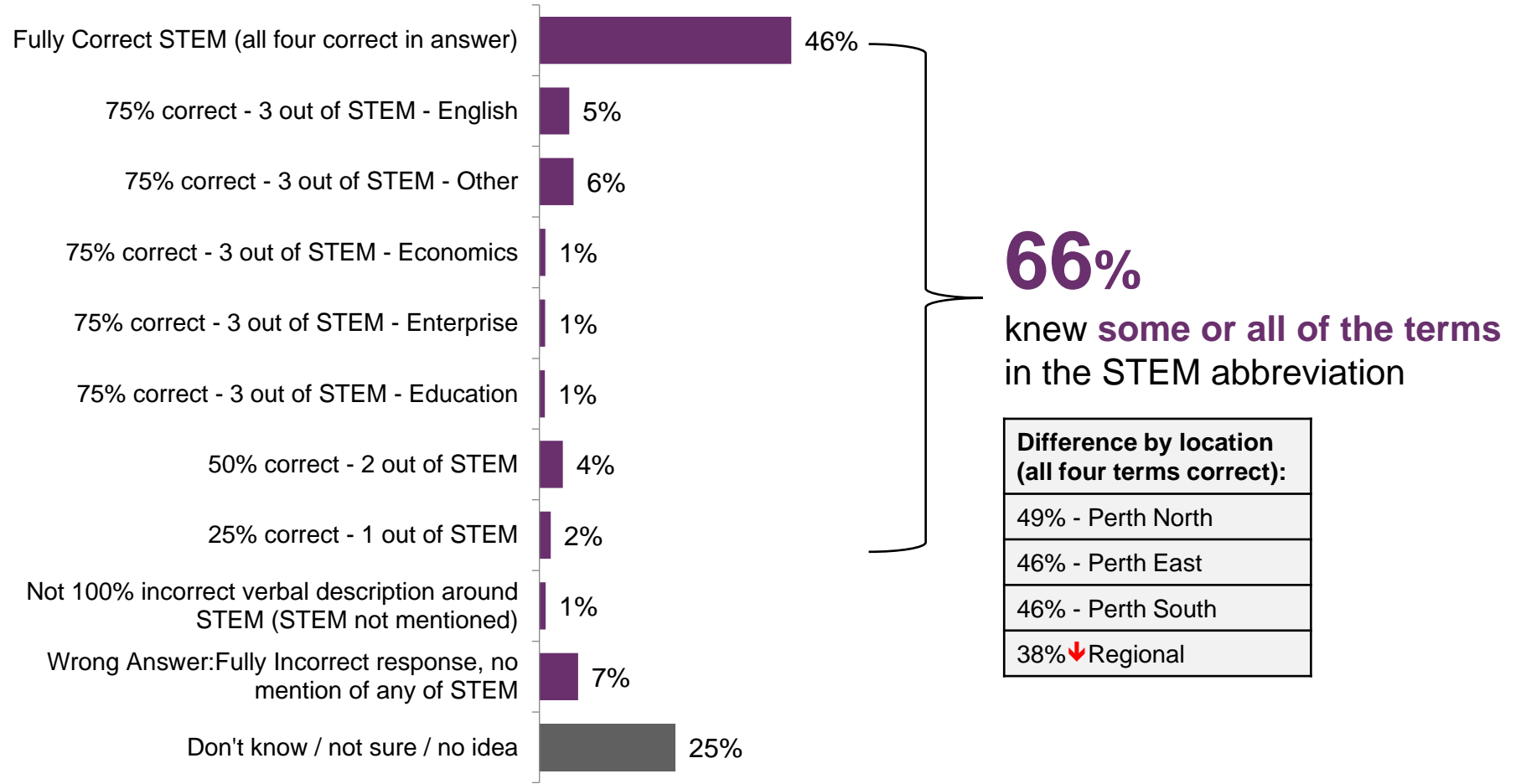
# Sample Profile (Unweighted)



# Meaning of the term 'STEM'

Positively, two-thirds (66%) of Western Australians were able to identify some or all of the terms in the STEM abbreviation, with just under half (46%) able to identify all four terms (Science, Technology, Engineering, Mathematics) correctly. Relatively consistent results can be observed across metro areas, while regional respondents had a significantly lower overall rate of identifying the terms correctly.

## AWARENESS OF STEM ABBREVIATION (Detailed)

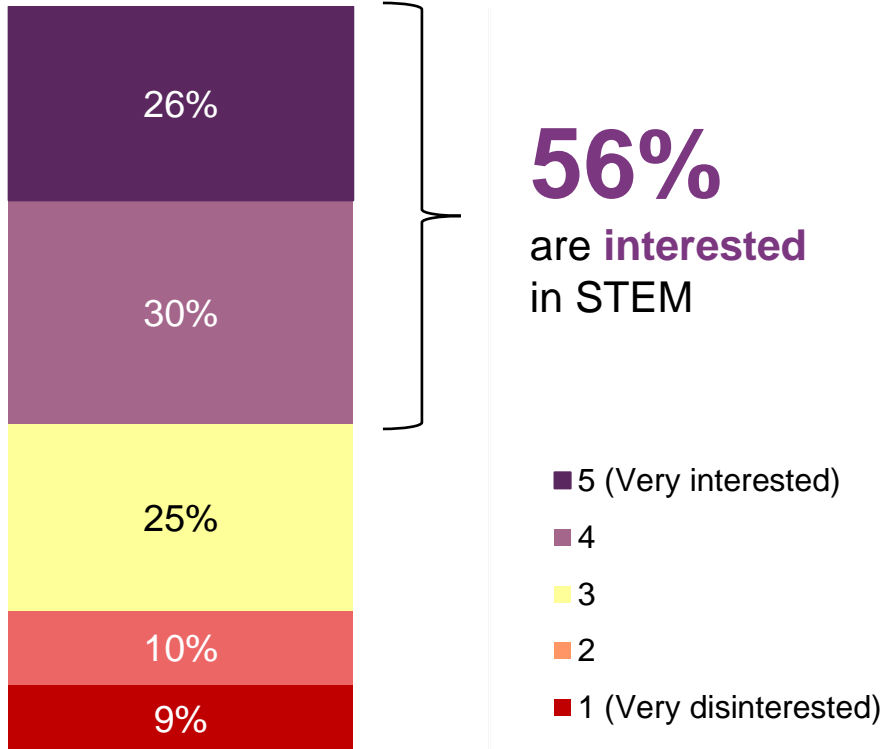




# Interest in STEM

Over half (56%) of Western Australians expressed a high level of interest (net 4-5) in STEM. The primary drivers include interest in science, technology, engineering, and mathematics (30%), a belief that STEM is 'necessary for the future / improving our world' (19%), and its recognised importance in education and as a skillset (18%). On the other hand, those disinterested (net 1-2) in STEM (19%) primarily see STEM as 'not important' or 'irrelevant' to them.

## INTEREST IN STEM



## 56% Interested: Why interested in STEM?

	%
Interested in science / technology / engineering / mathematics	30%
Necessary for the future / improving our world	19%
Teaches important skills / problem solving / critical thinking / important part of education	18%
It's an important area / essential to our society	17%
I currently / previously work in this field	16%
I currently / previously study in this field	9%
Employment / career opportunities	4%
I have children or grandchildren in school	4%
Other	12%

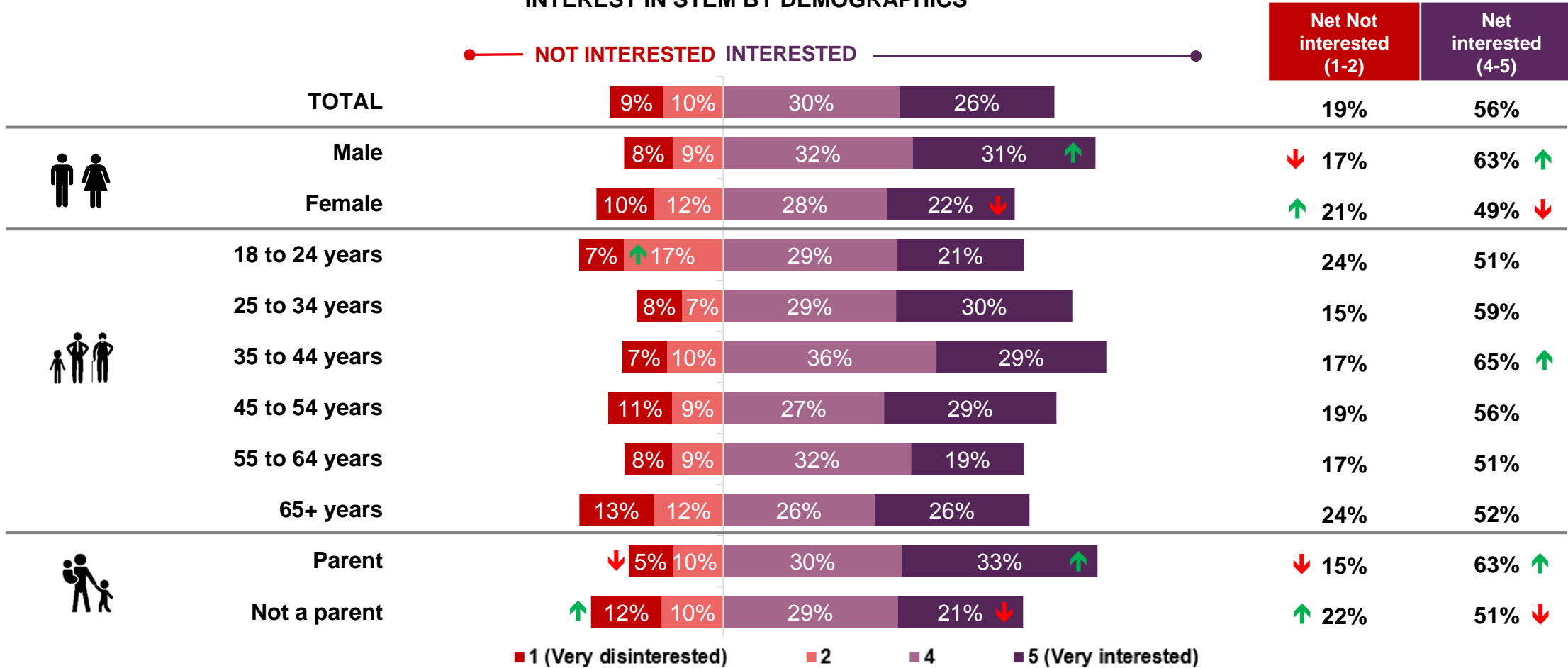
## 19% Disinterested: Why disinterested in STEM?

	%
Not important / relevant to me	35%
Not interested in science / technology / engineering / mathematics	22%
Age / too old / retired	12%
Don't have children or grandchildren / or no longer at school	7%
Don't like it / boring / not good at it	7%
Don't know anything about it / don't know enough about it	5%
Other	12%
Don't know / not sure	5%

# Interest in STEM

Overall, males (63%) indicate significantly higher overall interest levels (net 4-5) along with those aged 35-44 (65%), and parents (63%). A significantly lower overall interest can be seen among females (21%) and non-parents (15%).

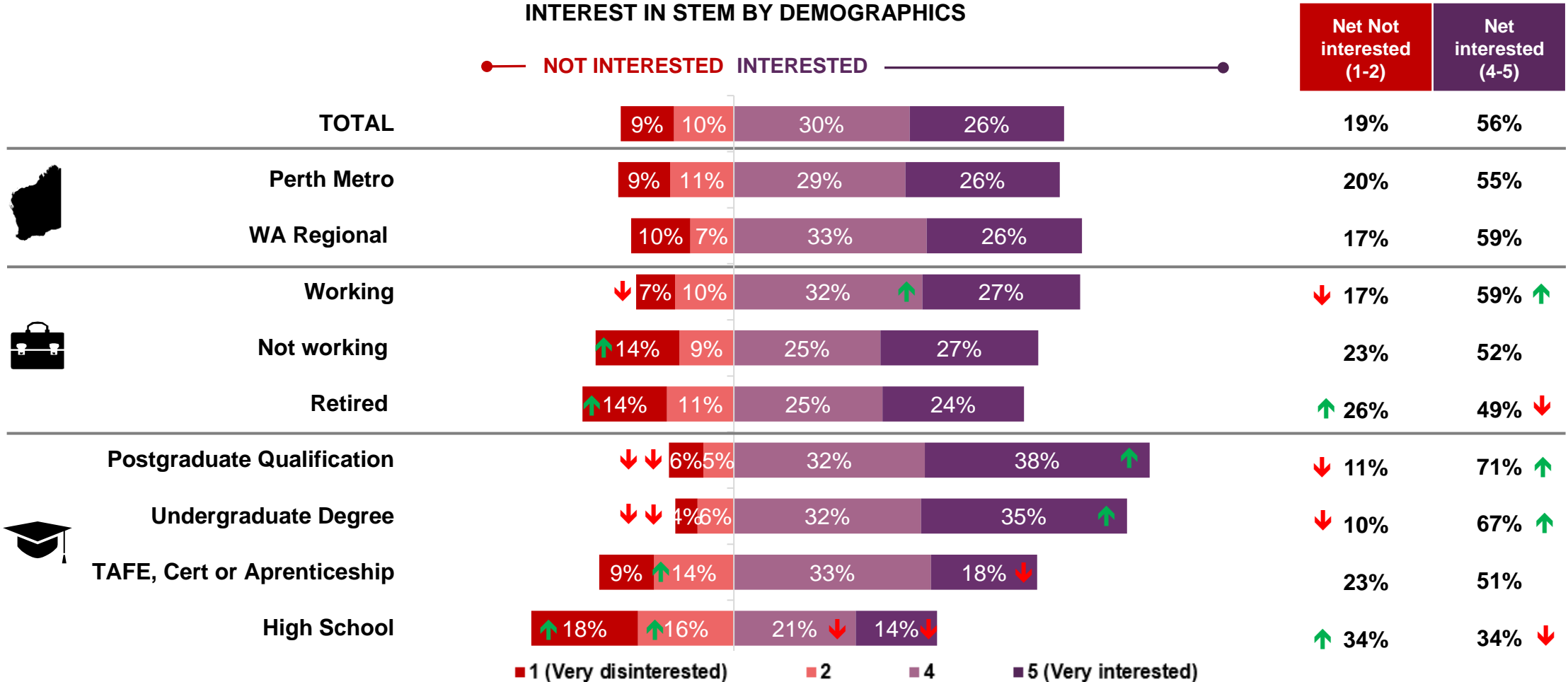
## INTEREST IN STEM BY DEMOGRAPHICS



# Interest in STEM

Interest in STEM (net 4-5) remains relatively consistent across metro and regional populations. Among those working, there is a significantly higher overall interest (59%) against those not working (52%) and those retired (49%). Interestingly, educational level appears to correlate with level of interest, with those holding postgraduate qualifications having the highest levels of interest (71%), followed by undergraduate (67%).

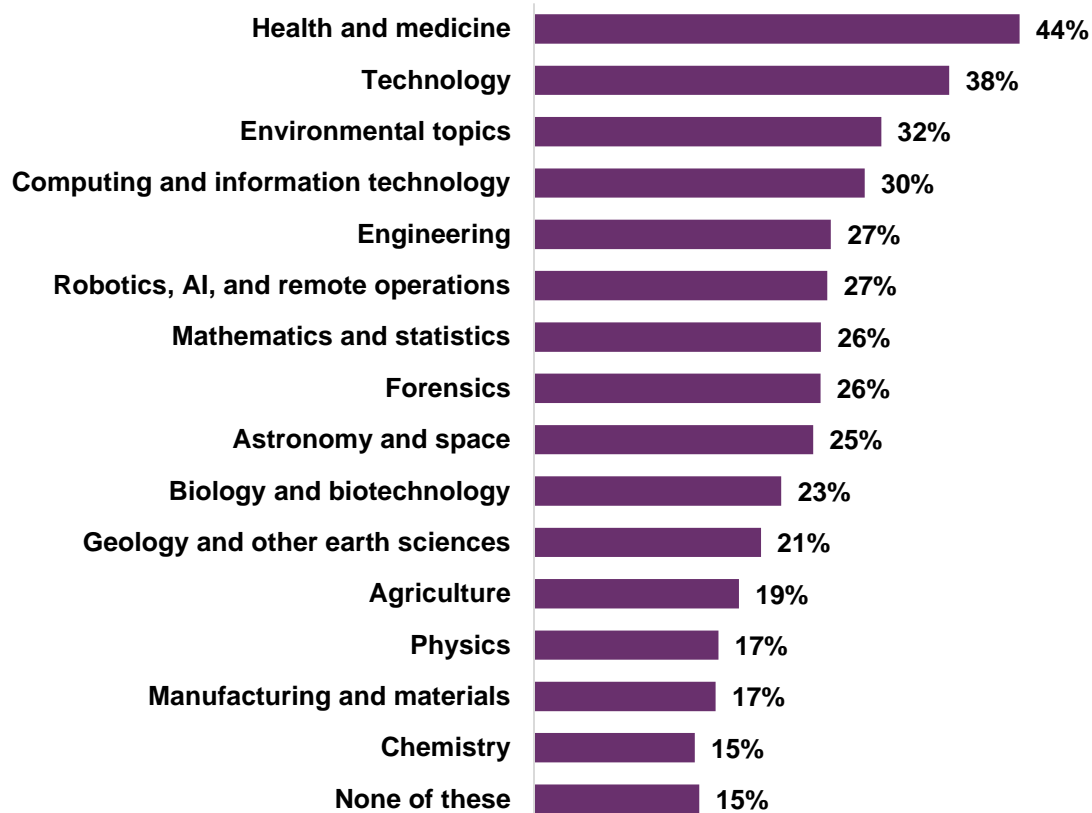
## INTEREST IN STEM BY DEMOGRAPHICS







# Areas of interest

Significant differences exist across demographic groups regarding the broad areas of interest in STEM, with health and medicine (44%) having the highest level of associated interest, followed by technology (38%) and environmental topics (32%).

## INTEREST IN BROAD AREAS OF STEM



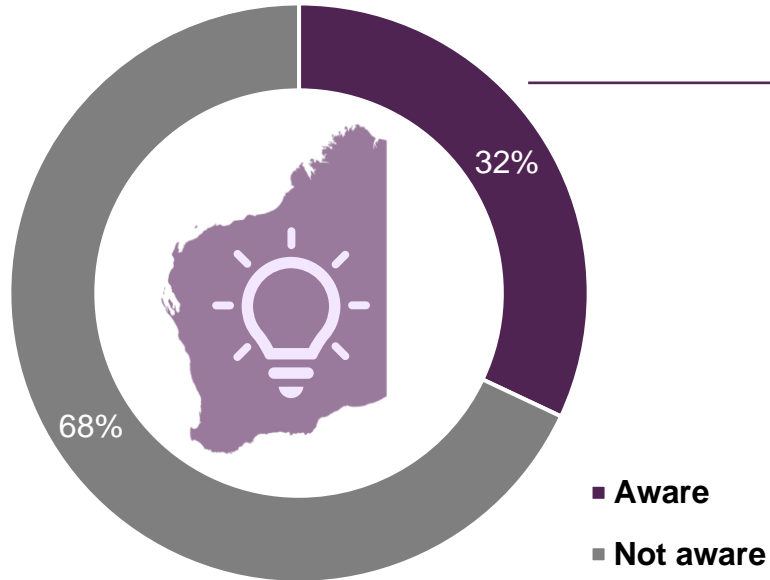
## DEMOGRAPHIC DIFFERENCES

				
ANY AREA	87% Male 83% Female	↑ 89% < 45 years ↓ 82% 45+ years	↑ 90% Parent ↓ 82% Not parent	↑ 93% Postgrad ↑ 93% Undergrad ↓ 82% TAFE ↓ 72% High school
HEALTH	↓ 30% Male ↑ 58% Female	↑ 40% < 45 years ↓ 48% 45+ years	↑ 48% Parent ↓ 41% Not parent	↑ 54% Postgrad ↑ 50% Undergrad 42% TAFE ↓ 30% High school
TECH	↑ 48% Male ↓ 28% Female	41% < 45 years 35% 45+ years	40% Parent 36% Not parent	↑ 44% Postgrad ↑ 45% Undergrad 38% TAFE ↓ 23% High school
ENVIRONMENT	↓ 24% Male ↑ 39% Female	29% < 45 years 34% 45+ years	34% Parent 30% Not parent	35% Postgrad 37% Undergrad 30% TAFE 25% High school

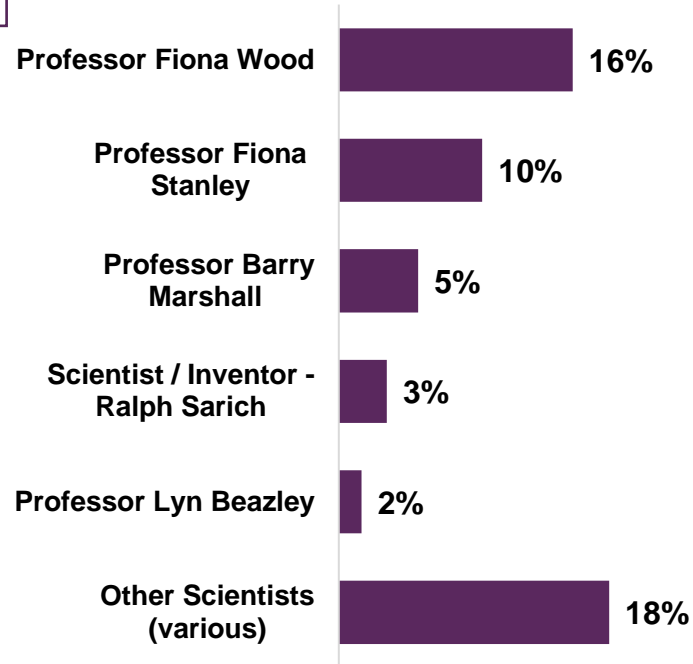
# Spontaneous awareness WA scientists / inventors / discoveries / inventions

Only 32% of Western Australians can name a scientist or scientific discovery, with awareness being mostly led by mentions of scientists rather than discoveries. Professor Fiona Wood and Fiona Stanley account for 26% of the mentions overall, with Spray on Skin having the highest number of mentions for a discovery at 5%.

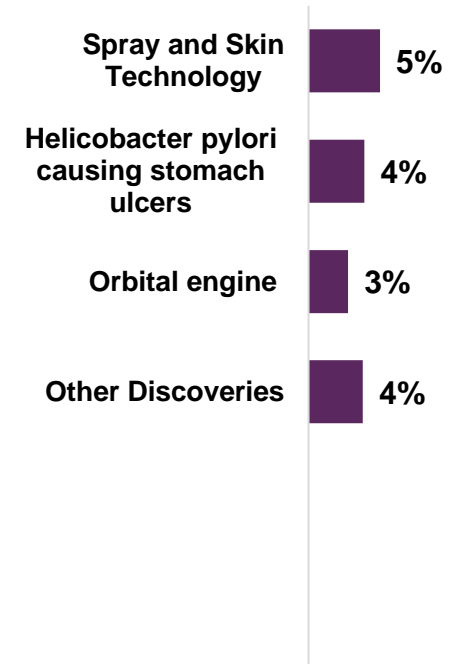
## UNPROMPTED AWARENESS OF WESTERN AUSTRALIAN SCIENTISTS AND SCIENTIFIC DISCOVERIES



**29%** of all respondents mentioned a **Scientist / Inventor**



**13%** of all respondents mentioned a **Discovery / Invention**

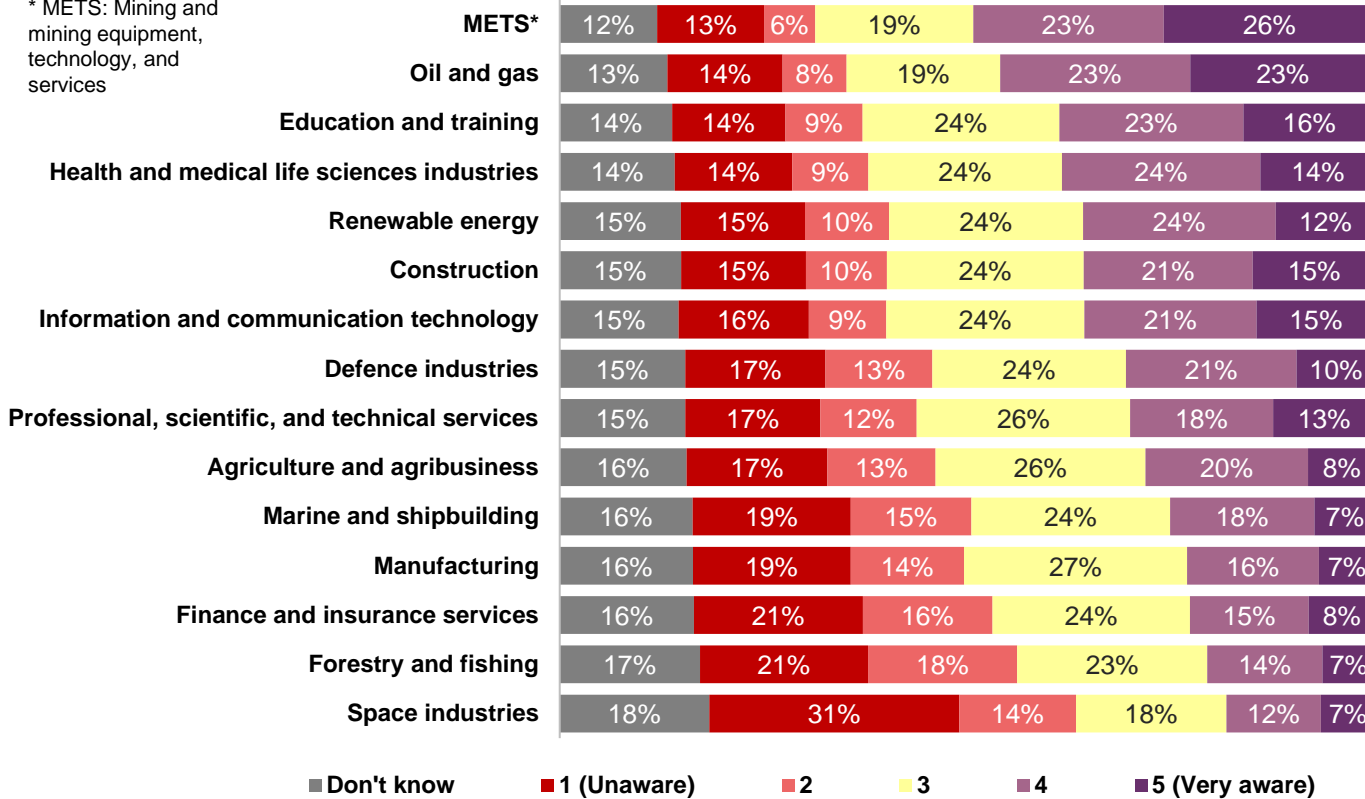


# Awareness of STEM jobs

Only 35% of Western Australians express a high awareness (net 4-5) of the jobs available in STEM industries, with resource sector jobs leading in overall awareness, followed by oil and gas.

## AWARENESS OF JOBS IN STEM INDUSTRIES

\* METS: Mining and mining equipment, technology, and services



## DEMOGRAPHIC DIFFERENCES (VERY AWARE)

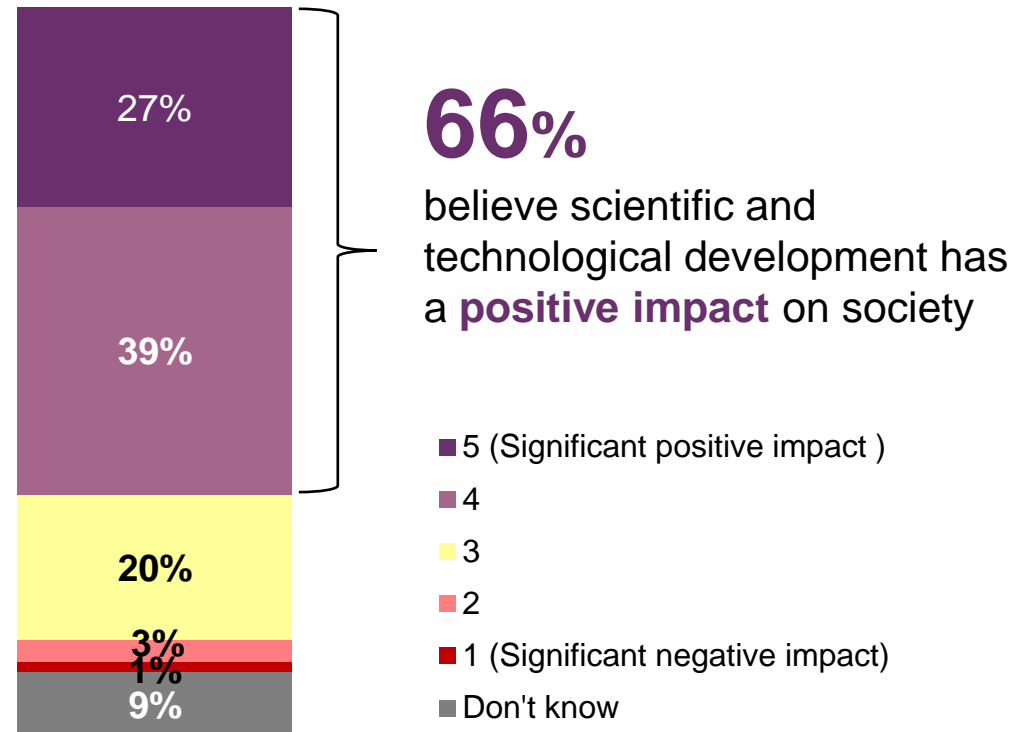


Industry	Gender	Age	Education
METS	↑ 30% Male ↓ 22% Female	↑ 32% < 45 years ↓ 21% 45+ years	↑ 32% Postgrad 30% Undergrad 24% TAFE ↓ 17% High school
OIL&GAS	24% Male 22% Female	↑ 26% < 45 years ↓ 20% 45+ years	↑ 32% Postgrad 25% Undergrad 19% TAFE ↓ 14% High school
EDUCATION	15% Male 18% Female	18% < 45 years 15% 45+ years	↑ 24% Postgrad 17% Undergrad 14% TAFE ↓ 9% High school
HEALTH	13% Male 15% Female	15% < 45 years 13% 45+ years	↑ 22% Postgrad 15% Undergrad ↓ 10% TAFE ↓ 9% High school

# Perceived impact of science

Just over two-thirds of Western Australians (67%) indicate a high level of belief (net 4-5) that scientific and technological developments positively impact society. Conversely, only 4% of the population indicate a belief that these developments have a net negative impact (net 1-2).

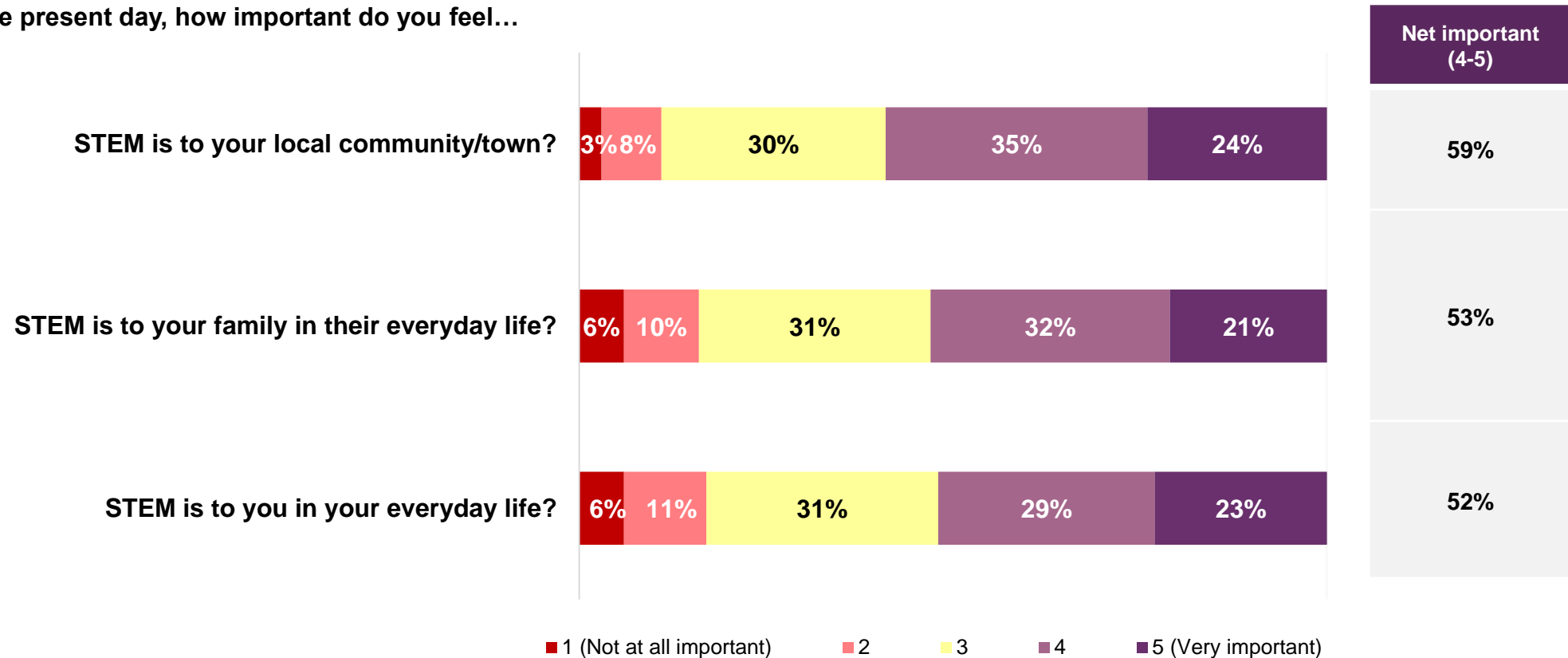
## PERCEIVED IMPACT OF SCIENTIFIC / TECHNOLOGICAL DEVELOPMENTS



# Importance of STEM

A high percentage of the population perceives STEM as important (net 4-5) to various aspects of their lives. Just over half (59%) feel that it is important to their local community and town with 53% feeling that it is important for their families. Roughly half (52%) indicate feeling that it is important in their everyday lives. Less than one in five felt that STEM was not important (net 1-2) across any of these aspects.

Thinking about the present day, how important do you feel...

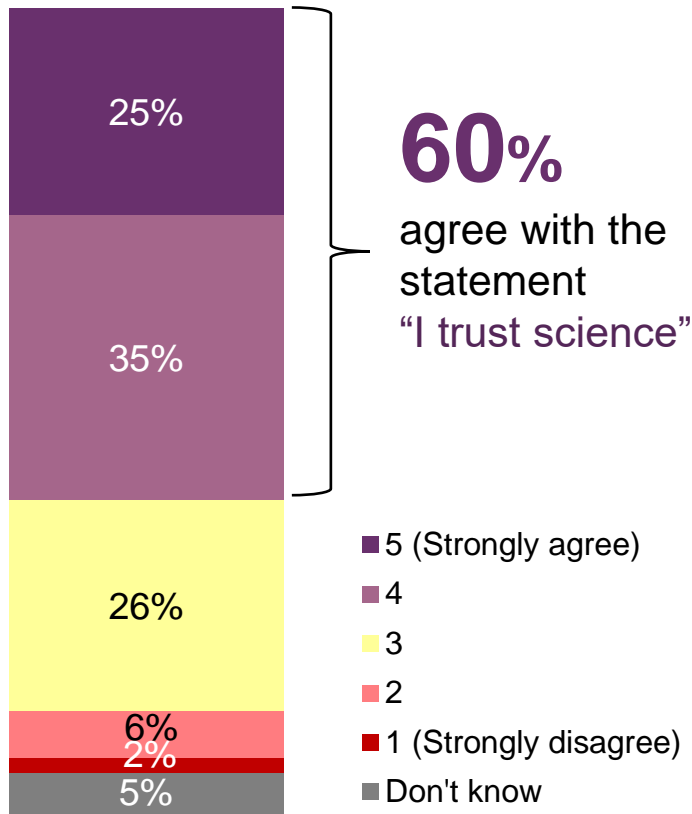




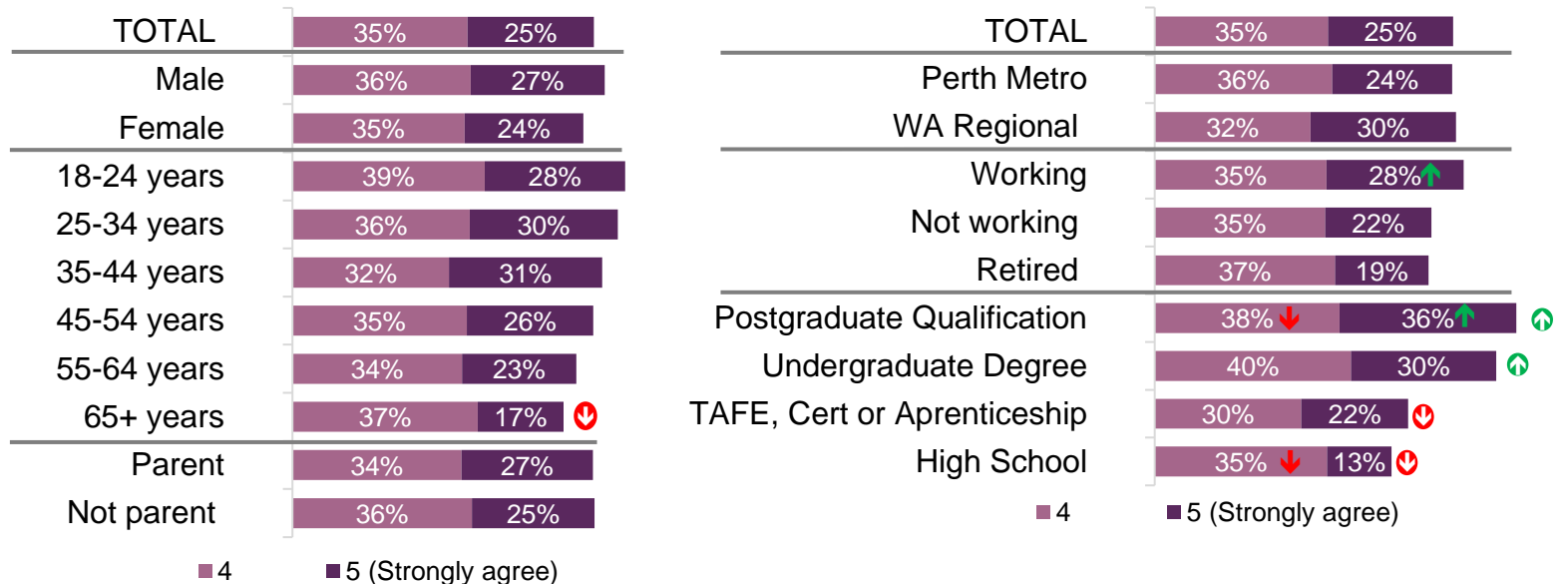
# General attitudes towards STEM “I trust science”

A majority (61%) of respondents expressed trust in science (net 4-5), with this sentiment being particularly strong among those with postgraduate qualifications (74%) and undergraduate degrees (70%). In contrast, trust in science was notably lower among individuals with only high school or TAFE certificates, at 48% and 52%. Significantly lower overall trust can also be seen within retired populations, with just over half (56%) agreeing that they trust science. Among those who indicate a high level of agreement (net 4-5) with the statement, 36% indicate interest in pursuing a career in STEM, against 7% with low agreement (net 1-2). Similarly, three-quarters (76%) of respondents with higher agreement (net 4-5) indicate heightened advocacy levels for their family and friends to follow paths in STEM disciplines.

## AGREEMENT: I TRUST SCIENCE

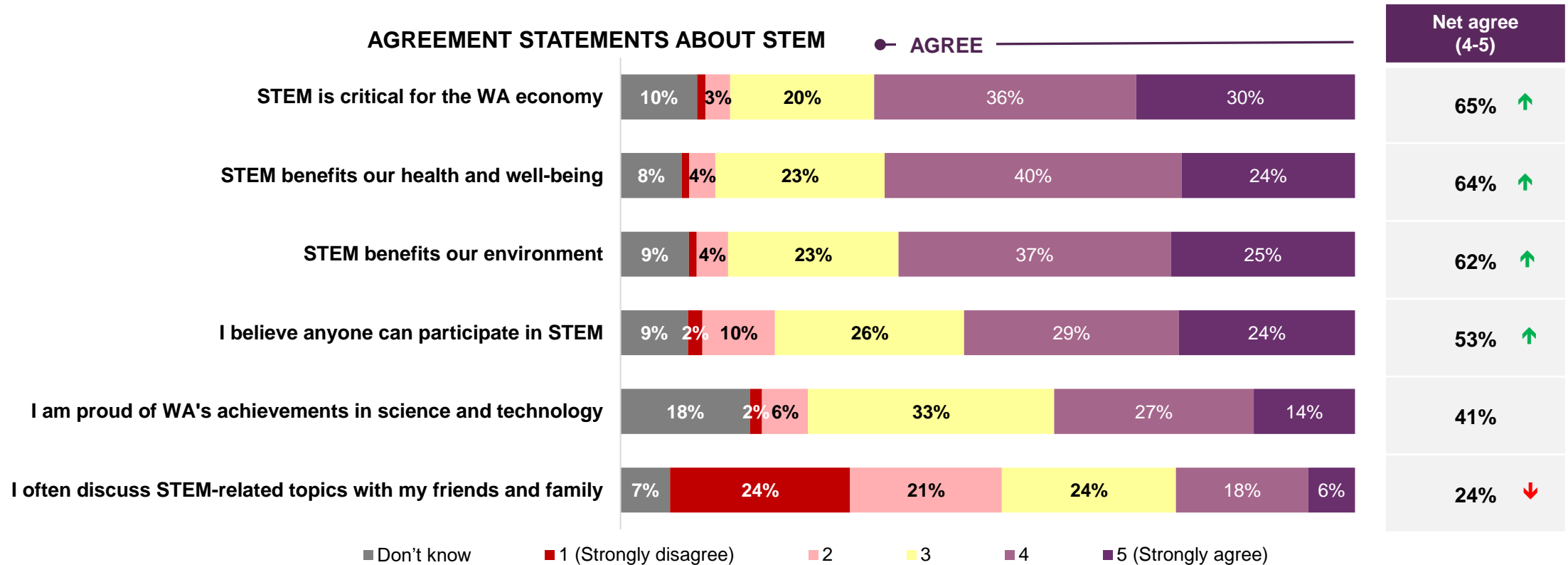


## AGREEMENT STATEMENTS ABOUT STEM (% AGREE 4-5) BY DEMOGRAPHIC



# Personal attitudes towards STEM

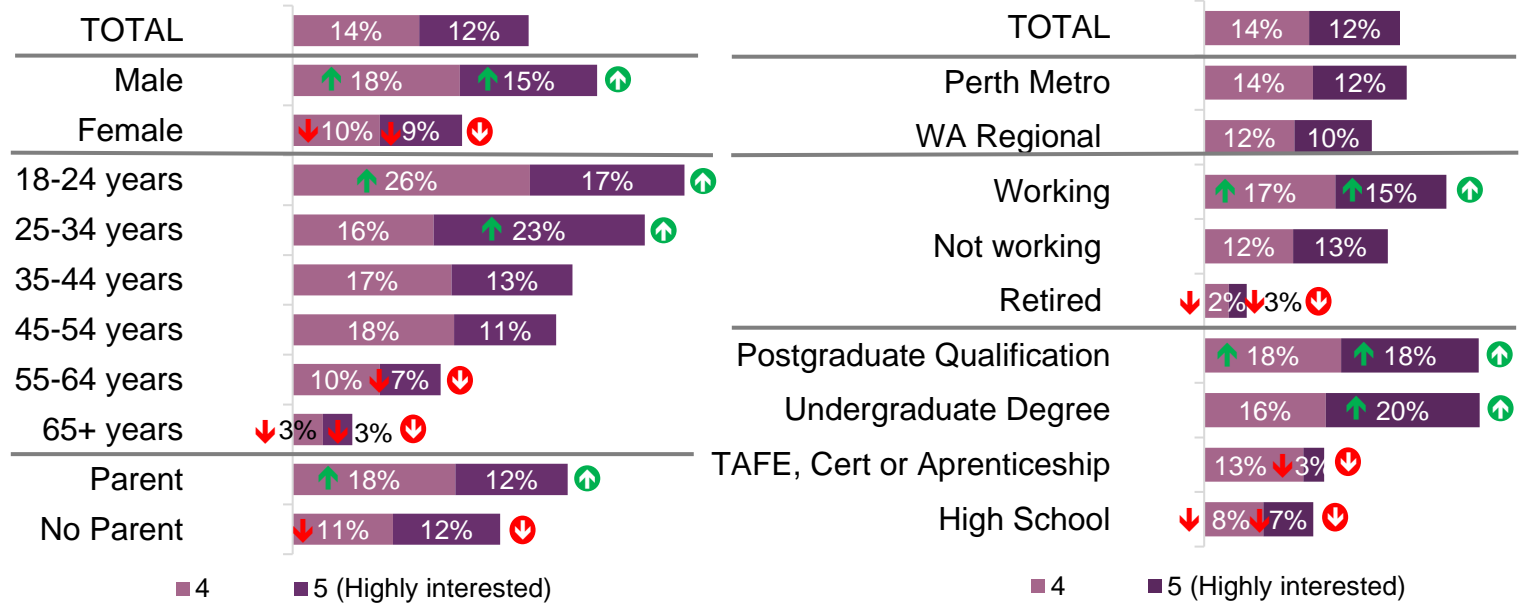
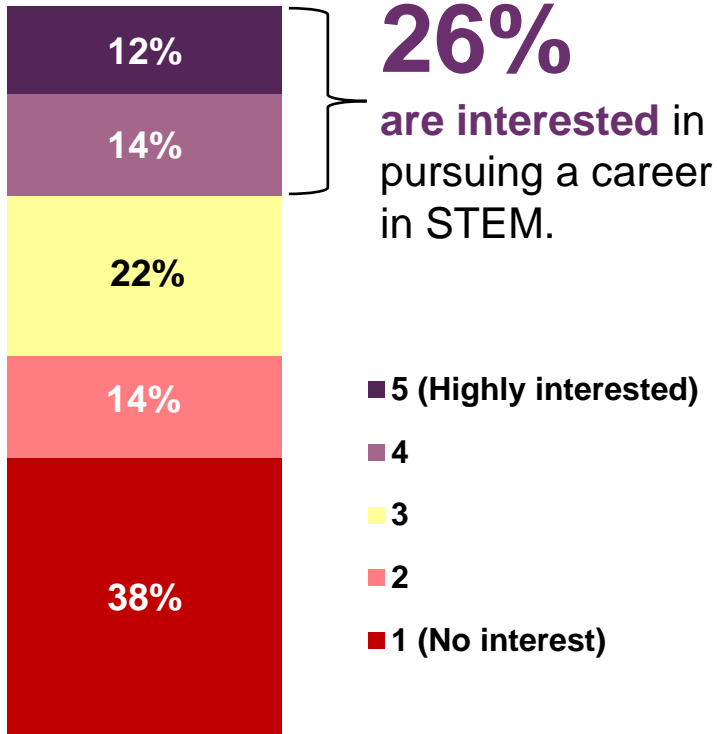
A high percentage of Western Australians agree (net 4-5) that STEM is critical for the WA economy (65%), beneficial to health and well-being (64%), and advantageous for the environment (62%). Additionally, over half (53%) agree that STEM is an inclusive career open to anyone. Still, only two out of five indicate (net 4-5 agreement) that they are proud of WA's achievements in Science and Technology (41%). While deemed an important topic to many, only one out of four indicate (net 4-5 agreement) that they frequently discuss STEM-related topics with friends and family (24%).



# Interest in pursuing a career in STEM

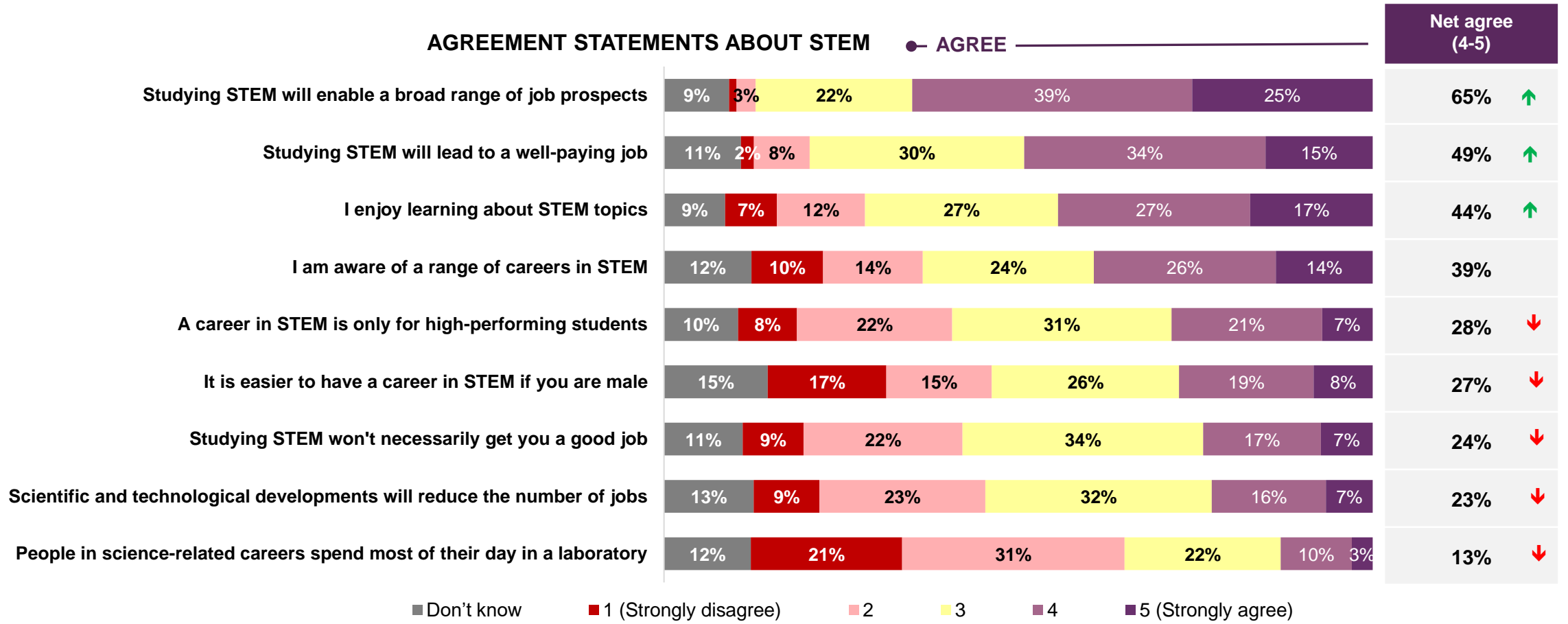
Just over one in four Western Australians (26%) are highly interested (net 4-5) in pursuing a career in STEM, with clear demographic being seen among gender, age, parental status, location, working status, and qualification levels (note the potential impact of earlier career stages/age on interest).

## INTERESTED IN PURSUING A CAREER IN STEM



# Career orientated attitudes towards STEM

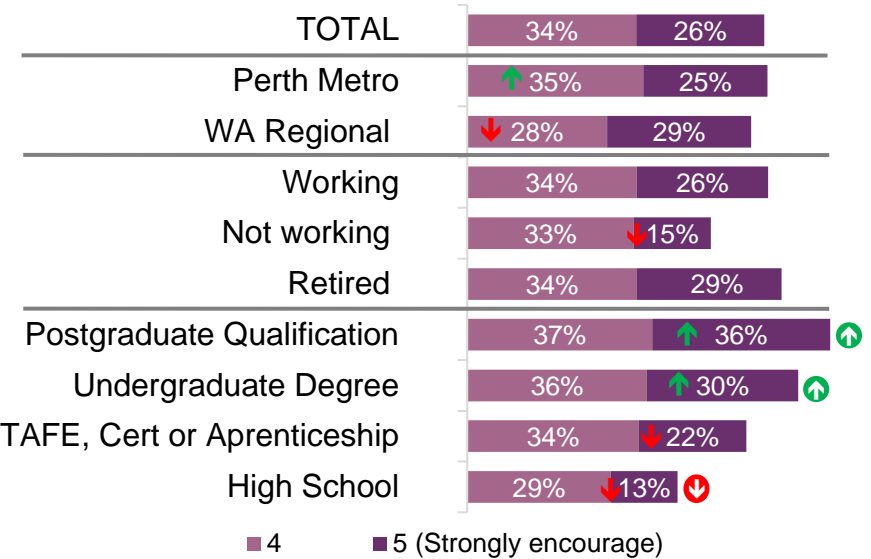
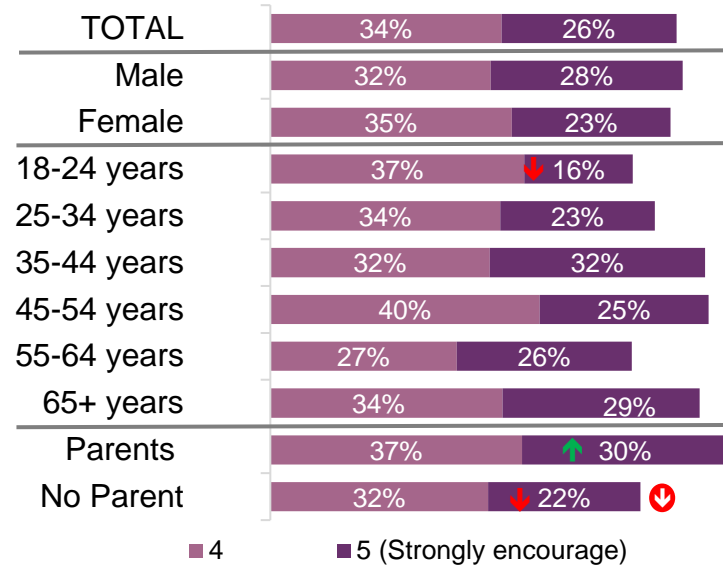
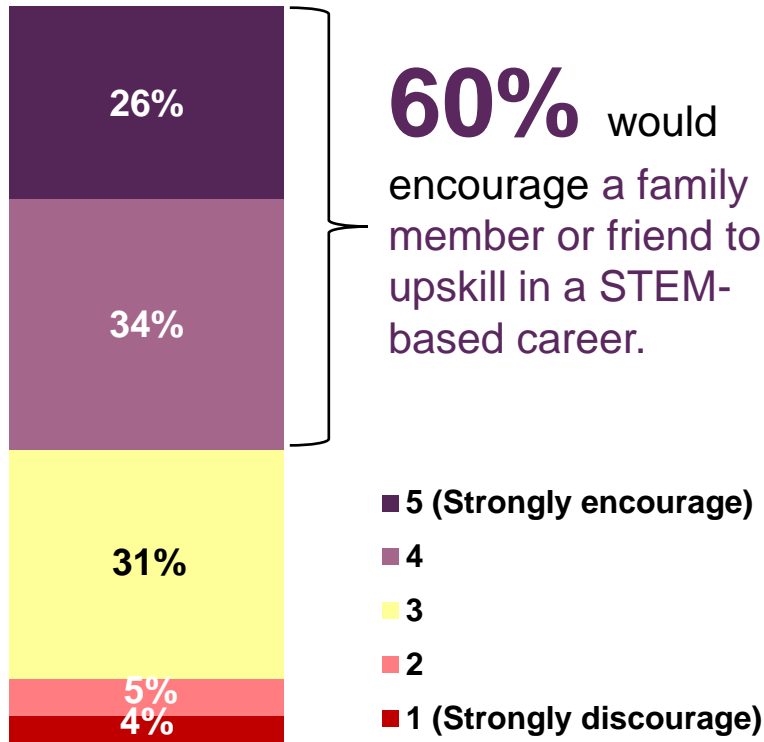
Two-thirds (65%) of Western Australians agree (net 4-5) that studying STEM enables a broad range of job prospects, with half (49%) agreeing that it leads to a well-paying job and just under (44%) stating that they enjoy learning about STEM. Only a small percentage of residents agree that STEM is only for high-performing students (28%) or that studying STEM doesn't necessarily lead to a good job (24%). Moreover, one in four (23%) think scientific and technological developments will reduce the number of jobs in the future, with just over one in ten (13%) feeling that people in science-related careers spend most of their day in a laboratory. Interestingly, perceptions related to the statement, "It is easier to have a career in STEM if you are male", are roughly split, with 32% net disagreement and 27% net agreement.



# Encourage family and friends to reskill or upskill in STEM

Most Western Australians (60%) would encourage (net 4-5) a family member or friend to reskill or upskill in a STEM-based career, with the likelihood of encouragement generally higher among parents (67%) and those with higher-level qualifications (66% to 73%).

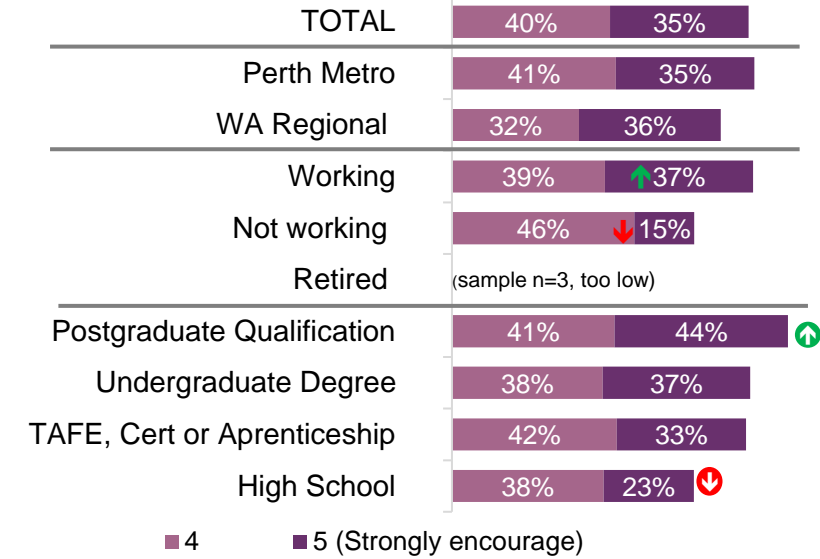
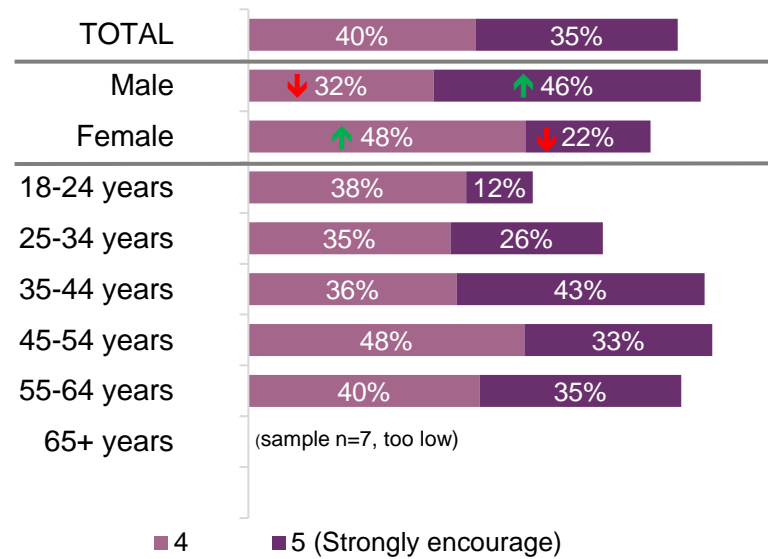
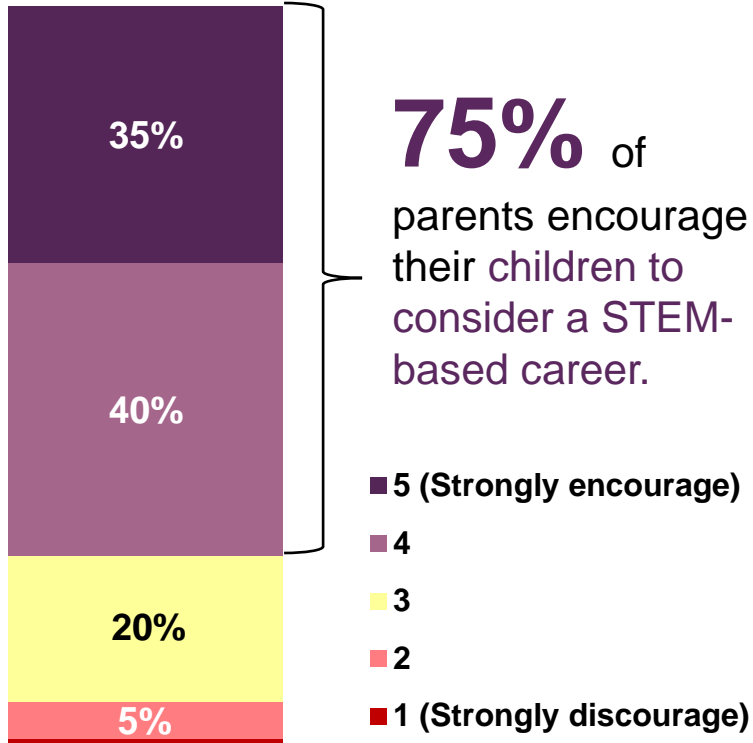
## ENCOURAGE A FAMILY MEMBER OR FRIEND TO RE- OR UPSKILL IN A STEM-BASED CAREER



# Parental encouragement to consider a STEM-based career

Positively, 75% of parents in Western Australia would encourage their child/children to consider a STEM-based career (net 4-5 encourage). With a greater level of encouragement being seen from males, those working and with postgraduate qualifications.

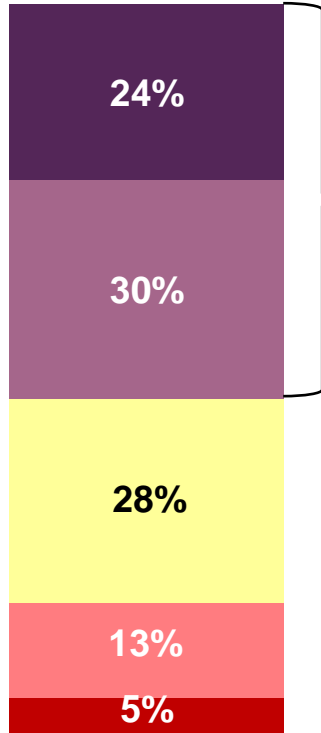
## ENCOURAGE YOUR CHILD/CHILDREN TO CONSIDER A STEM-BASED CAREER



# Parental confidence in discussing STEM with child/children

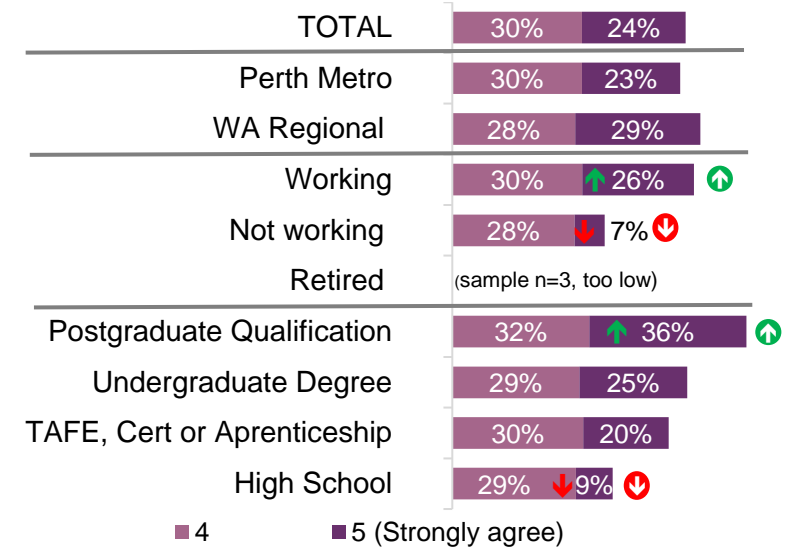
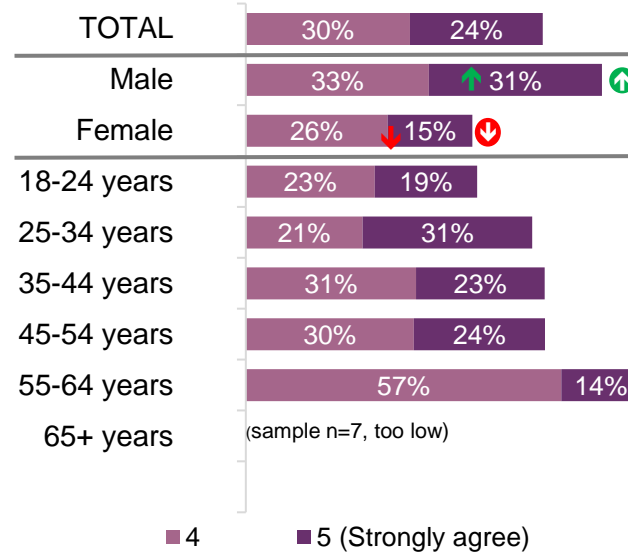
Just over half of parents (54%) in Western Australia agree (net 4-5) that they feel confident discussing STEM with their child/children. With a greater level of encouragement again being seen from males, those working, and with postgraduate qualifications.

## AGREEMENT "I FEEL CONFIDENT DISCUSSING STEM WITH MY CHILD/CHILDREN."



**54%** of parents agree with the statement *"I feel confident discussing STEM with my child/children"*

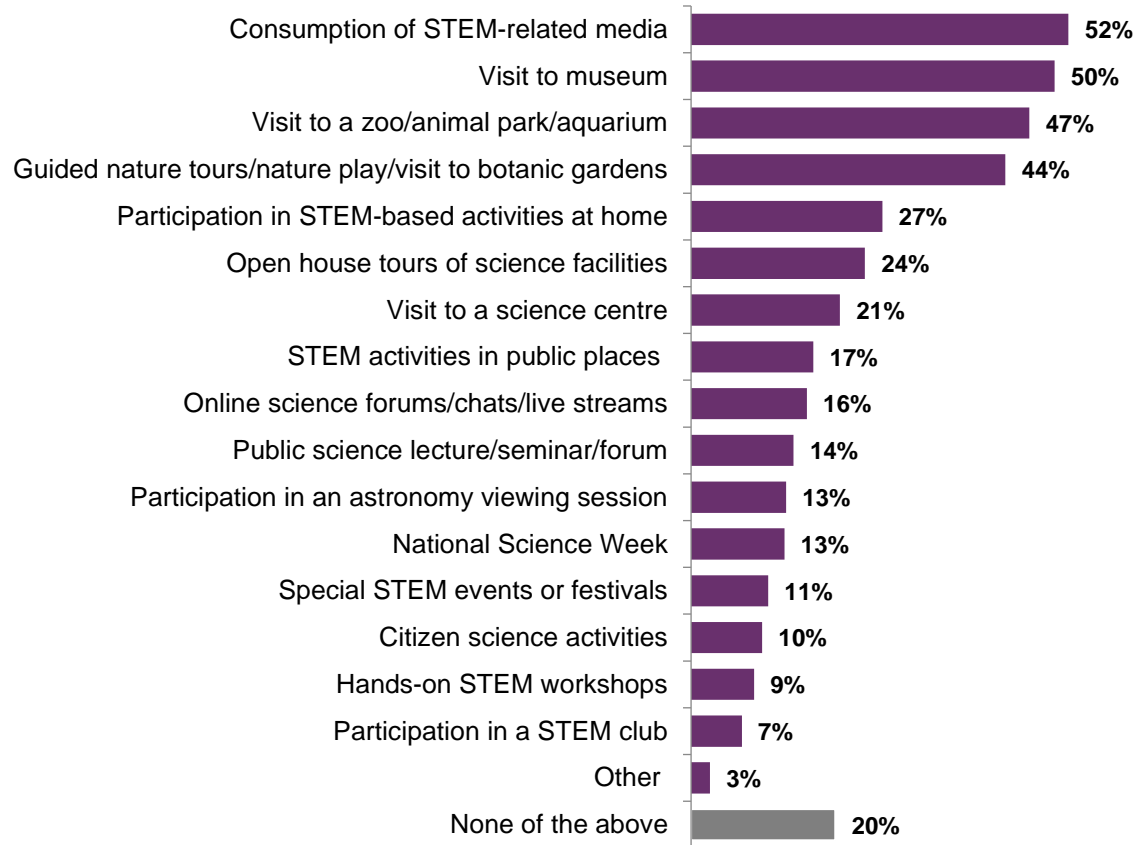
- 5 (Strongly agree)
- 4
- 3
- 2
- 1 (Strongly disagree)



# Participation in STEM-based activities past 12 months

Consumption of STEM-related media (52%), visiting a museum (50%) or a zoo/animal park/aquarium (47%), and guided nature tours/nature play/botanical gardens (44%) top the list as the most frequently engaged with STEM-based activities in the last 12 months. Among respondents who did not engage in a STEM-related activity (20%), 44% believe (net 4-5 agreement) that scientific and technological developments positively impact society, against 66% across the wider population. Within this group, lower overall agreement with the statement “I trust in science” (net 4-5 agreement) can also be observed at 36% vs 60% against the wider population.

## Participation in STEM-based activities in the last 12 months

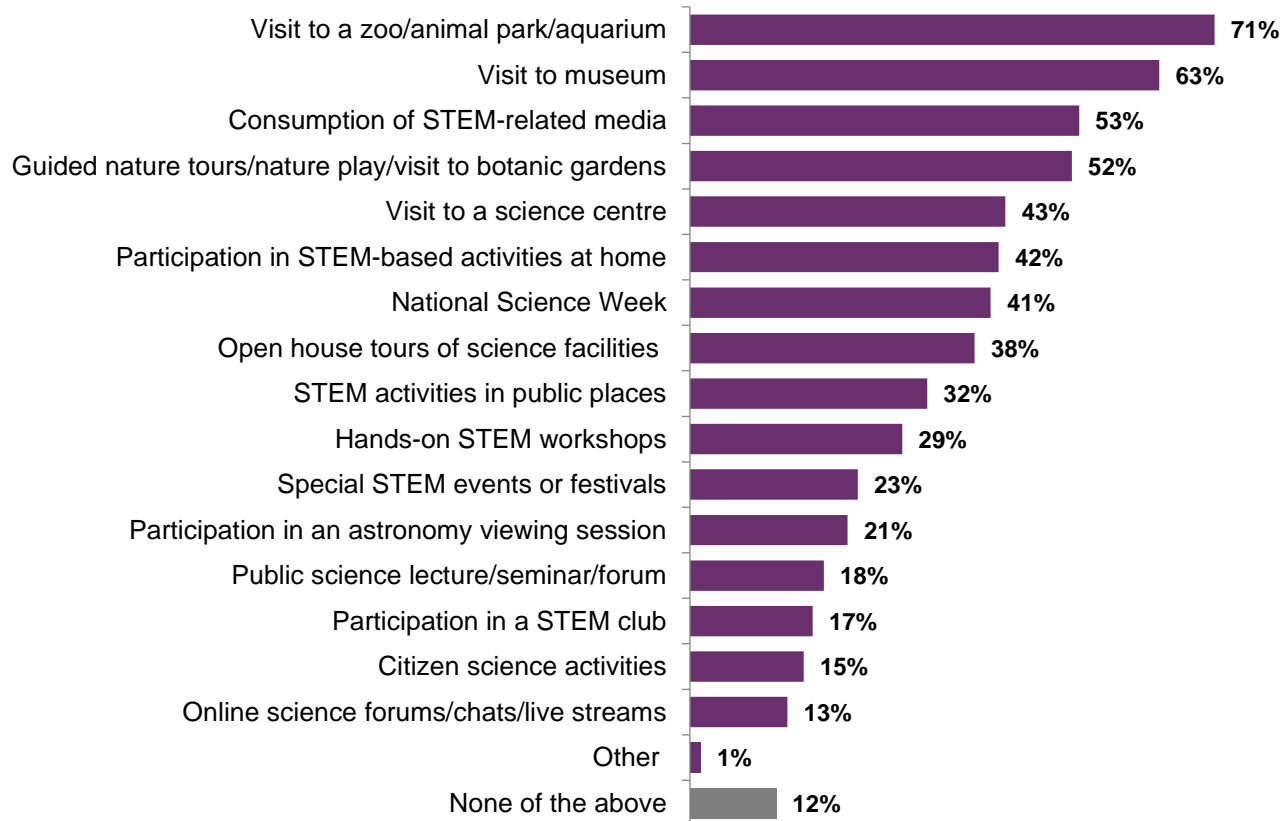




# Your child's participation in STEM-based activities past 12 months

Engagement by children in STEM-related activities is significantly higher overall compared to the general population with only 12% not having engaged in an activity in the last 12 months. However, the most commonly engaged with activities are similar and include visiting a zoo/animal park/aquarium (71%), visiting a museum (63%), consuming STEM Media (53%), and guided nature tours/nature play/botanical gardens (52%).

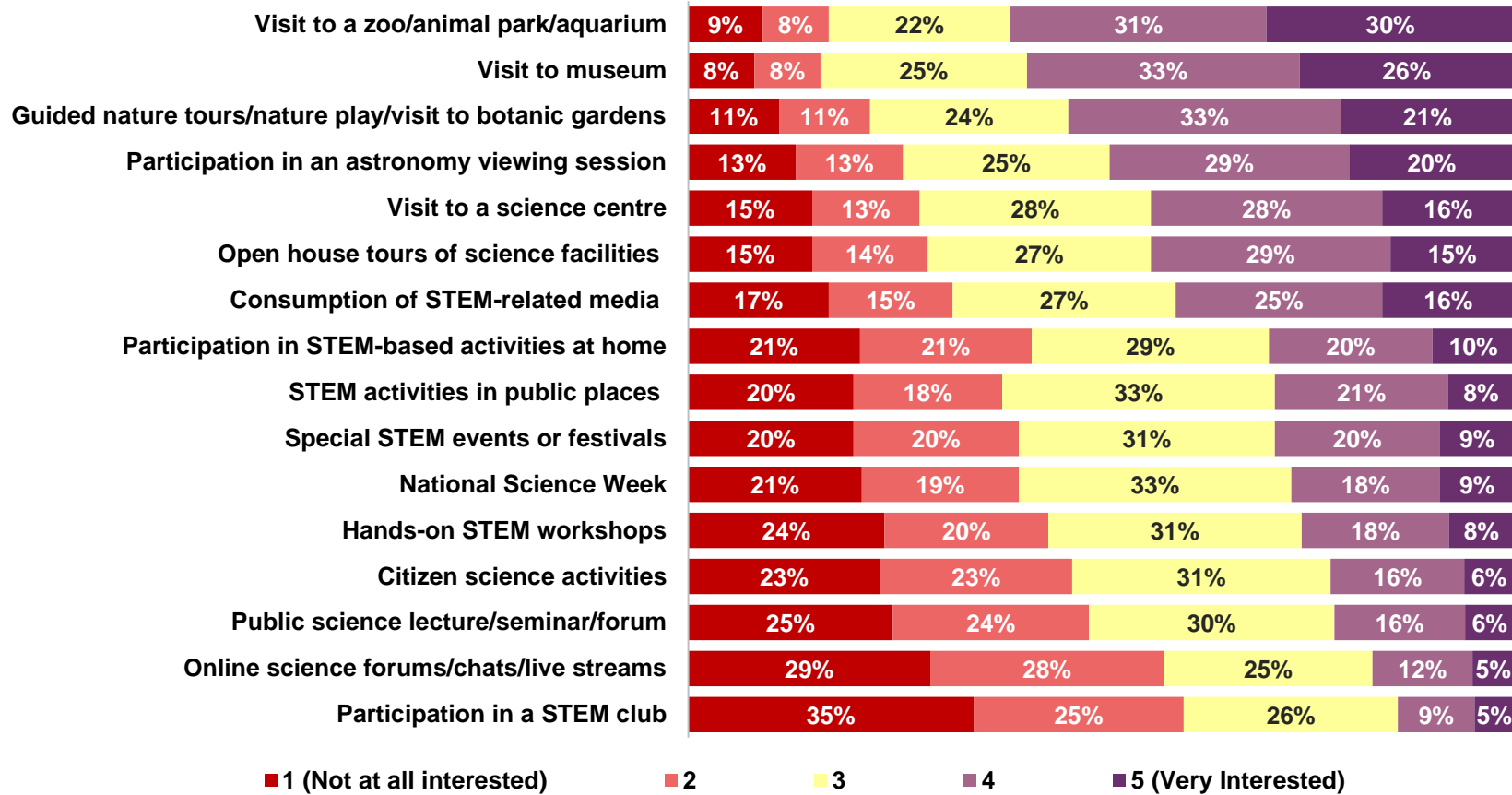
## Child's participation in STEM-based activities in the last 12 months



# General interest in specific STEM-based activities or events

Interest in specific STEM-based activities remains generally similar to participation, with the exception of a few activity types. In particular, interest in 'an astronomy viewing session' appears significantly higher when compared to attendance.

## INTEREST IN STEM ACTIVITIES AND EVENTS



Rank of actual participation (last 12 months)	Rank of actual child's participation (last 12 months)
3	1
2	2
4	4
11	12
7	5
6	8
1	3
5	6
8	9
13	11
12	7
15	10
14	15
10	13
9	16
16	14

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