# Supplementary Materials for "VisRecall: Quantifying information Visualisation Recallability via Question Answering"

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This document contains the visualisation type distribution among MTurk groups (Figure 1), and additional examples from the VisRecall dataset for each visualisation type (Figure 2-7). Moreover, we provide the hit rate, false alarm rate, memorability (recognisability) and recallability scores of all visualisations in each quadrant in Figure 9 (Right) from the main manuscript (Tables 1, 2, and 3).
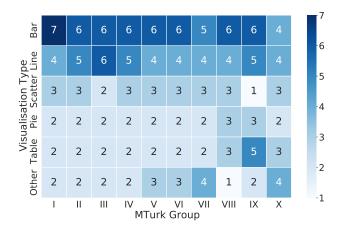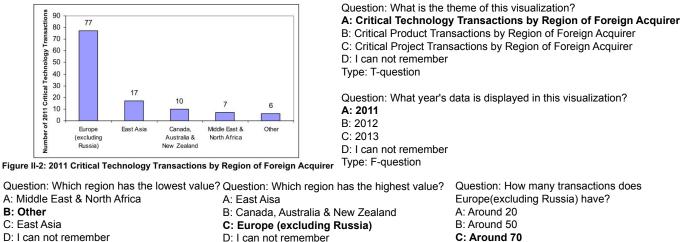


Fig. 1: Visualisation type distribution, i.e. the number of visualisations of a certain type, among ten MTurk groups.

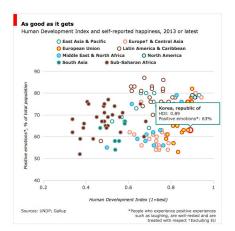Figure II-2: 2011 Critical Technology Transactions by Region of Foreign Acquirer

Question: What is the theme of this visualization?
**A: Critical Technology Transactions by Region of Foreign Acquirer**
B: Critical Product Transactions by Region of Foreign Acquirer
C: Critical Project Transactions by Region of Foreign Acquirer
D: I can not remember
Type: T-question

Question: What year's data is displayed in this visualization?
**A: 2011**
B: 2012
C: 2013
D: I can not remember
Type: F-question

Question: Which region has the lowest value?
A: Middle East & North Africa
**B: Other**
C: East Asia
D: I can not remember
Type: FE-question

Question: Which region has the highest value?
A: East Aisa
B: Canada, Australia & New Zealand
**C: Europe (excluding Russia)**
D: I can not remember
Type: FE-question

Question: How many transactions does Europe(excluding Russia) have?
A: Around 20
B: Around 50
**C: Around 70**
D: I can not remember
Type: RV-question

Fig. 2: Example visualisation of bar plots from VisRecall dataset with five multiple-choice questions. The correct answer to each question is shown in **bold**.



| Reno Housing Unit Growth Outpaced Population and Household Growth During the Past Decade | | |
|---|---|---|
| Date of Census | 4/1/2000 | 4/1/2010 |
| Reno-Sparks Population | 342,885 | 425,417 |
| Annual Growth Rate | - | 2.4% |
| Reno-Sparks Households | 133,546 | 165,187 |
| Annual Growth Rate | - | 2.4% |
| Reno-Sparks Housing Units | 145,504 | 186,831 |
| Annual Growth Rate | - | 2.8% |

Source: Census Bureau (2000 and 2010 Decennial)

Question: What is the theme of this visualization?
**A: Reno housing unit growth outpaced population and house hold growth during the past decade**
B: Reno population growth outpaced housing unit and house hold growth during the past decade
C: Reno house hold growth outpaced housing unit and population growth during the past decade
D: I can not remember
Type: T-question

Question: What period of data does this visualization show?
A: 2010-2020
**B: 2000-2010**
C: 2000-1990
D: I can not remember
Type: F-question

Question: Which one has the highest annual growth rate?
A: Reno-Sparks Population
B: Reno-Sparks Households
**C: Reno-Sparks Housing Units**
D: I can not remember
Type: FE-question

Question: Which one is higher, annual growth rate of Reno-Sparks Households or annual growth rate of Reno-Sparks Housing Units?
**A: Reno-Sparks Housing Units**
B: Reno-Sparks Households
C: The same
D: I can not remember
Type: U-question

Question: What is the population in 2000
**A: Around 350,000**
B: Around 400,000
C: Around 450,000
D: I can not remember
Type: RV-questio

Fig. 3: Example visualisation of tables from VisRecall dataset with five multiple-choice questions. The correct answer to each question is shown in **bold**.

**As good as it gets**
Human Development Index and self-reported happiness, 2013 or latest

East Asia & Pacific · Europe† & Central Asia · European Union · Latin America & Caribbean · Middle East & North Africa · North America · South Asia · Sub-Saharan Africa

Korea, republic of
HDI: 0.89
Positive emotions*: 63%

*Positive emotions*, % of total population* (y-axis: 40–90)
*Human Development Index (1=best)* (x-axis: 0.2–1)

Sources: UNDP; Gallup
*People who experience positive experiences such as laughing, are well-rested and are treated with respect †Excluding EU

Question: What is the theme of this visualization?
A: Tourism and GDP
B: Foreign exchange reserves and GDP
**C: Military spending and GDP**
D: I can not remember
Type: T-question

Question: What period of data does this visualization show?
A: 2001-2010
B: 2002-2010
**C: 2002-2011**
D: I can not remember
Type: F-question

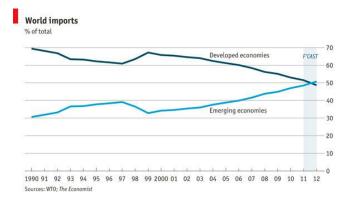Question: Which country has the biggest GDP growth in this period?
A: China
**B: Angola**
C: Ethiopia
D: I can not remember
Type: FE-question

Question: Which country has the biggest Military spending growth in this period?
A: Ecuador
**B: Kazakhstan**
C: Armenia
D: I can not remember
Type: FE-question

Question: Which country has a negative growth in military spending?
**A: Italy**
B: Canada
C: Singapore
D: I can not remember
Type: F-question

Fig. 4: Example visualisation of scatter plots from VisRecall dataset with five multiple-choice questions. The correct answer to each question is shown in **bold**.

**World imports**
% of total

Developed economies    F'CAST
Emerging economies

(y-axis: 0–70)
1990 91 92 93 94 95 96 97 98 99 2000 01 02 03 04 05 06 07 08 09 10 11 12
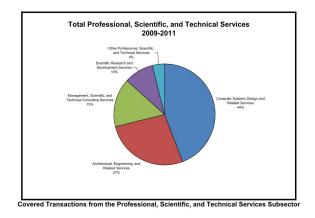Sources: WTO; The Economist

Question: What is the theme of this visualization?
A: World economies
**B: World imports**
C: World exports
D: I can not remember
Type: T-question

Question: What period of data does this visualization show?
A: 1990-2010
B: 1990-2011
**C: 1990-2012**
D: I can not remember
Type: F-question

Question: What range of percentage does this visualization show?
A: 0-60
**B: 0-70**
C: 0-80
D: I can not remember
Type: RV-question

Question: What decreases as time goes by?
**A: Developed economies**
B: Emerging economies
C: General economies
D: I can not remember
Type: U-question

Question: What increases as time goes by?
A: Developed economies
**B: Emerging economies**
C: General economies
D: I can not remember
Type: U-question

Fig. 5: Example visualisation of line plots from VisRecall dataset with five multiple-choice questions. The correct answer to each question is shown in **bold**.

Question: What is the theme of this visualization?
A: Total Professional services
B: Total Professional services and Scientific services
**C: Total Professional services, Scientific and technical services**
D: I can not remember
Type: T-question

Question: What year's data is displayed in this visualization?
A: 2009-2010
**B: 2009-2011**
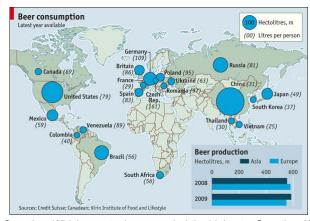C: 2007-2009
D: I can not remember
Type: F-question

Question: Which Field has the highest share of contribution?
**A: Computer systems and related services**
B: Scientific research and development
C: Architectural Engineering
D: I can not remember
Type: FE-question

Question: Which Field has the lowest share of contribution?
A: Computer systems and related services
B: Scientific research and development
**C: Other professional, scientific and technical services**
D: I can not remember
Type: FE-question

Question: Which keyword stands for the visualization the best?
A: Professional
**B: Transactions**
C: Technologies
D: I can not remember
Type: F-question

Fig. 6: Example visualisation of pie plots from VisRecall dataset with five multiple-choice questions. The correct answer to each question is shown in **bold**.



Question: What is the theme of this visualization?
**A: Beer consumption around the world**
B: Beer consumption around Europe only
C: Beer consumption around US only
D: I can not remember
Type: T-question

Question: What are the years seen in the visualization?
A: 2008 and 2010
B: 2000 and 2001
**C: 2008 and 2009**
D: I can not remember
Type: F-question

Question: Which country has recorded the highest consumption in terms of literes per person?
**A: Czech Republic**
B: US
C: Germany
D: I can not remember
Type: F-question

Question: Which country has recorded the lowest consumption in terms of literes per person?
**A: Vietnam**
B: France
C: China
D: I can not remember
Type: F-question

Question: How much Hectoliters/m of beer is produced by Asia and Europe in the year 2009?
A: Around 500
**B: Above 550**
C: Below 400
D: I can not remember
Type: RV-question

Fig. 7: Example visualisation of *others* from VisRecall dataset with five multiple-choice questions. The correct answer to each question is shown in **bold**.

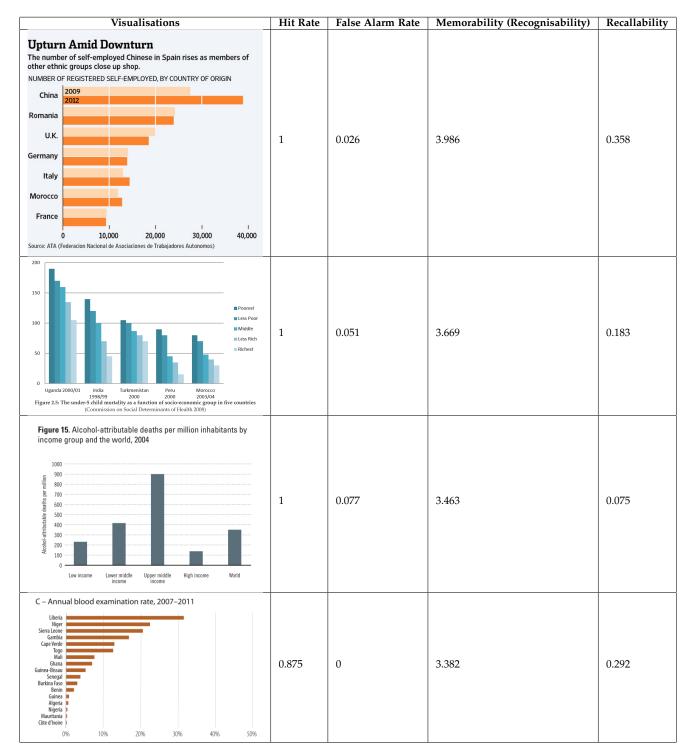| Visualisations | Hit Rate | False Alarm Rate | Memorability (Recognisability) | Recallability |
|---|---|---|---|---|
|  | 1 | 0.026 | 3.986 | 0.358 |
|  | 1 | 0.051 | 3.669 | 0.183 |
|  | 1 | 0.077 | 3.463 | 0.075 |
|  | 0.875 | 0 | 3.382 | 0.292 |

TABLE 1: Hit rate, false alarm rate, memorability (recognisability) and recallability scores of all visualisations in top-left quadrant in Figure 9 (Right) from the main manuscript.

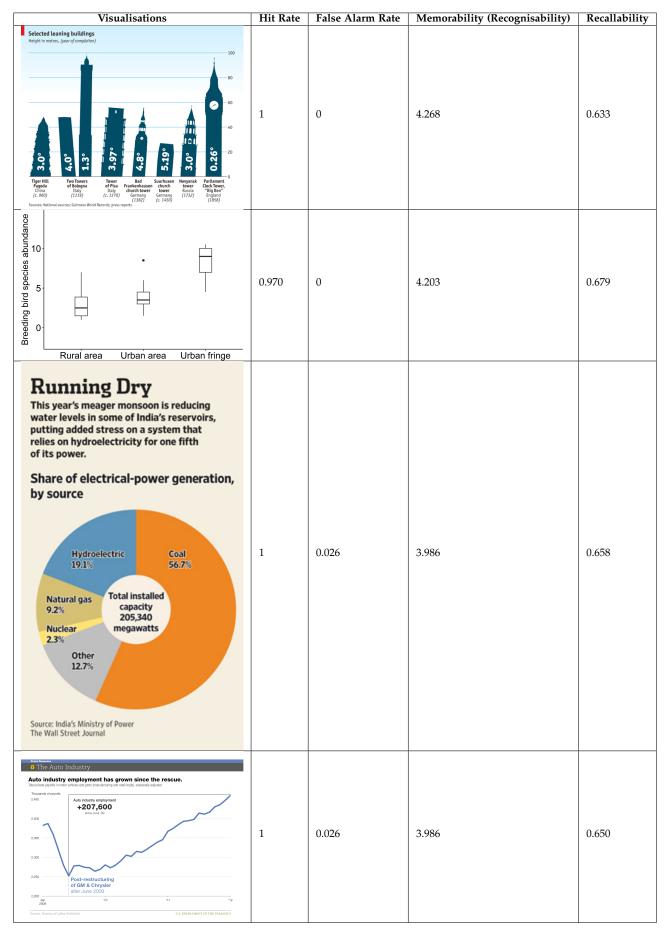| Visualisations | Hit Rate | False Alarm Rate | Memorability (Recognisability) | Recallability |
|---|---|---|---|---|
|  | 1 | 0 | 4.268 | 0.633 |
|  | 0.970 | 0 | 4.203 | 0.679 |
|  | 1 | 0.026 | 3.986 | 0.658 |
|  | 1 | 0.026 | 3.986 | 0.650 |

TABLE 2: Hit rate, false alarm rate, memorability (recognisability) and recallability scores of all visualisations in top-right quadrant in Figure 9 (Right) from the main manuscript.

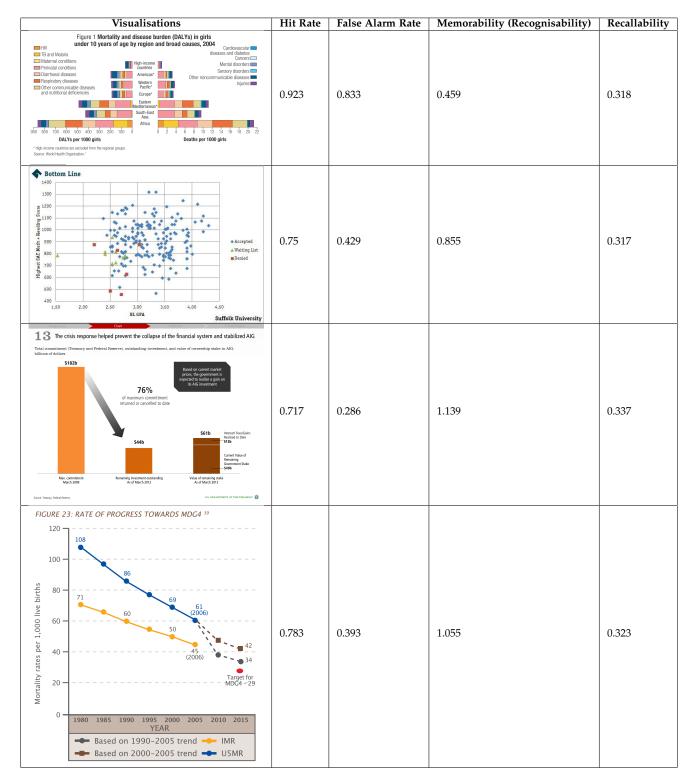| Visualisations | Hit Rate | False Alarm Rate | Memorability (Recognisability) | Recallability |
|---|---|---|---|---|
|  | 0.923 | 0.833 | 0.459 | 0.318 |
|  | 0.75 | 0.429 | 0.855 | 0.317 |
|  | 0.717 | 0.286 | 1.139 | 0.337 |
|  | 0.783 | 0.393 | 1.055 | 0.323 |

TABLE 3: Hit rate, false alarm rate, memorability (recognisability) and recallability scores of all visualisations in bottom-left quadrant in Figure 9 (Right) from the main manuscript.