RH Thanks everybody for coming and making the time this evening to join us and talk about your experiences with data visualisations over the last few weeks, and previously, and tonight as we’ll talk about some more.

My name’s Rosemary Hill. I’m from the University of Leeds and you may remember me from last month when we met. This is my colleague Will Allen and he’s from the University of Oxford and he’s the co-investigator on the project.

Voldemort So, you’re actually coming at it from totally different universities.

RH That’s right.

WA We work together on this project. I’ll be going around setting up computers as you’re doing this first bit.

RH The project is about data visualisations. You should have seen some of these on the website and I talked about them when I met you before and we looked at some in the newspaper on that occasion. Really these are like a bit exciting new thing in the tech world in particular and in the media, and they’re being used to explain data. So, if you imagine the way that data is being harvested online from all your shopping trips and everything you do, sometimes this data is being used to create these beautiful images. And that’s not just about shopping; it’s about polls, about weather reports and all sorts of things, census data.

WA Lately it’s about Ebola and stuff in the news; so lots of different topics.

RH So, there’s a lot of academic interest in how they’re making these visualisations, because they’ve come up in the media they’re becoming increasingly visible to everybody. So, we want to find out about how people respond to them and engage with them and how people make sense of them. So, the longer-term aim of finding out what kinds of skills, literacy skills people need to be able to read them, and also what kinds of things the people who are making them need to do to make better ones.

Part of the project is thinking about how migration is being visualised. That is why we’re particularly interested in coming to Li-shire to talk to people and that’s why we asked you.

So, when we look at these visualisations you should be assured that we didn’t make them, so if you don’t like them or want to say something rude about them that’s okay; we aren’t going to be offended. We also want to emphasise that this isn’t a test of your ability to read them or get information from them; that’s not what’s being tested here. We just want to know what you think about them in a more holistic sense. So, if you like them tell us what you like about them; if you don’t like them tell us what you don’t like. We want genuine responses so please speak up and don’t feel like you have to say what everybody else is saying. If you don’t like something that everybody else likes and vice versa we want to know about that.

You’ve signed the consent forms, and one of the things about that is this is a confidential space so we won’t go and tell people outside the room what you’ve said without using a pseudonym, which I’ll ask you for at the end of the session. Similarly you shouldn’t talk about what people have said outside the room in ways that Voldemort identify them. But that does mean that you can feel safe when in the room to talk about whatever you like.

First of all we’ll talk a bit about your general awareness of visualisations and the diary keeping. And then we’ll look at visualisations and then have a discussion about the visualisations that you’ve seen. Is that clear to everybody? ((Agreement))

((Housekeeping remarks))

## How aware of data visualisations were you prior to participating in the study?

RH Before you started doing the diary keeping and before I was in touch with you what kind of awareness of visualisations did you have?

Redrum None whatsoever, if I’m honest.

Storm Just ones I see on the news in the morning.

RH What kinds of ones did you see on the news?

Storm When they’re talking about statistics like house statistics or economics and things like that they always have statistics to show things going up or things going down and stuff. They always have lots of different visualisations.

Voldemort I think one of the recent ones that was in the news was the Scottish vote: how many percent are going no, how many percent are saying yes. I never really took a lot of notice; it didn’t really bother me to be honest because I never thought they’d say no anyway.

RH I’ve just realised that we need to say our names for the transcriber. It was Redrum that spoke first after me, Rosemary, then Storm and then Voldemort. Is it Voldemort or Voldemort? [RLH – clarifying whether to use full name or nickname]

Voldemort Whatever.

RH So, if you wouldn’t mind going round and introducing yourselves.

J. C. I’m J. C. .

Katniss I’m Katniss.

Harry I’m Harry.

RH So, you’d seen some about the referendum but you were thinking?

Voldemort It’s never really bothered me to be honest. It was always the people that wanted to stay in the UK, I always thought they’d want to do that.

RH So, did the polls reflect what you thought, the ones you’d seen?

Voldemort It was closer than I thought because I thought more would probably want to say in the UK. What was it, 55? I can’t remember the final outcome to be honest, but I think 55% wanted to stay. I reckon it was something like that.

Redrum I think I had seen them on the news before but just not put two and two together.

RH What do you mean not put two and two together?

Redrum Like realised what they are. Obviously I’ve seen weather maps and this, that and the other, and table results and things, but just not…

RH You mean you’ve not thought about that they were data visualisations?

Redrum Yeah, probably.

Storm We see them all the time with score sheets and shows and stuff.

RH What shows do you mean?

Storm Well, Redrum does a lot of horse eventing, so I don’t know if they display it on big displays, the competition results and stuff.

Redrum They get put up on a score board.

RH What about you two?

Harry I don’t know. I don’t really have a time to look at a lot of telly. I suppose the job I’m in, I work for an accountancy, so I suppose there is data visualisation. I have to make the graph for it to be there.

RH So, you’re the one doing the data visualisation?

Harry Yes. Like if people want to see the comparative, for example, we have to produce the information so that it’s there for the comparatives to be seen.

RH Right, so you were quite aware then to a point by the sounds of it?

Harry Yes.

Redrum That sort of thing.

RH Right, so it’s more like a table.

Katniss I’m just a hairdresser so I don’t see graphs and stuff. ((Laughter)) I see it on my Daily Map app and that’s it.

RH What kinds of things do you see on the Mail app?

Katniss Football results. That was really it that I could find.

J. C. You do see them every day I think, but you don’t think of it as being data. It’s a bit difficult to explain really. You do see them but you don’t think anything of it. You just see it as information; but you don’t look at it in depth and think oh that’s data visualisation sort of thing.

RH So, it’s just…

J. C. It’s just there and you look at it. You look at all the information and it’s there clearly laid out for you so you can read it. But then I suppose once you’ve read it then you just disregard it, I suppose.

RH So, perhaps a bit like what Redrum was saying about not realising that they were data visualisations?

Redrum I got a bit confused when I first read through the leaflet; I thought this sort of thing was stuff that was too big for a computer to be able to work with. I didn’t think it was anything to do with this, if you see what I mean.

RH You’re right to pick up on that because there’s the big data which is the stuff that doesn’t fit on the computer. Then a lot of the time the visualisations we see are based on smaller data. So, that’s a good point.

Redrum I think I was maybe looking for something too advanced or something.

RH We don’t always know though, do we, what kind of data these are based on.

Redrum Whereas all these everyday stuff I do come across is all pretty much manual stuff or just basic stuff you can do on a computer.

## Did you encounter many visualisations?

RH In general did you come across many visualisations? Did you encounter many over the last week during your diary keeping?

J. C. No.

RH You said you come across them every day but now you’re shaking your head.

J. C. You do come across them every day. Like for instance I read the Farmers’ Weekly and in the back of that there’s a farmer’s section, so it gives you the price of say wheat for this year compared to last year. You look at it but you don’t think oh, that’s a visualisation. I suppose really it is a visualisation but at the time you don’t realise.

RH Right. So, did you write about that one in your diary?

J. C. Yes, I did write about that one.

Harry I will be honest in the last week I’ve hardly had time. So, I did go on the internet last night and find both of these, because I just don’t know where my last week has gone. I’ve not sat and watched any telly. I don’t think I’ve been at home a single night.

RH So, you were expecting to see them on the telly?

Harry Yeah, I think so. Like if you watch the news and everything. But I get home, have tea and then nine times out of ten have to go out again.

Storm I think television is the most likely place you’re going to see a visualisation because it’s a very easy way to describe sometimes a lot of information. It’s easy to portray to a lot of people for everyone to understand the visualisation. When they say the column is this big and this is this big you can clearly see that one is bigger than the other.

Voldemort I think if you were to go home and say where would you go and find some visualisation I would go and sit down and watch the half past ten news because I’m pretty sure there are always graphs and stuff coming up on there showing different things going on in the world. I’m pretty sure you’d find them. I never really think about it because I’ve not really sat down and watched the news in a long while; only occasionally. But you always see information coming up.

RH So, did you see many?

Voldemort A few. I don’t watch a lot of TV; only sometimes before I go to bed I’ll probably switch the news on. I never really took a lot of notice of it to be honest. But I didn’t see many. One of the big ones, like I read the Farmers’ Week, I read it every week, and there are always a lot of graphs in there. They have a weekly poll, I can’t remember what the last one was this last week, but it’s something like: do you agree with the badger cull, yes or no? And obviously people vote in on the website, yes or no, and it’s done in a round pie chart sort of thing. They have one in every week. Have you seen that?

J. C. Yes, I’ve seen that.

Voldemort They have a different topic every week with a different question, and then you’ve got to vote on next week’s as well.

RH So, that particular visualisation is tied in with your next week’s thinking; so it’s quite interactive then.

Voldemort Yes. What it’ll do is underneath the results of the last one it’ll show next week’s topic. It’s always something quite current and topical in the agricultural news and they’ll be asking people’s opinion of what do you think of this, vote yes or no; or how many of so and so do you think we should have, and all that sort of thing. Then they broadcast the results, which I always find quite interesting. I can’t quite think of what they are. I should have brought them with me.

J. C. The big one at the minute is the milk prices with the dairy.

Storm There are a lot of visualisations going around with a bottle of milk.

J. C. Yes, I’ve written that one down.

Storm I didn’t think about it, but on the bottom it shows you how much the farmers are paid and then how much the supermarket makes. That’s quite a good visualisation and that’s something we probably actually see quite a lot when you think about it.

RH The milk bottle imagery there does that hit home or does that make it quite striking?

J. C. It makes it relevant to the subject. Instead of being just a bog standard pie chart it actually is relative to the subject.

Katniss I haven’t got any of this. I have seen that one though.

Harry We’re just accountant and a hairdresser, that’s it. ((Laughs))

RH Can you email that to me?

J. C. Yes.

## Which were particularly noteworthy?

RH Were there any that were particularly noteworthy that you saw and wrote about in your diaries? Any that struck you?

Harry The main one I did really was I found one on weather data. There were lots of different graphs all on the same page, and it was showing you how bad the winters had been over the last goodness knows how many years, and the average summer temperatures over the years. It’s quite interesting to see how much it goes up and down, if that makes sense.

RH So, it was about the longer weather patterns.

Harry Yeah.

RH Why did you find that one striking? Why did it stick out for you?

Harry It was the only one I really found; I quickly did it last night. I don’t know. I think it’s because when you go on Facebook at the moment it’s all these newspaper articles about they’re predicting the worst winter since forever.

Voldemort They do this every winter time. Like every springtime they predict the hottest summertime. One day they’ll get it right.

RH So, it was something that stuck out for you because that was what you found basically?

Harry Yes.

RH There was one that you were thinking about. Talk to us about Strictly.

Katniss I only watched it that one time so I can’t really remember. But they had like a scoreboard and it was live I think, and it shows everyone’s results. I think it shows the last week’s results, then all the results they get. Then it shows you each judge and what couple got what on this big table. So, it’s quite good for a graph.

RH What do you mean for a graph?

Katniss Well, they can be pretty boring, can’t they?

RH In what way? Tell me about that.

Katniss I don’t know.

RH This is really interesting to us about how people relate to graphs. If you think they’re boring then we’d love to know why that is; what might make them more interesting for you. Tell us what it is that is boring about them.

Katniss I don’t really know because most of the stuff that you get in a graph is pretty irrelevant to me.

Voldemort It depends if you’re interested in it. If you’re not interested in what the graph is talking about then it’s of no interest to you anyway.

RH Right, so subject matter is important.

Harry Sometimes tables and graphs can be a bit boring because there’s too much data as well.

RH Is there an example you have in mind?

Harry Only one from work, which won’t be relevant to anyone else. But my boss makes me do a lot of comparison ones on fertiliser prices from years past. Sometimes we’ve got ten years of fertiliser prices that you plot on a graph to see how trends have gone. But ten lines across a graph can be a bit too much going on, so you can’t really see the benefit of seeing it all. So, sometimes I take a few lines out and try and do averages across two years and use those. Because then the data actually means more; rather than having ten lines that you just look and see a mass of lines crossing each other. You have five lines but the five lines actually mean something and you can actually understand what you’re trying to say from it.

RH So, there’s something about the actual way that the data is being depicted as well and whether that has meaning not just in terms of the subject matter but in itself as well.

Storm Yes.

## What kinds of reactions did they provoke?

RH What kinds of reactions in general did these visualisations that you looked at for your diaries provoke?

J. C. I think when I looked at some of the visualisations I was actually surprised with the data that was shown. Because say for instance I looked at the year on year comparison in the wheat prices in the Farmers’ Weekly I was actually surprised at the data. For instance last year the wheat prices were quite high, but this year they’re quite low, so I was actually surprised at the difference in values.

RH So, the actual data jumped out you as being a surprise. Were there any other reactions?

Harry To be honest, I didn’t find any visualisations; I’m just remembering.

RH You didn’t find any?

Harry Well, I did. I stole her Strictly one. I’ve been really bad.

RH You only came from holiday at the weekend, didn’t you?

Harry Late hours of Saturday, yes. I had over 1,000 invoices to go through on Monday; I’ve been a bit busy. ((Laughter)) But I do a lot of visualisations at work. We do a lot of comparisons on what we’re doing: the relevant price of fertiliser in comparison to how people are ordering. So, we’ll plot different trends of different products against price, because price often influences what they buy. So, we sometimes track that, and relevance of tons against price to look at how deflation has affected turnover through the business.

RH So, in general then if you could each have one word that summed up your reactions to data visualisations what would that be?

Katniss Does it have to be one word?

RH It could be one word.

WA Ideally one word.

Katniss It’s more interesting than what I thought.

Storm I think it was surprising for me on how things change so much. With like the weather one that I looked at it was major differences, so it was quite surprising for me.

Voldemort I’ll go with surprising.

RH For the reasons you talked about.

Voldemort Yeah.

Voldemort Intriguing. It depends on what it is and whether I’m interested in it again or not. If I’m not interested I’m not going to look at it. I know a lot can be a bit confusing, but in the farming magazines they do a lot of chemistry and what works best on controlling certain weeds, and they’ll have percentages of control they’ve found in trials. I find that fascinating because obviously I want to apply that on my own farming business. So, that sort of thing I will purposely look at when I see the title of it, like ((0:22:55?)) controls in wheat last year; I will look at all that and see what it’s got to say about it.

Anything on politics, or whatever they’re squealing about right now, I’ve no interest in whatsoever.

RH So, it’s intriguing and fascinating when it’s something that you think is potentially useful.

Voldemort Yes, when it’s something that I’m interested in and want to know more about. But if it’s something that I have no interest in, like student tuition fees or something, if that was on a graph in there I wouldn’t be interested in it to be honest. Because I’ve never been a student I’m not interested in it so I’d never look at it anyway.

RH What would your word be?

Storm Interesting, just because the types of visualisations I suppose I end up looking and working with. I’m interested in comparatives; that’s what we use them for to understand data.

Redrum I’m surprised again, because listening to all this now I’m actually surprised I use it every day, not realising what it is.

RH When do you use it?

Redrum I work with horses on the yard so we have different forms and files and things when all the horses have been shod, so you can compare one month with the amount of work they do to how long they were last shoed etc. And then on feed. So, you’re using figures and this, that and the other all the time. But as I said before I thought this was all above all that, so I hadn’t put two and two together.

RH So, it seemed distant and irrelevant perhaps?

Redrum Yes, maybe. One thing I used on the diary was a tacograph a paper version, because that’s got all the data you put on it and things before you ((0:25:10?)).

RH Yes, absolutely. That’s a really good example. I’ve not come across that example before.

WA That raised an interesting point in that maybe what we think of visualisations isn’t always what we expect. Quite a lot of you used surprised or had a reaction of surprised, which is interesting to hear.

I think as we move into the next part of the focus group and you look at some visualisations, that maybe you’ve seen, maybe you haven’t seen before, maybe that will help clear up what we’re actually looking at. I’ll just quickly run through the next stage of what we’re going to do. Each of you will be given a packet like this which has several parts in it, and I’ll briefly run through each part. So, what this next section will be is we’ll present you some visualisations online. You go through them and basically as you look at each one, similar to what you did in the diaries, you have a form here with some prompts getting you to think about three aspects of each visualisation. Now, these aren’t specific questions; you don’t have to answer them all. These are just designed to give you some food for thought as you fill in each of these sections. You fill out one of these for each visualisation you look at. I’ll have more on that in a moment.

In addition to that as you look at each visualisation we have this larger chart which is basically a two by two grid. There are two aspects we’d like you to think about: One, from top to bottom, is whether you learned something from the visualisation or if you didn’t learn anything from the visualisation. And equally, from left to right, if you didn’t like it or if you did like it. And this is just a gut feeling; it isn’t anything we ask you to put a specific point on. But we do ask that if you really liked it put it more over on the right-hand side. If you really didn’t like it put it over far on the left-hand side; in fact you can put it outside if you really didn’t like it. This is designed as a gut feeling as you think about the visualisation.

Redrum Can you be on the fence or have you got to put it in one of the boxes?

WA On the fence is fine. Each of the visualisation has a little sample, which you then stick wherever you think it belongs. And I think Rosie has an example of that.

RH Yes, I do.

WA In that example Andy – different Andy – has placed some visualisations that he really liked over on the right-hand side; and the ones that he for example didn’t learn a lot from further down. That’s just an example. This is purely a gut level instinct and your opinion on it.

Now, we have on the website that you’re going to look at several visualisations. You don’t have to look at all of them if you don’t have time, but we do ask that you go through them in order, so start from number one and go down as many as you want. If you get through all of them great, but it’s not a requirement because it’s not a test or anything.

The important thing to do is to look at the visualisations; write one sheet per visualisation; and stick your little screen shot onto the chart.

RH Number four is on paper so we’ll put that on the table when you get to that.

WA I think what we’ll do is have three here and three over there. I think that’s easiest and gives you some room. Do you have any questions on this next part? So, write or look, write and stick.

((Group does exercise))

## Let’s start by looking at where you placed each visualisation on the grid.

WA Thanks for taking part in that section. We’ve now got all of your goods up here on the board. It’s interesting to see some similarities and differences come out of this. Looking at the first visualisation that you saw, which was the BBC sports one, we see that some people moved it over in the right-hand side, which meant that they liked it.

RH Most people liked it.

WA Most people liked it, except for J. C. and Storm. Can you tell us a little bit about that?

Storm I just didn’t see the point of it really. It’s just a strange thing to have a visualisation about: put my height and my weight in and compare me to what sport I might play is a bit random. It’s got nothing to do with ability or anything, which a sport is an ability really. I didn’t dislike it – maybe I should put it more on the middle.

WA Would you like to move it?

Storm Yes, on the line, on the fence.

Redrum I disagree.

RH Tell us why?

WA Where did you put it?

Redrum I liked it and learned from it.

WA What did you like about it?

Redrum I’m not being discriminative against people but a short and fat person couldn’t win a gold medal against Usain Bolt. ((Laughter)) So, his physique, weight, tallness or whatever gives him an advantage to sprint; whereas he might not be able to throw the hammer.

WA What did you get out of the visualisation itself?

Redrum I like the way it’s set out. You filled in the data and then it automatically put you where you should be, and then you can compare yourself to the other people.

WA What did some other people think of that specific one?

J. C. I didn’t like it because I thought it just looked like a lot of little dots to me. I know that’s more or less what it was. When I put my height and my weight in and it came up I was a bit oh, I didn’t like the look of it.

WA Didn’t like it; what came up?

Voldemort Made you out to be obese, a sumo wrestler! ((Laughter))

J. C. It wasn’t offensive because that’s the way I am; but I was a bit shocked that I was compared to someone else like a wrestler. ((Laughter)) I was just a bit shocked. I thought it was a bit discriminative. I just felt a bit unhappy about it. I was just a bit unhappy that that’s what I was compared with.

WA When you typed in your figures how did you feel when you got your result back?

Voldemort I was compared to a female discus thrower ((0:33:38?)). I was mortified. ((Laughter))

Storm I was quite happy because I came out as a woman footballer.

RH You were the one that had the greatest liking for that visualisation.

Storm Yes, I just liked clicking on all the moving dots as well to see what the tallest person actually did and what the heaviest person actually did.

WA Oh, so you looked at the extremes?

Storm Yes.

Harry Yes, me too.

Storm I could see that I was in the middle so I looked at the person that was the shortest and the lightest, and then looked at the person that was the tallest and the heaviest.

RH So, you spent some time looking around and seeing what was there.

Storm It was the one I looked most at.

WA Let’s think about the second one that you looked at which was the migration census.

Harry Best not talk about this!

WA I see two people put it way up in the liked and learned category.

RH Two still liked and learned.

WA Then we had three disliked it. What were some of the things that you liked about that visualisation?

Harry It was pretty. A lot of bubbles.

Katniss It was interesting and easy to find what you want, apart from my actual…

WA Apart from Skegness.

Katniss It was interesting. I really liked that one. It was my favourite.

RH Why did you like it then?

Katniss Just because of all the information it gave you and it was easy to find; easy set out like the others.

WA What do you mean set out?

Harry The information was laid out simply, wasn’t it?

Katniss Yeah.

Harry Like the minute you clicked…

Voldemort It wasn’t a problem with what was on the screen. It was just the fact you had that box search for Boston, you popped on another box, I’ll search unemployed and click on that ((0:35:37?)). I found it easy to use. You found it fascinating so then you type in oh, I wonder what London’s unemployment rate is.

Harry It’s user friendly, isn’t it?

Voldemort Yes, user friendly. But then I thought where are they getting this information from.

Redrum You’ve got two or three ways you can use it as well, whereas Voldemort typed in Boston I found that other bubbles formed more or less the shape of the UK but Birmingham was right on the south coast. ((Laughter)) So, I clicked on the bubble, or you kind of hovered over the bubbles and it flashed up Li-, Boston etc. And then you clicked on it and it brought the information up that way.

RH Whilst you were looking at that particular visualisation there were a number of things that cropped up for you that you expostulated, “Hey, what about this?” and, “I didn’t know that” while you were looking at them. So, can you, for the benefit of the tape, recall some of those things and tell us about them?

Katniss The inactive one I didn’t understand. So, there was employed, self-employed, unemployed and inactive – I didn’t realise that inactive was disabled people and retired people, which was quite interesting.

RH How did you feel about that inactive thing before Voldemort(?) said that?

Katniss A little bit confused because I didn’t know what it was.

Redrum Basically are the unemployed people perfectly capable of working but just lazy; whereas the inactive are unemployed for a reason?

WA The inactive bit on the census refer to people who are disabled, who aren’t working or maybe people who are retired so they don’t have a job. So, they’re not actively contributing to the economy according to the way this data was collected; that’s all it refers to.

Storm Whereas inactive is people who cannot be bothered to get a job?

RH That would be the official figures presumably through the census.

WA This is the census and they filled it out that way.

Harry There are a lot of people that would declare themselves employed in Boston.

Voldemort What percentage of people actually filled the census in?

WA A pretty high percentage.

Voldemort Because not a lot of people nowadays can be arsed to vote. If they don’t vote in elections they’re not going to be bothered to fill in a census. People are getting that they just don’t want to do it.

RH So, did you feel like you didn’t trust the visualisation because you had those doubts about who was filling in the census?

Voldemort No, I just think did they get everyone’s information; and I don’t think they could do because not everyone will have filled in the census. Do they have to do one?

Storm Isn’t it done by household now?

RH It’s a legal requirement.

Voldemort Oh, is it?

Storm I think it’s a household rather than a personal thing, so you fill it in for your household.

WA For your family or whoever is living there.

Voldemort I suppose it would be fairly accurate then.

RH Yes, and there is a fine for not filling it in as well.

WA When we were looking at that visualisation what were the feelings that came up as you were looking at it?

J. C. I disliked the bubbles because it seemed a bit full on and in your face. It actually made me feel a little bit dizzy because all the bubbles were moving around as you were hovering over them and moved the cursor. But if I’d known you could type it in, I didn’t see the bit at the top where you could type in your town. But when I got into say Boston, when I looked at that all the information was really clear.

RH There were a number of places that you were looking for that you couldn’t find as well. How did you feel about that?

Katniss A bit shocked because if Boston is on there then normally Skegness should be on there.

Harry It’s the closest one. I don’t know whether it’s because where we come from it’s our two nearest towns and it’s what you automatically look for. But in a census people aren’t necessarily going to be concentrating on those particular areas. It’s just because it’s near where we live.

WA When you were all looking at that what was the first place you looked for?

Harry Boston.

Storm Boston.

J. C. Hometown.

Storm It’s not my hometown. Boston just because I was intrigued on the immigration numbers. ((Laughter))

Harry And the unemployed.

WA When you were looking at that one was there anything that surprised you?

Harry No.

RH You were looking at the unemployment figures and it sounded like there was some surprise in the room at that time. But perhaps I misinterpreted it.

Katniss It’s because it’s kind of half and half, like half the town seems to be unemployed and half the town seems to be employed nearly everywhere you go.

Voldemort Yeah, that seems to be the case for just about every town you go.

Storm There are probably more unemployed than you maybe realise. I wouldn’t have thought that half the population in Boston were unemployed. That’s a lot of people. I know a lot of people in Boston are unemployed but I wouldn’t have thought nearly half.

WA Was it all of Boston or was it people who were born in the UK?

Voldemort Something like 47%, was it? I think a town like Liverpool was 53%.

WA Let’s move on to some of these other ones you looked at. Some of you got to the movie one – three people. And all of you did not like it or didn’t learn anything or didn’t learn as much from it. Tell us a bit about that.

Harry It was just the graph I felt as though I was back in a geography lesson looking at all the contours on a map.

RH Did you not like geography?

Harry I took GCSE geography. I don’t know; for talking about films it’s not the best graph to use, I don’t think.

WA What did it look like to you, the graph?

Katniss Waves.

Storm Sonogram.

Harry Yeah, waves; the contours on a map.

Storm It doesn’t seem like the right graph to use to depict that kind of information.

Redrum From a distance it almost looks like it’s half a graph and then mirrored.

Storm But there’s so much information on it; because you can hover across it and then that’s when it shows you all the different movies and things. It’s just a very strange way to show the information. I suppose because it’s lots of different colours they’re trying to show how much each box office made in comparison to how long it was in the cinemas. But it just seems like a strange way to show it over a long period of time. It’s a very long graph that goes right back to 1994 from 2008, so a lot of data.

WA Quite a long time then.

Harry Yes.

Katniss And I typed one film in and it wasn’t on there.

WA What film did you type in?

Katniss Mamma Mia, only because I went to see the musical on Saturday in London.

WA So, you couldn’t find what you were looking for?

Katniss No, but it only went up to 2008 and obviously that came out after.

Harry That was when we realised it was only till 2008.

Storm We hadn’t read the title.

Katniss I typed in Pretty Woman and that didn’t come up either.

WA So, when you were looking at this for the first time how did it make you feel?

Harry Bored.

Katniss Bored. Yes I lost interest.

WA Did you spend less time on it than the other ones you looked at?

Storm Yes.

Harry The minute I couldn’t find my film that was it; I was bored. ((Laughter))

WA How about you when you looked at it?

Katniss I was just a bit confused with all of it really so I just gave up. Because I like simple things, easy to find.

WA So, you found it complicated that one? ((Agreement))

Katniss Far too complicated for what it should be. It could be a lot easier than what it is.

RH I’d like to ask J. C. about Shakira and Rihanna.

WA You liked it and you learned something. Tell us about that.

J. C. It’s so simple, isn’t it, to understand.

Redrum Yes, it is simple.

J. C. Everything is clearly laid out. It’s not difficult to read. It’s simple; it’s got simple figures.

RH What’s simple? What do you mean when you say simple?

J. C. Well, the figures on there when it said about Facebook and the Twitter followers it says Facebook and it’s got the logo there and the number inside the logo or next to the logo, and then the same with Twitter. Then it’s got different percentages. It’s just really clear and easy to read.

Harry If it had been Kylie Minogue it would have been right off the page.

J. C. I would have, yes.

WA Are you a Kylie fan?

J. C. I am.

## Which subject matters interested you? Which did not? Did your level of interest in the subject matter affect your response to the visualisations? In what ways?

RH So, is there something about the subject matter as well?

J. C. Well, yeah, if you’re interested in those people like in music and that then I suppose it’s relevant. But I did think it was more swayed towards the female side because of the colours that were used. Perhaps if it was in blues or greens or something it might be more interesting to males. But because the colours are pink and orange and that…

WA Who would you say it was intended for?

J. C. I would say it was intended for females.

Storm I thought the opposite.

RH You didn’t like it, did you?

Storm No. I didn’t get that orange and pink thing because on it I think the Facebook thing is all in one colour and the Twitter thing is in another. I assumed the pink was something to do with Shakira and the orange is obviously to do with Rihanna, because she’s surrounded by the orange and she’s surrounded by the pink. To which I said to myself: well why are they showing how many millions of Facebook fans Rihanna has got, and Twitter, vice versa, when if they’re trying to show who’s more popular they should show both Facebook statuses and both Twitter things. I didn’t see the relevance of what they were saying. Shakira has got four million Instagram followers; but Rihanna might have seven – there’s no information there. So, you’re not actually learning anything. It’s just pointless data of two marginally dressed attractive women. That’s what I thought anyway. But that’s what I made of it from the different colours.

RH Quite a different response then.

WA So, the colours signalled it to you?

Storm Yes. Shakira was everything represented in pink and Rihanna was everything in the orange. But then some of the things are a bit of both. It was a little bit higgledy-piggledy.

WA You mentioned at the beginning that you thought it was for men. What makes you think that?

Storm Well, it’s all about fans and things. And I think both of them, being very attractive young women, probably have more men follow them. You look at the kinds of pictures as well that they have, promo pictures and that kind of thing, I think they’re probably going to have a lot of male followers. They’ve probably got a lot of female followers as well.

RH What promo images are you thinking about?

Storm Well, both of them don’t wear a lot a lot of the time. They are very sexual type pictures; very male orientated.

Redrum 57% of Rihanna’s Facebook friends are female.

Storm But you don’t know what percentage are Shakira’s.

Harry It doesn’t give you comparatives.

Storm No, so the data is pointless I thought.

RH So, quite different reactions there and different thoughts about the colours as well.

J. C. I didn’t pick up on the things Storm said but I do agree.

RH But you interpreted the colours in a different way.

Redrum If I was reading the paper I wouldn’t read that.

RH You wouldn’t read the article, do you mean?

Redrum Yes. It didn’t stand out at me as something to look at.

RH Because?

Redrum I don’t know really.

## Trust is an important thing in visualisations. Did you ‘distrust’ any of them? Which ones? Why?

WA Of the visualisations you looked at were there any that you trusted, or maybe the opposite, didn’t trust?

Redrum In what way? Trust the data or…?

WA Trust the data or trust what you were seeing was correct.

Storm The first census one I suppose is the one I trusted most.

Harry Yes, I was going to say the migration in the census would be the one I trusted most.

RH And why is that?

WA What signalled that to you?

Harry I think with the unemployment figures and everything it was giving.

Redrum Is that just because you assume Boston is like that anyway, it kind of tallies with it?

Storm But also the census is something that is sent out to everyone that you are supposed to fill in; it is something that you are supposed to fill in correctly. It’s government monitored, isn’t it, so as far as that information it’s not going to be manipulated. Whereas that…

Harry That migration in the news one.

Storm Yeah, could be manipulated by the BBC because they might want to say well, the BBC do more coverage about migration rather than maybe the tabloids; because that then is beneficial to them because they say they’re bringing more news to the public.

WA So, you’re comparing the two migrations.

Storm Yes.

WA So, did you trust the migration in the news one more or less?

Storm Less.

Harry Less, yeah.

WA What did other people think? We all managed to get to that one so maybe we can talk a bit about that one. Did you trust it? Some people say less.

Redrum I’m pretty on par with them all really.

Katniss If I had to choose I’d choose the migration on the census.

Harry As the most reliable.

Katniss Yeah.

WA What signalled to you that the news one wasn’t reliable or was less trustworthy?

Katniss Because it could be tampered with more than the other one.

WA What could be tampered with?

Katniss Because it says one says how many words you’ve used, so somebody could just type in loads of words one day and just get it on there.

WA Somebody; describe what you mean?

Harry You mean like somebody at the newspapers?

Katniss Yeah.

Harry We’ve all seen the newspaper scandals that people can write the article so that it’s better for them, even if it’s not what the person has actually said.

WA Oh, so you mean to make it seem more exciting.

Harry Yes. But the migration in a census, because it’s a government thing you would expect that to be the information they’ve actually been supplied with; it won’t have been tampered with to make it look better on their part.

Storm They won’t be trying to benefit from it; whereas the tabloids would maybe try to benefit from putting something into the paper because they want to sell more papers.

WA I see.

RH So, exactly what is it that you feel that you don’t trust here? Is it the data or is it the media? Is it the newspapers?

Harry I think it’s the media because you’ve seen it all, haven’t you, like the newspaper scandals. It went on in court for months. Not being funny, but if it can happen in one newspaper it can happen in them all.

RH Are you thinking about things like phone hacking when you say it’s been in courts?

Harry Yes.

Redrum I actually won an equestrian award in a magazine, Horse and Hound. They did an interview with me for an article. Then when I read the article it was a lot different to what I’d said.

RH So, did that affect what your feelings about the media in general?

Voldemort Did you feel a bit like Tulesa?

Redrum Yes. There’s no point in them interviewing you…

Storm If they’re going to make it up anyway.

Redrum … If they’re going to write what they’re going to write anyway.

RH So, it wasn’t the visualisation then in this particular instance that wasn’t trustworthy; it was the way the media had...

Harry Knowing where it had come from.

WA So, the source of that information. Okay.

## Which visualisations were easiest to understand? Which were hardest? Why do you think that is? (chart type; colours; interaction design; annotation (is more or less info needed?); layout)

RH Which of these was the easiest to understand that you looked at?

Katniss Migration in the census. ((Agreement))

Voldemort When you got passed the bubbles I think.

Katniss I liked the bubbles.

RH What in particular made that easy to understand?

Storm Just how the information was laid out.

Redrum It was that type of graph or chart. If the Olympic sports information was in the same style as the census…

RH When you say style can you be precise?

Redrum Like the percentage figures: so if 90% of judo players were five foot high weighing blah, blah then you’d see it…

Storm Better. ((Agreement))

Redrum Whereas if all your census migration people are in dots scattered about that chart then probably your thoughts would change. So, I preferred the information in the Olympic sports one, but it wasn’t as easy to read as the percentage figures on the census one.

RH So, the subject matter of the BBC one interested you more?

Redrum Yes.

WA Was there anyone that thinks differently about the one they found easiest to understand? Anyone not think it was easiest to understand the census one but rather another one they looked at?

Redrum The newspapers one is easy to understand because you can work out very quickly that one icon equals a million. But the figure is there as well so it tells you.

RH So, it was quite immediate then.

Redrum Yeah. It’s easy; there’s little information there. If they had a blurb about how many Facebook fans and named a few of them then you’d get bored and would not take it in so much.

WA Let’s flip and say: which one did you find the most difficult to understand?

Katniss The movie one.

RH Why is that?

Katniss I just wouldn’t lay it out like that because it doesn’t make sense. I wouldn’t have one bit up there and one bit down there; I’d have more than one line to show upwards and go upwards, instead of down and up.

WA So, maybe you’d start from a base of zero and then have everything from that base.

Katniss Yeah.

RH So, you could compare.

Katniss To actually show movies and stuff, it’s just a bit of a weird way to put it. I don’t understand it anyway.

RH So, you wanted a more obvious comparison?

Katniss Yes.

Redrum Do you think that’s maybe the way you’ve been brought up with graphs? You go along the corridor and up the stairs type of thing, don’t you, at school?

Katniss Maybe, yes.

Redrum Whereas if we were born and bred into the charts that you use – I didn’t get to the movie one.

Katniss It was ever so complicated.

Redrum But if you’re brought up with that then you’d maybe have a different opinion about it.

RH Were there any other bits of any of them that you found hard to understand or struggled with?

Voldemort Not on the actual visualisations.

RH You felt comfortable using the computer environment, using the interactive stuff? You knew where to click? ((Agreement)) You felt comfortable reading the graphs, except the one you talked about?

WA Aside from not seeing Skegness. ((Laughter))

Harry That’s disappointed me no end.

## Tell us some things that you learnt from looking at the visualisations.

RH Can you tell us anything you’ve learned from looking at these; any facts that spring to mind that you can remember?

Katniss There’s a lot of unemployment.

WA That was a message you got out of that?

Katniss It was out of that one, yes.

Storm My height and weight makes me a handball player, apparently.

Katniss I’m an Egyptian football player, a male one. ((Laughter))

WA What are some other things you’ve learned or remembered from them?

Harry I think it would be the unemployment is the one that sticks in my head.

Storm I’ve learned that inactiveness means you’re either disabled or retired. I didn’t know that.

RH Although you didn’t learn that from the visualisation.

Storm I wouldn’t have asked the question if we didn’t know it was there.

WA Fair enough.

Storm So, it’s an outcome of the visualisation.

RH That’s a good point. Actually whilst you were looking at these it was quite a shared experience. You were chatting about them and asking each other questions about how to use them and what kinds of things things meant. That was really interesting to see actually.

Were there any facts that you two picked up on?

J. C. I think what we did look at, like when we got into it all the information was relatively clear. Probably the only one that I struggled with was the sports one because it was just all so compact I thought; the series of dots were all really close together.

Voldemort It took me a while to fathom that out. I was like I don’t really like these dots; then when I was clicking them I was like oh yes, that sport needs a bit more height and weight than that sport. I found that quite interesting. But at first I looked at it all and thought that’s all just a load of dots bunched together. I found it quite interesting clicking on what sort of height and weight I am and what other people do in the Olympics. I found it quite interesting.

RH So, spending a little bit of time and thinking about where you fitted in helped you to go a bit further?

Voldemort Yes.

WA You mentioned interest, which is what helped you get through that. Were there any topics that you found really interesting, or ones that you found boring that you just didn’t care for?

Voldemort I found the third one we did ((0:59:51?)).

RH The migration in the news?

Voldemort Yeah. I was just flicking through that; it just didn’t catch my eye. It was like this is just boring. I just looked at it and thought I don’t know what this is going on about. I clicked through, clicked through; just didn’t enjoy that.

Harry I thought there was too much information on that one because every time you moved your mouse all this information popped up everywhere. I didn’t like it.

## Which subject matters interested you? Which did not? Did your level of interest in the subject matter affect your response to the visualisations? In what ways?

WA Focusing on the subject matter: there were two of them you saw about migration; one about sport; one about movies; some of you got to the one about celebrity music. Were there ones that you found more interesting than others as a subject?

Harry Migration.

Storm The census is quite interesting because there is more than just the migration on there. There was more information on there if you clicked through. So, that was probably the most interesting because obviously the thing that probably attracts most people is to look at the migration and that kind of thing; but there were other bits and bobs to see as well.

RH More to catch your eye.

## What do you think helps you to be able to understand a visualisation?

RH Thinking about these visualisations, the ones that you’ve looked at in your diaries and any others that you’ve seen before the diary keeping started, what do you think helps you to understand a visualisation? What kinds of things about visualisations themselves do you think are helpful in helping you to understand what they’re telling you?

Storm It’s clear.

RH What do you mean by clear?

Storm Well, the first one, the Olympics one and the movie one were both not very clear to look at to understand what the data was trying to show. Whereas if you looked at the migration one when you clicked on the information it was very simple: it said immigration this; non-UK this. It was self-explanatory; you didn’t have to look into it more to be able to understand it. And if they’ve got a lot of data sometimes too much data can be explained and then you lose track of what it’s even actually worth.

Voldemort Another thing it depends what sort of chart form. I never got onto that one with the great big waves, but that would just send me boggling.

RH The movies one.

Voldemort But if it’s just in straight, I think you call it a bar graph…

Harry Bar chart.

Voldemort That’s it, when it’s just in a box, and says 80% or 70% or whatever, it’s just easy to understand. But all these wavy lines and dots all over the place it just sends you crazy and you just lose interest. If it’s a simple bar chart it’s a lot easier to understand I think than the other ones.

RH You mentioned bar charts as well earlier, didn’t you, Katniss?

Katniss Yes.

RH Is there anything else that you think helps you to understand them?

Redrum I think because they are visualisations you are looking at them. For example the bubbles, the bubbles drew me in more. Whereas if somebody rang me up and tried to explain it you’d probably go and make a cup of tea and leave them there chatting in the background. ((Laughter)) It wouldn’t have the effect. Whereas you can read it your own way if you’re looking at it; then you can always read it yourself and hear yourself talk about it as well.

## Do you think visualisations are an effective way to understand data?

RH So, actually you find the visual itself if a helpful way to understand. Do other people feel like that that these visualisations are an effective way to help you understand data?

Harry Yeah.

Katniss It’s a lot better than sitting there and just reading it all when it’s all just typed out; it’s quicker to understand it.

J. C. It’s a bit like a summary. Often you see like an article which has got hundreds of words in; but then sometimes you see a chart or a graph at the end which just gives you all the information that you want in a little box. So, it’s a quick summary I think.

RH Is there ever a time when it doesn’t feel like a quick summary?

Katniss The movie one. When you’ve got to just sit there, like the wave one, you don’t understand, so you’ve got to sit there for ages to try and understand it.

Storm And to be able to see the values that it was trying to show you had to kind of hover on it because there were so much; you couldn’t really see what values it was trying to show you. Say how much it made at the box office, you couldn’t see that, it wasn’t obvious straightaway; you had to hover across it. I think the colours make a difference as well.

Harry I was going to say colours. I think it was on one of the ones in migration in the news, it used a line graph to show you immigrants and asylum seekers and everything. There were two pinks on there that were very nearly similar in colour, and both those lines were near each other so it was hard to work out which one was actually which because the colours were too similar.

WA Did other people find that?

RH General nods.

Storm Also the movie thing, the colours they’d picked to do that movie one are quite dull and droll colours.

Harry Dull and boring.

WA What would you have chosen?

Katniss Bright colours like purples and blues and greens, just so it’s brighter.

Storm Primary colours. I think primary colours…

Katniss They attract you in more.

Storm … they attract you in more; but they’re much easier to read. They don’t get mixed. I suppose what they were trying to do from the little graph on the side which is the index, they were trying to show the ones with the lighter colour, the ones that didn’t gross as much; and the ones in the darker colour were the ones that grossed more. But they just didn’t seem the right colours to do it in.

WA So, the wrong shape and the wrong colour? ((Agreement))

## Are there any skills that you feel you might need to help you understand visualisations?

WA When we think about visualisations in general do you think you need certain skills to be able to understand them?

Harry No, I think anybody can understand a visualisation really. As long as the correct graphs are used to make it clear.

WA What do you mean by correct?

Harry Not complicated graphs; simple graphs like line graphs and bar charts and pie charts I think anybody would be able to follow.

RH So, particular kinds of graphs?

Harry Yes.

RH Are these graphs you’ve come across before?

Harry Yes.

Redrum It would depend on the depths of the…

Harry Subject.

Redrum Yeah, or the actual visualisation itself.

Voldemort The data.

Redrum Whereas the sports one for a ten year old wouldn’t be able to read it as clearly as he’d be able to read that.

RH He’d be able to read the Shakira one.

Redrum Yes.

WA What about other people; what skills do you need, if any?

Redrum Depending on where they are, you’d need basic computer skills to find those. But if there’s one downstairs on the noticeboard then anybody can look with their eyes?

Voldemort Being able to read – I know it sounds daft but some people are not able to or don’t understand it; but some people with dyslexia, I don’t know how they would see it.

Redrum I was going to say people if they’re dyslexic, or what’s the one with numbers?

RH Dysnumeric.

Redrum Something like that. It might all go round in their mind if it’s just figures.

RH Those are really good points actually. We haven’t talked about that before with our focus groups.

WA Do you have any last thoughts or burning comments you want us to know about? Or thoughts you’ve had about visualisations in general? Or any questions you might have for us?

J. C. I think if you can try and keep them as simple as possible because I think that’s when you’re going to keep most people interested.

RH When you say simple what do you mean?

J. C. Just not like how the movie chart was. Just try and keep them easy to understand and not overcomplicate them when it’s not necessary.

Storm I think the visualisation needs to be dependent on the market you’re talking to. The movie one might be really relevant to someone who sits and looks at box office turnovers all the time; but that to us is obviously not very relevant. I wouldn’t look at that, whether I came across it in the newspaper or not because it’s not relevant. So, the relevance of the information and what the person wants to take from it I suppose also has an effect on what the visualisation should look like as well. That’s why l like when you see the ones on the news, the BBC and stuff, they’re always fairly simple visualisations because they’ve got the whole population watching really. They’ve got people across the whole spectrum so they need to make it simple so that most people understand it rather than just some people understand it.

WA Sure, so you’ve got a wide audience.

Storm Yes. So, your audience is really going to affect how you put it on. That is why that is very simplistic.

RH The Metro one.

Storm Yes, because a lot of people will read it; it needs to be simple for most people.

Redrum Like J. C. and Voldemort said at the beginning when they read the Farmers’ Weekly all the stock prices and grain prices and everything mean everything to them; but to me and you we kind of look at it, see a few figures but it wouldn’t mean anything as such.

RH So, knowing your audience is an important factor. Thank you so much for your contributions tonight. It’s been really fascinating talking to you and you’ve raised some really interesting and thoughtful points, and talked about things that we haven’t talked about with other focus groups as well.

I need the notes that you made. I also need you to tell me a pseudonym, so a favourite name that you want to be known by in the research.

WA An alter ego.

Storm Can I be Storm please?