



SDS PODCAST
EPISODE 213
WITH
ANDY KRIEBEL
&
EVA MURRAY



- Kirill Eremenko: This is episode number 213 with the legends of data visualization, Andy Kriebel and Eva Murray. Welcome to the SuperDataScience Podcast. My name is Kirill Eremenko, data science coach and lifestyle entrepreneur and each week we bring inspiring people and ideas to help you build your successful career in data science. Thanks for being here today and now let's make the complex simple.
- Kirill Eremenko: Welcome back to the SuperDataScience Podcast ladies and gentlemen, super excited to have you back here on the show. Today, we've got two very, very special guests, Andy Kriebel and Eva Murray. Andy and Eva have both been on the podcast before and you can find their personal stories and journeys in episodes number 91 and 127 respectively and what we discussed in today's episode is their brand new creation, the Makeover Monday book.
- Kirill Eremenko: So some of you may know, especially if you listen to the podcast or if you follow either Andy or Eva, that they host the Makeover Monday Project, which you can find at makeovermonday.co.uk, where they take visualizations, one visualization per week, they supply the datasets to everybody who's interested and then they redo that visualization to make it look fantastic and look much, much better. So just random visualizations that they find on the internet. Then they also critique other people's works, provide advice, they will have these discussions, there's a whole community around Makeover Monday and now they're super excited to announce the launch of their brand



new book, Makeover Monday, which you can pick up on Amazon.

Kirill Eremenko: So this episode is all about visualization and why it's important for data scientists and machine learning experts to know how to visualize data and also you will find some tips that Andy and Eva will be sharing with you from their brand new book. Very, very excited about this episode, can't wait for you to check out amazing tips. By the way, this podcast is available in video version if you would like to see Andy, Eva and me chatting, you can find it at www.superdatascience.com/213, or on the SuperDataScience YouTube channel. But if you're listening to this on the go, then no worries, you'll get all the value from this audio version of the podcast as well and so on that note, without further ado, I can't wait to bring to you Eva Murray and Andy Kriebel from Makeover Monday.

Kirill Eremenko: Welcome back to the SuperDataScience podcast ladies and gentlemen, to this super special episode where I have not one, but two guests, Andy Kriebel and Eva Murray calling in from different parts of Europe into this show. How are you guys going today?

Eva Murray: Good.

Andy Kriebel: Great, how are you?

Kirill Eremenko: Awesome. So Andy, you're in the UK, what is it, 6:30 for you right now?

Andy Kriebel: 6:39, yes, it's early.

Kirill Eremenko: 6:39.

Andy Kriebel: And dark.

Kirill Eremenko: Yeah, it's pretty dark and I mentioned that you look like you're about to get on your bike again, as you do everywhere.

Andy Kriebel: I am, yeah, yeah.

Kirill Eremenko: All right, gotcha. And Eva, where are you calling from?

Eva Murray: I'm calling from Nuremberg, it's daylight but cold so I'm glad that we're doing this before I have to go out. So it has the chance to warm up a bit more.

Kirill Eremenko: Nice and please, dear listeners forgive our guests because they haven't spoken much, as Eva correctly pointed out, since the morning, so might need a bit of time to warm up. Anyway guys, very excited to have you on the podcast. I've had each one of you separately on the podcast but now, it's like double trouble, both of you at the same time. You are amazing guests and first of all, I wanted to congratulate you on your book that just came out, the Makeover Monday book. Congratulations, how are you guys feeling about it?

Andy Kriebel: It's been overwhelming I would say. Thank you for your congratulations first of all and thank you for your kind words on the back of the book. It's been quite overwhelming, I was mentioning to you earlier, the weirdest thing for me was actually seeing a physical copy of the book but then we get to the Tableau conference and that was, I guess, kind of the official book launch, would you say Eva? Something like that?

Eva Murray: Yeah, yeah.

- Andy Kriebel: And to see people that actually wanted to buy it and wanted to read it and wanted us to sign it was a bit weird.
- Kirill Eremenko: Why was that weird Andy? You guys are some of the leading experts in the field.
- Andy Kriebel: I don't know, it just ... why would somebody want to read what we write?
- Eva Murray: Yeah, I think we see ourselves as, we're just these normal people and we happened to write a book and suddenly there's hundreds of people lining up to get us to sign it and take photos with us and it's just kind of weird because typically we just sit there at our computer and we talk to people without actually seeing them or hearing them so it's a bit strange to suddenly ... because before we signed the book, we also had our Makeover Monday live event and there were hundreds of people outside the door waiting to get in and it's just weird.
- Kirill Eremenko: Wow, wow, that's really cool. Yeah, I think I heard about that at the Tableau conference, that you couldn't even fit everybody in the room who wanted to come inside. Was that right?
- Eva Murray: Yeah.
- Kirill Eremenko: Wow, that's insane.
- Andy Kriebel: Yeah, there were about 725 people, something like that.
- Kirill Eremenko: And how many could you fit in?
- Andy Kriebel: That was the limit, yeah.

Kirill Eremenko: That was the limit and so you had-

Andy Kriebel: Yeah.

Kirill Eremenko: ... more waiting outside, wow.

Andy Kriebel: Yeah.

Kirill Eremenko: That is really, really cool. It's a testament to the community you've built. You guys have built something incredible on Makeover Monday, that's the website, right? Makeovermonday.com, right?

Andy Kriebel: .co.uk.

Eva Murray: .co.uk.

Kirill Eremenko: .co.uk, that's right. So makeovermonday.co.uk, you guys ... For those who don't know the project, I know there's probably plenty of people who know, probably, for those who don't know, Andy do you mind giving us a short overview? What do you guys do there?

Andy Kriebel: Yeah, so the week starts ... Even though it's called Makeover Monday, we publish a new dataset every week along with a chart that could use a makeover, hence Makeover Monday. Now we do publish the data on Sunday's but we do that primarily because a lot of companies doesn't allow their people time to learn, unfortunately. So people want to be able to participate, so we publish it on Sunday but the bulk of the work comes on Monday and Tuesday I would say. So we encourage people to just do something quick, time box it to an hour if you can, especially that's what we do during our Makeover Monday live and then it starts a discussion during the week. Eva and I run a weekly

webinar, we call it Viz Review, where people can submit their work for us to review and so we do that for about an hour every week and now we've also added in what? About a 10 minute demo, something like that at the end. So we'll just take a fresh look at the dataset and show how quickly you can build something.

Andy Kriebel: Then we write a weekly recap. We write a blog post that includes maybe a couple of lessons, one about design, one about analysis, and then we choose our favorite visualizations from the week. Then that becomes part of our gallery, so we have a gallery on the website that has ... what did I say the other day? 354 images just from 2018.

Kirill Eremenko: Wow.

Andy Kriebel: So it's really cool. But yeah, the general idea is you get a new dataset each week that you're unfamiliar with and try to make something better than the original.

Kirill Eremenko: Gotcha and people naturally have access to all the archives as well so they can take any past dataset-

Andy Kriebel: Yeah.

Kirill Eremenko: ... as well.

Andy Kriebel: Yeah, it goes back to the beginning of 2016, so that's what? I guess we're at 150 right now. This was the 150th dataset Eva-

Kirill Eremenko: Wow.

Andy Kriebel: ... so you should write about that.



- Kirill Eremenko: That's awesome, that's awesome, you guys are legends. I'm just going to ask you, how much does access to this service cost? Is it like \$100, \$500 a week? \$10,000 a year?
- Andy Kriebel: \$10 billion. Go ahead, Eva.
- Eva Murray: It's completely free, so yeah. So anyone can participate and they can get the data for free. The data is public data anyway, so we just locate it in one place on data.world on our page. The website has all the B sources, so makeovermonday.co.uk, where you can find the datasets, find the previous blog posts, find the gallery that Andy mentioned, get some inspiration and also order the book of course. Then participation just happens kind of organically. So people participate, they post their results, so they post a submission online, ideally on Twitter and data.world so that we have everything in one place, but on Twitter they can also join the conversation around it using the hashtag makeovermonday and get feedback from other people, become part of the community but also have their work seen by others in the industry and beyond. It's what we noticed, why getting away from Twitter, which we tried earlier this year, just doesn't really happen because people still want to connect with others who might be in the industry but not participate, or might not be in the industry but be really curious. So we keep the conversation going there and yeah, people just ... They have to drive it themselves, they get out of it what they put in and it is completely free.
- Kirill Eremenko: Amazing, amazing. All that work, 150 datasets, years of work and it's completely free. What inspires you to

keep going? Every week you're putting so much effort into this, 150 datasets, years of work, what keeps you going and putting in all this effort every single week?

Eva Murray:

Mostly, is people feedback saying that it's helped them learn something, that they enjoy finding a new community, they've made new friends. A lot of them have found new jobs, we have a list of 42 people that we actually know of who told us that they found a new job mainly on account of ... yeah, because of Makeover Monday, because they built a portfolio of all these visualizations. All the work that they created, which help them land a new job. If just one person tells me, "This has been a bit fun." Or, "This has been helpful, it has taught me something. I've got inspiration." It's enough to keep going for another week. It's not like it's a chore, we actually enjoy doing it, we enjoy putting the content out there, seeing what people create and helping them through it and coming up with the lessons every week. But yeah, sometimes because it is quite a lot of work, we do need a little bit back and that feedback really helps.

Kirill Eremenko:

That's awesome, that's awesome. Well that's really cool. Let's go back to the book. Andy, can you show us the book? For those listening to us just audio, you can't really see it but on the video version, Andy's showing us the book.

Andy Kriebel:

There's a reflection, there we go. It looks like it's backwards as well but just flip the screen and then you'll be able to read it right.

Kirill Eremenko:

No, no I can see it, I can see it right. I can see it right.

Andy Kriebel: Okay.

Kirill Eremenko: Makeover Monday, Improving How We Visualize And Analyze Data One Chart At A Time.

Andy Kriebel: That's right.

Kirill Eremenko: Yeah, it's so cool. It's a big book as well, right?

Andy Kriebel: Yeah, it's 400 ... How many pages is it? So I'm going to include-

Eva Murray: [inaudible 00:11:46].

Andy Kriebel: ... the index, 472 pages.

Kirill Eremenko: Wow, that's awesome. Can you show us a couple or just flip through it so we can see a couple of visual-

Andy Kriebel: Sure, yeah. So let me find a couple here. Oh here's one. I think one of these is ... So that's a couple there. Let me find some. Oh here we go, here's a good page. So this one here is four different pictures. So there's 300 pictures exactly in the book.

Kirill Eremenko: Nice.

Andy Kriebel: But when we say 300, people think we're just kind of making it up so we tell people there's 301, something like that to make it sound more precise.

Kirill Eremenko: Nice.

Andy Kriebel: There's ironically exactly 300 pictures in the book.

Kirill Eremenko: That's [inaudible 00:12:27].

Andy Kriebel: So there's tons of things like ... So this one is using maps appropriately and all different kinds of stuff. Looking at proportions, so here's one looking at

different proportions and stuff. So it kind of goes on and on with the different types of visualizations. So we write a lot about ... There's quite a few examples in there of actual makeovers that people did, but that's not the focus of the book. The focus of the book isn't showing people's before and afters, it's the process and what we've learned through the process of running the project.

Kirill Eremenko: Wow, wonderful. I remember reading through your book even before it got published. I thank you, I had the honor to just see the initial ideas because I was blown away by some of how in depth you go into it and I remember really liking how you structure the book. Could you walk us through ... a little bit through the table of contents? Like the main parts of the book, what are they dedicated to?

Andy Kriebel: Yes, so we have a couple of sections. The first ... Really, there's only really only one main section of the book and it starts with the habits of a good data analyst so what are ... Looking at an analytical approach versus just building a visualization, how do you add context to visualizations, how to [inaudible 00:13:54] things clearly. Working with data quality and data accuracy, so for example this past week, for Makeover Monday I wrote about in the blog post, that people need to sense check their numbers, make sure you account for the filters appropriately and things like that. So that's some of the lessons in there. When do aggregates work, when do they not? Keeping things simple, paying attention to detail, knowing your audience, iterating, using color, chart types and the

chart types sections is actually interesting because I didn't cover charts that are covered in other books. I wanted to cover things that I hadn't really seen written a whole lot about. Using text and then-

Kirill Eremenko: What's some example of the charts that you cover in the book?

Andy Kriebel: So something like packed bubble charts, tree maps, slope graphs, connected scatter plots, circular histograms, radio bar charts-

Kirill Eremenko: Wow. [crosstalk 00:14:55].

Andy Kriebel: And then we also include a list of resources. Well yeah and people use them every so often but we wanted to write about when those work and when those don't. So for each of those charts, I'm just going to flip to the page right now, we write about ... We give a description, or we start with the purpose of the chart, a description of ... a more in-depth description about it and when it should be used and when it shouldn't be used and then we get into ... Yeah, and then there's a series of examples for each of those chart types. So for example, when we look at diverging bar charts, so you can see there on the book-

Kirill Eremenko: Oh yeah you've got a [inaudible 00:15:36] versus ...

Andy Kriebel: ... we've got an example of a diverging bar chart versus shrimp, right and then this is another page of examples, so we're trying to give people lots of inspiration through the book as well because they can look at, "Oh okay, I see ..." And all of the examples, we try to use something that's quite different. So each of

them are different from the other so that people can maybe take bits and pieces from each one when they want to ...

Kirill Eremenko: Nice, nice.

Andy Kriebel: Hopefully it's a source of inspiration for people as well.

Kirill Eremenko: Gotcha, gotcha. So it's like a book not just with visualizations but also with case studies, real case studies of how you ... Some people might relate to this one, some people might relate to that one? Yeah, okay, gotcha.

Andy Kriebel: Yeah, I don't know if I'd use the word case studies, because I think about business case studies in that example but some of them are, yeah. Some of them are actual charts that people created and we show the makeover process. Maybe it was their before and after, so there's a couple where we actually included the person's first visualization, the feedback that we gave them ... particularly in the chapter about iteration. We showed their before, the feedback that we gave them and then the after visualization so people can see, "Okay, these aren't really complicated changes but it helps it communicate much more clearly."

Kirill Eremenko: Gotcha, gotcha. Okay, and Eva, what would you say is your favorite part of the book? What is your favorite chapter? I know you probably love all of them because it's your creation but what would you say is one of your favorite chapters that you maybe wouldn't mind sharing a little bit with us on the podcast about?

- Eva Murray: Yeah, so I would say my favorite section is the community section at the back because it highlights different authors who've made the project what it is and who made strong contributions over the years and really helped us to grow the community because we do need people who are regular contributors who can help others and who can take some of the load of giving feedback from us because we're not the only ones who know something, so we rely on others to also provide feedback because also at some point we sleep. On Twitter, very much the conversation is reasonably real time so if we don't respond for eight or ten hours, oh there's a picture, then yes. Oh I should highlight, yes, Joe [Redburn 00:17:59], so he's our youngest [inaudible 00:18:00], he's I think 10 years by now, but he joined when he was eight in 2016 and visualizations so yeah, we feature a lot of the authors in that chapter and I really like that because the community's what it's all about.
- Eva Murray: In terms of the technical chapters, I like the color chapter because I like the [inaudible 00:18:23].
- Andy Kriebel: And she wrote it.
- Eva Murray: And maybe because I wrote it and because I had the honor of having Maureen Stone [inaudible 00:18:30] Tableau, she's a very famous researcher in the field of color actually.
- Kirill Eremenko: Who's this?
- Eva Murray: Maureen Stone from [Abode 00:18:36]. She reviewed it, so I think that's why I have a very strong connection to that chapter but also I like the chapters on text and

adaptations because I think they're such valuable lessons for people to take into building visualizations and trying to communicate information.

- Andy Kriebel: Kirill, I remember when Eva was considering sending that chapter to Maureen, she was like, "Oh my God, I am terrified to do this, this lady's a color expert in the world and is she going to tear it to shreds?" So it's really-
- Kirill Eremenko: Sorry guys, I lost you there for a second.
- Andy Kriebel: Oh okay.
- Kirill Eremenko: You were talking about the review from Tableau about the colors, how you [inaudible 00:19:20] it.
- Eva Murray: Okay, yeah so I really like that chapter because I have a personal connection to it and because I got to speak to Maureen Stone in Seattle actually, I was on a visit there in March and I had 15 minutes with her. She gave me a really quick breakdown which was great and then I asked her whether she would review the chapter and she said yes. So later on, I sent it to her and it just feels really special because I think a lot of effort went into that, when you have someone who's world-renowned researcher looking at your work, you make sure that it's as good as you can possibly have it before you send it through.
- Kirill Eremenko: Okay, okay, gotcha. And Andy, you were nervous about somebody reviewing the book?
- Andy Kriebel: Well no, I wasn't nervous. So Eva was nervous about sending it to Maureen because of her expertise in the field and she was a bit nervous that she would tear it

to shreds and she would have to start over because that was by far Eva's longest chapter, so I think we ended up paring that one down quite a bit and simplifying the chapter, but it's really amazing, it's fascinating to have, or it's an honor to have people like Maureen spend their time reviewing some of the work for us.

Kirill Eremenko: That's awesome, that's awesome and so it all passed? If you passed Maureen's review, that means it probably is an amazing chapter and a lot of people can learn from that. That's really cool. I like that ... Oh, Eva can you share with us an insight about colors? That's your favorite chapter what is one key takeaway that our listeners can ... that you can help them out right now to better apply in their work?

Eva Murray: Oh, red and green. Red and green. So keeping in mind-

Kirill Eremenko: [crosstalk 00:21:07].

Eva Murray: ... yeah, keeping in mind color impairments that people might have and I actually have at least one comic I know of who can't differentiate between red and green so he sees shades of blue and gray and using red and green in combination in a single visualization, I could write about it every week for Makeover Monday because every week someone uses it and sometimes I say to Andy, I'm like, "Did nobody read last week's blog post?" Because we talk about it so often and I think it's not really a big issue if the colors are used in very separate parts of the visualization or the dashboard and it's very clear what

the meaning is and there was good labels but if there's a bar chart that literally just has red and green bars, it just gets so difficult. So I think using something like a color blind checker, there's a number of different tools out there where you can upload your picture of your visualization, it shows you what it looks like for people with color impairment, or sorry, vision impairment for colors that would be really helpful and also just picking color palettes that are already taking that into consideration and at the very least just not combining red and green in a single viz.

- Kirill Eremenko: Awesome, very, very valuable tip. What I like about Tableau is it has those preset palettes that already take into account impairment, right? So that you can use [inaudible 00:22:32].
- Andy Kriebel: That's right, yeah.
- Eva Murray: Yeah.
- Kirill Eremenko: Awesome. Over to you Andy, what's your favorite chapter, what's your key take away you can share with us?
- Andy Kriebel: I think my favorite chapter is the one about context. I preach about that a lot, especially in my teaching at The Data School because just putting something on the screen doesn't really add any value, you have to ... I encourage people to always say, "Well okay, compared to what?" So if you put a big ass number on your dashboard, it's just a big number. You might say you have 3.3 million users, or you have 50 users, both of those might be big numbers for your company but unless you add context to it, they're meaningless. So if

you're doing big numbers you should maybe put maybe ... I like putting a real small number next to it in text, like plus or minus prior period or something like that. Or if you're doing a bar chart, why not have a target line or ... you have to have something that you're comparing it to, you know, you're comparing it to the previous period.

- Andy Kriebel: Any chart you create you can add context to so I encourage people to do that. Yeah I would say that's my favorite chapter because I love context in visualizations.
- Kirill Eremenko: Awesome, awesome. An example jumps to mind is like a country could be reporting on how it's reducing emissions of CO2 for example, and compared to its prior year it might be a good number, it might be a significant reduction but if you compare it to other countries in the region, it might be still very high, depending on how you present it, this result. What's your favorite case or example from the book, where you actually ... context makes a big difference?
- Andy Kriebel: Yeah, well I'm going need to actually look because I don't remember all the ones I wrote about to be honest with you. So I'm going to go to chapter 12, go ahead Eva.
- Eva Murray: And while Andy looks, I actually want to just reiterate his point, so he really does always use contextual information in his visualizations and if you look at Andy's vizs, while a lot of us might just report the actual numbers, he always finds a way to make them relatable, like ... Yeah, compared to prior period,

compared to another country, compared to another product, whatever is in the data. I always think, "Oh, he's done something good again," but he does make sure there's contextual information so people don't fully understand what we mean by that, or want to see some examples, just go to Andy's Tableau public profile and you'll see it.

Kirill Eremenko: Nice.

Andy Kriebel: So here's one Kirill, you can probably see two lines right, that are highlighted?

Kirill Eremenko: Yes.

Andy Kriebel: But there's actually a bunch of other lines on there as well.

Kirill Eremenko: Yeah, yeah I can see.

Andy Kriebel: So that's where you're giving a couple of people a couple of bits of context there. One is you're highlighting, I think this is a particular month, I think each of these is a month, I don't remember exactly but one of them is a month that you want to highlight and the other one is maybe ... like the black line is the average of all the months. So you're comparing against the average and then all the other gray lines in the background are all the other ones combined, or not combined, individually. So you're getting actually several pieces of context there and you can see, okay how am I doing relative to everybody else?

Kirill Eremenko: Gotcha, there is-

Andy Kriebel: So I love using highlighting for context.



- Kirill Eremenko: Yeah, very powerful tip. So it really is an art, right? These little things are what make ... and data scientists that might know only to keep ... they separate that, a person like that from a person who actually knows how to communicate. Knows how to talk to the other side, the business decision makers.
- Andy Kriebel: Yeah, so here's another example for numbers, hopefully you can see it on the screen. It's a bit tough to see but in that particular example, it's just four numbers, right?
- Kirill Eremenko: Yeah.
- Andy Kriebel: But it has two years, so it's comparing 1979 to 2017 and then it's comparing the month you select versus the median for all of the months and it's just to give you at a quick glance what's the difference? Then the ends of the lines show the end of the line labeled because it's the percent change since the beginning. So you're getting several bits of context in one visualization to help you understand the chart a bit more.
- Kirill Eremenko: Gotcha, gotcha. Okay, let's do one more each. I think it's really helpful. What do you guys have? What else do you have? So we've got red and green from Eva, don't use them together for people of visual impairment or color blindness and we've got context from Andy. Hit us with one more each so that we can become experts at data visualization and communication. Eva, what do you have?

- Eva Murray: So I have to go off the top of my head, I don't have the book lying here, it's literally not even behind this [inaudible 00:27:25] on the table.
- Kirill Eremenko: Oh no.
- Eva Murray: But I'd say storytelling. So using the layout, using the flow of the data, the way you structure your visualization, so whether it's a top down, or left to right flow, that you build a story around it and not every dataset necessarily gives us a really impactful story, sometimes just the [inaudible 00:27:51], I can just show you something but I can't really take the reader or the viewer, the audience on a journey but if we have something a bit more involved and we saw a lot of those examples throughout the years of Makeover Monday, you can actually build a story, you can look at different aspects. So combining charts with their titles, using labels, using annotations and maybe even elements like arrows or lines to guide the reader through ... across the page or down the page to really understand how things build up.
- Eva Murray: So some people start from a very high level and then go into the detail. Others maybe start with the detail inside and then bring it into a summary at the bottom in a call to action. I think that's really powerful and we have a few examples in there that really help just to show how can it be done and then people can apply that to their own work.
- Kirill Eremenko: So you're talking about telling a story within the visualization itself?
- Eva Murray: Yeah.

Kirill Eremenko: That's awesome because I think that's the next level. Something that I often advocate is using your datasets project to tell a story, not just delivering the insights but actually when you're presenting or when you're writing up that report to tell a story of what the data's explaining and even if it's not just telling the story of the data, it could even be that telling the story of how you got there like, "I got this dataset that I took to this person," and so on, making it engaging but I think what you're talking about is taking really to the next level where you have a visualization which conveys that story on its own. Of course if you're attached to it and you can talk about it it's even better, but thinking through the story part in the visualization that's really powerful. Thanks, that's a really cool tip. I think more people should do that. It's good that you have examples of that in the book. All right, Andy, what do you have?

Andy Kriebel: Yeah well I think there's two that sort of go together. One is iterating, it's kind of the whole purpose of getting better at something, especially data visualization, is you have to continue to iterate on your work but it's also knowing when to stop. Visualization's never done, you just have to decide when it's good enough but iterating is a large part of the Makeover Monday Project. Eva and I send each other pictures of our work along the way and say, "Hey what do you think of this?" We'll give each other feedback so we're constantly iterating our work.

Andy Kriebel: Then the other section I really like is the one where we talk about simplicity. So simplicity in design,

simplicity in your text, how do you use white space effectively, basically decluttering, reducing the text, reducing the number of charts, trying to make the data more the focus of the visualization, not all of the words and all of clutter. So simplicity is something we preach about quite often as well.

Kirill Eremenko: Gotcha, wow, you guys flooded us with tips, so we got all the ... We got color, red and green, we got context, visualization and storytelling, iterating and knowing when to stop and simplicity. That's all in-

Andy Kriebel: Just in case people need to see it again, there's the book.

Kirill Eremenko: ... Makeover Monday. So I'm so excited for those watching video and guys if you're just listening to this in audio, then the book is really cool, it's black and white on the front so you completely don't expect that there's all these ... and it's a color book right? You don't often-

Andy Kriebel: Yeah.

Kirill Eremenko: ... [inaudible 00:31:20] color books, that's really cool. Okay, so I've got an interesting question for you. So let's say I'm listening to this podcast, and I'm sure there's lots of fans of yours who are listening to the podcast and they're very excited, can't wait to get their hands on it. By the way the book's already out, can people get it on Amazon?

Andy Kriebel: Yes, yes.

Kirill Eremenko: You can get it around the world?

Andy Kriebel: There is a bit of a delay getting them in the UK, I think they had some issues with getting them shipped over but those should be maybe this week, I think, something like that. I thought they said November 14th, is that right Eva? That's the-

Eva Murray: I think so.

Andy Kriebel: That's what's sticking in my head.

Eva Murray: Yes but in the US it's out, so you just order and it gets delivered.

Kirill Eremenko: Okay, so Amazon's the best way to get it?

Eva Murray: Yeah.

Andy Kriebel: Yeah.

Kirill Eremenko: Awesome, so I'm sure there's people listening to this already ordering the book but let's say I'm listening to this podcast and I'm really good at machine learning and I love it, I love programing, I love getting into that field and I haven't really touched on visualization that much and I don't really think it's for me. All I need to know is how to run a regression or maybe some kind of K-Means Clustering or maybe a deep learning algorithm and I don't think I will ever need visualization in my career and therefore, I'm not really interested in learning about it and these different types of techniques of visualization and how to use it then. What would you say to people like that who are confident that all data science is about is machine learning because that is a valid point of view and they are professionals that get along without ever looking

into visualization. How can visualization enhance somebody's career?

- Andy Kriebel: Well I would say ... Eva I'll let you go in a second, I have an opinion about that, everybody has to communicate their findings, whether it's to your boss, to it's whatever, the simpler you can make that communication the better. If you just throw model out there and one of the things we encourage people to do is show people that know nothing about your work and if they can understand it then you've communicated it properly. That's no different whether it's data, whether it's writing a book, whether it's being an artist, whatever it is, if somebody else can understand your work then you've probably done something right. I think visualizations are so easy for people to understand, especially when they're done right that I think you'd be kind of foolish to skip that part.
- Kirill Eremenko: Mm-hmm (affirmative), gotcha, gotcha, that's powerful, powerful advice definitely. Everybody needs to communicate their findings in the end.
- Andy Kriebel: Yeah.
- Kirill Eremenko: Eva, so you have anything to add to that?
- Eva Murray: Yeah, I just want to add another example to that because that was exactly what I was going to say. So what I was at uni-
- Andy Kriebel: I knew that's, that's why I went first.
- Eva Murray: Smart. So I studied psychology and I didn't have to do data visualization. Visualization wasn't my topic, or

data analysis, well data analysis was but through the studies. So we had to do experiments, we had to communicate our findings and even in a research paper, you have some charts that show how different metrics are correlated et cetera. So you will at some point build a chart. If you just focus on data science, let's say, and you're not going to touch data visualization but at some point you might lead the team or you might have to, like Andy said, communicate your findings with someone, visuals always work best and if you understand the basics of how they should be constructed, that really helps.

Eva Murray:

Our book is not type of how-to book. It really is about best practices for data visualization and how you can tackle those and communicating information effectively. So I think it will be helpful for everyone and most people I think in business will at some point sit in a meeting where they look at a chart and they're like, "What is this and what is it telling me?" So we want to make sure that those moments become fewer and fewer and that more and more people sit there and say, "It's really insightful, I get it."

Kirill Eremenko:

Yeah, gotcha, gotcha, and I agree.

Andy Kriebel:

Yeah and I think Eva made a good point there, especially about the book. It's a tool agnostic book, there's ... a lot of visualization's were created in Tableau because that's the ... the largest number of participants were from Tableau but what we write about has nothing to do with Tableau at all. It should be a book that can last a long time because of what we wrote about. It has nothing to do with Tableau.

Kirill Eremenko: That's awesome. That was actually going to be my next question Andy, you're reading my mind. That is really cool and I think a book like that has power. I'm really happy and lucky that you guys sent me a free copy so I'm going to hold onto that for a long time because the reason I think that way is that these principles, our brains are not going to change that soon. Maybe the algorithms that we have access to and the ways we analyze data will change and you have to ... If you have a book on how to do a certain of algorithm in Python or R, you will need to update that knowledge quite soon but in terms of visualization, these are principles that last a very long time and therefore ... and especially if it's tool agnostic, that's really, really powerful for anybody to learn because then you can carry around that knowledge.

Kirill Eremenko: So on that note, I wanted to ask you guys, you mentioned that the book has quite a lot of different areas of focus, lots of different chapters from colors to different types of charts, to adding context and pretty much a holistic approach to visualization and it's a big book, it's got a lot pages there on visuals. It's probably a cool book to sit down and read and go through in your free time and just go through it but how would you recommend for somebody to use it who needs practical knowledge now? They want to empower their career. Would you say read it from start to finish or is there certain ways you can get the most out of the book like bits and pieces here and there while you haven't read the whole thing yet?

- Eva Murray: So I'd say it's a good one to do a first run through just flicking through it. If there's a specific topic where you'd say, "Yeah, I really want to learn about color." By all means go ahead, read the color chapter or context or iterating, whatever it may be. I mean, there is a table of contents or index at the back, so you can use that but also maybe start with the pictures and see which ones you're drawn to and then read the surrounding information that really help ... There are so many images in the book, so that should help guide people where they're like, "Oh this looks really good, I wonder what they wrote about this. I wonder what was good about this visualization?" So I'd probably start with the picture personally.
- Kirill Eremenko: Nice, that's a good tip. What about you Andy? What would you say?
- Andy Kriebel: Yeah at the beginning of the book, we stress that this isn't a book about data visualization basics and we point to other resources for that. So this is kind of supplemental to all of that information, or it builds upon some of those founding principles from Stephen Few, for example. So I think people that are new probably should read it front to back. The order of the chapters is intentional but then it becomes a reference guide and hopefully people flip back to it when they ... They say, "Okay I'm not quite sure how to add context to my visualization in this particular case. Let me flip open the book to that chapter and skim through it again and then maybe look at some of the visualizations in that chapter and see how people have done it." I think that's one of the beauty of all the

pictures is for each chapter, we've giving so many different examples that are based on different datasets, yet they all communicate the same principles clearly. So it just goes to show you, data's just data. You can always present it well if you pay attention to those sort of core principles.

Kirill Eremenko: Wonderful, wonderful and I really like how you guys built a community around Makeover Monday. How do you guys see this book supporting the community? Do you guys envisage that people will be referencing the book to each other? Do you think it will be helpful for the community as a guideline? Like a foundational stone of what you guys are talking about in Makeover Monday Project?

Eva Murray: Definitely. I think it will definitely be helpful but the key thing I saw at the conference that really delighted me about our community is people taking the book and saying, "Oh wow, I'm in the book, thank you so much for publishing my picture because now I'm in a book." So they were really excited and that was something they could share with each other. They would show each other, "Oh this is where I am." Or autograph each other's books on the pages of the images. So I think it gives everyone a collective object, something to hold in their hands that they're proud of. We all have the visualizations online, people write blog posts and all of that but this is something tangible. In a book there's been hundreds of years of humans having books and they're such a cornerstone of education and passing on knowledge. So to have your name mentioned in a book, to have your work

published in a book, I think gives people something to be proud of but also a pride they can share with the others.

Kirill Eremenko: And also probably encourages others to share more so that they're in your next book?

Eva Murray: Yeah exactly, the next book Andy.

Kirill Eremenko: When's the next book, Andy, coming out?

Andy Kriebel: I didn't ... I'm sorry, you were breaking up there.

Kirill Eremenko: When is the next ...

Andy Kriebel: Just kidding. No idea.

Kirill Eremenko: No idea, it's probably [crosstalk 00:41:02].

Eva Murray: I need to do some more convincing before Andy will say yes to another book.

Andy Kriebel: I was just going to mention along those lines of what Eva was saying, I'm going to actually look and see how many unique authors we have in the book. In fact, I need to figure out how I can ... Oh here we go, unique names. Let me try this real quick. I'm trying to use pivot tables in ... Here we go. Oh forget it, I can't get it to work. I'm trying to get pivot tables in Google Sheets but I can't figure it out. Okay, forget it. Do you remember how many unique authors there are Eva?

Eva Murray: I'd imagine it's around 150 to 200.

Kirill Eremenko: Wow.



- Eva Murray: Because some of the images of these 300 images are what we created but 250, roughly, visualizations are from the community.
- Kirill Eremenko: Wow.
- Eva Murray: So I'd say, yeah, probably 200 authors.
- Kirill Eremenko: That's really cool. So you're not only showcasing your styles and opinions, people get to see other people's styles and opinions [inaudible 00:42:02].
- Eva Murray: It's mostly the others. We just had to put visualizations in there where for what we were writing about, for the lessons, there wasn't the specific example in the community because maybe we hadn't had a dataset where that really happened or we could showcase it well. So sometimes yeah, we created charts as well.
- Kirill Eremenko: Gotcha, gotcha. Wow.
- Andy Kriebel: Yeah and I think one of the big things there is that the book isn't about us, it's about the community. So we need to make sure the community ... Or we intentionally wanted to make sure the community was the focus of the book because without them, there would be no Makeover Monday book.
- Kirill Eremenko: Makes sense, okay. Well on that note, thanks guys, it sounds like a very exciting book for anybody to pick up. Highly encourage people to add it to their arsenal of sources of knowledge for data science and visualization specifically. Thanks so much for going to the trouble of writing the book. You guys should be really proud that you made it happen.

Eva Murray: Thank you.

Andy Kriebel: Thank you very much, Kirill.

Kirill Eremenko: Awesome. Well on that note I'll let you go and hope to catch up soon. Please keep being awesome, please keep doing Makeover Monday, it's such a great project helping out so many people in the world.

Andy Kriebel: We certainly will. We enjoy it.

Kirill Eremenko: All right, take care guys.

Eva Murray: Thank you.

Andy Kriebel: Bye.

Eva Murray: Bye.

Kirill Eremenko: So there you have it. Those were Andy Kriebel and Eva Murray from makeovermonday.co.uk from the Makeover Monday Project and also legendary data visualization experts. I really hope you enjoyed this episode and the tips that they shared. If you'd like more tips on visualization, with live examples, as you heard they have 300 visualizations in that book. If you'd like more of those tips and examples, then head on over to Amazon and pick yourself up a copy of Makeover Monday, the book. My copy's already in the post and one thing that I'm super excited about, not just reading a book, of course super excited about but another thing I'm super excited is that you will find my review of the book on the back cover. So when you do pick it up, have a look on the back, you will see what I had to say about the book. It is highly, highly recommended, one of those books that I can definitely

vouch for. These are two people that I highly respect and I know did a fantastic job. I've seen inside the book, I can't wait to get my hands on.

- Kirill Eremenko: By the way if you're looking for a Christmas present for somebody who's special to you, a colleague, a friend, a relative, or maybe even yourself, if you haven't gotten yourself a Christmas present yet, this could be exactly what you need. Christmas, Hanukkah, and other celebrations are coming up very soon and this could be exactly the gift that you're looking for.
- Kirill Eremenko: On that note, thank you so much for being here. If you know anybody who could benefit from these tips, forward them this episode and I'll look forward to seeing you back here next time. Until then, happy analyzing.