

ISMPP University

Leveraging Data Visualization to Optimize Publication Management and Strategy

October 19, 2022

International Society for Medical Publication Professionals™

Webinar will begin promptly at:
11 AM ET / 4 PM GMT

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ISMPP Announcements

- CMPP Program is still accepting recertification via credit applications
- Application deadline for the March CMPP exam is February 1st



ISMPP Announcements

Registration is open!



Check it out!



Call for abstracts and session proposals



How To Ask Questions

Feel free to ask a question at any time, however all questions will be held until the end the of the presentation.

To ask a question, open the Q&A window, type your question into the Q&A box. Click Send

Note: Check Send Anonymously if you do not want your name attached to your question in the Q&A

We will make every effort to respond to all questions live (out loud)

Disclaimer

- Information presented reflects the personal knowledge and opinions of the faculty and does not necessarily represent the position of their current or past employers



Objectives

- Understand fundamental principles for developing data visualization and dashboards
- Formulate approaches to incorporate data and data visualization into publication management and strategy processes

Faculty



Richard White
Chief Operating Officer, Oxford PharmaGenesis



Timothy Mackey
Professor at UC San Diego Global Health Program, Director of the Global Health Policy and Data Institute, Editor-in-Chief of JMIR Infodemiology, CEO and Co-founder of S-3 Research



Moderator: Donna Simcoe
Medical Publications Consultant, Simcoe Consultants Inc and advisor/adjunct faculty for UCSD Extended Studies Medical Writing Certificate program



Why is data visualization important?

Richard White

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ELEPHANT

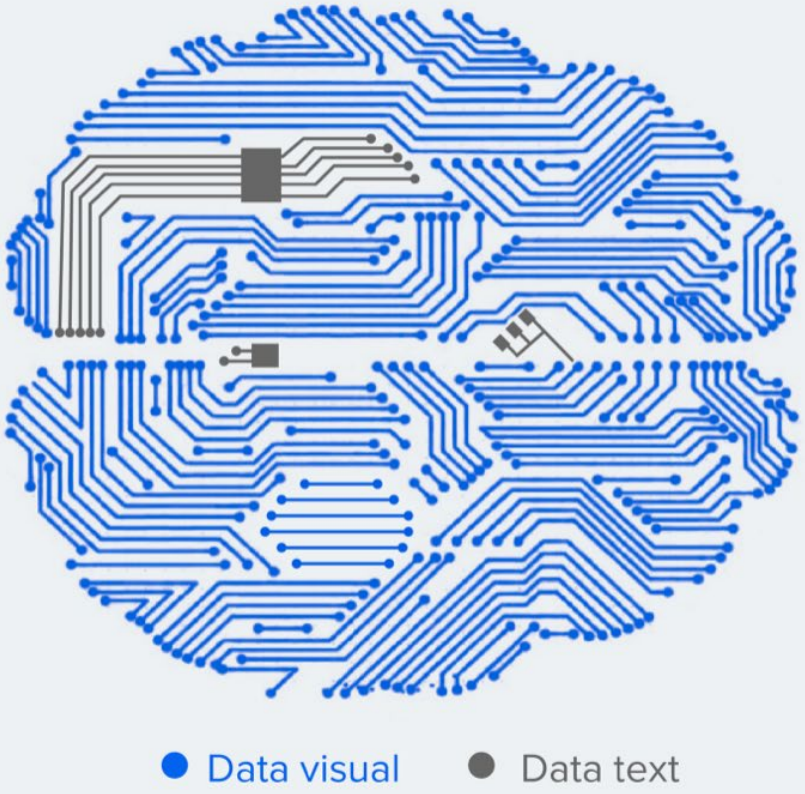
90%

of information transmitted to the brain is visual

Visuals are processed

60,000 X

faster in the brain than text



Medium. Available from: https://medium.com/mercadolibre-tech/hacking-our-brain-through-data-visualization-73556a82d8ac (Accessed May 5, 2022)



734602376568321091
238340363736759437
311038563918383851
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Blood-type distributions in the five most populous countries (1/2)

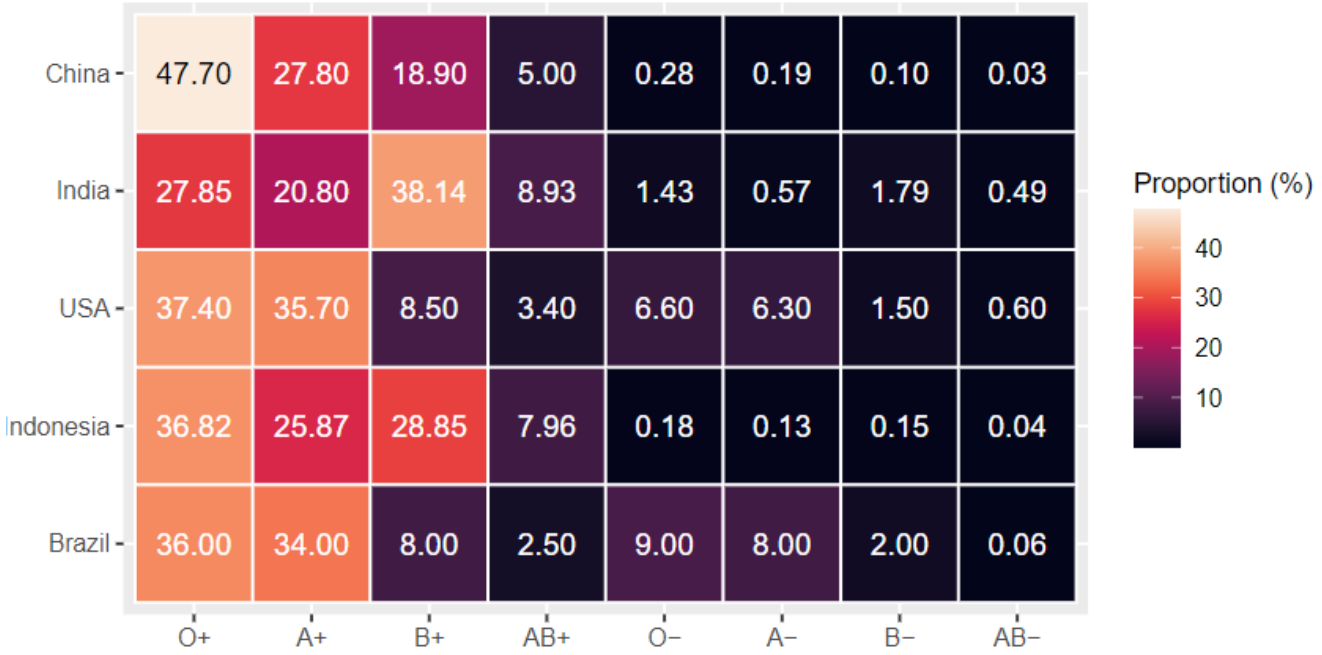
Country	O+	A+	B+	AB+	O−	A−	B−	AB−
China	47.70%	27.80%	18.90%	5.00%	0.28%	0.19%	0.10%	0.03%
India	27.85%	20.80%	38.14%	8.93%	1.43%	0.57%	1.79%	0.49%
USA	37.40%	35.70%	8.50%	3.40%	6.60%	6.30%	1.50%	0.60%
Indonesia	36.82%	25.87%	28.85%	7.96%	0.18%	0.13%	0.15%	0.04%
Brazil	36.00%	34.00%	8.00%	2.50%	9.00%	8.00%	2.00%	0.06%

Wikipedia. Available from: https://pt.wikipedia.org/wiki/Distribui%C3%A7%C3%A3o_do_tipo_sangu%C3%ADneo_por_pa%C3%ADs (Accessed May 5, 2022)

CC BY-SA 3.0

Blood-type distributions in the five most populous countries (2/2)

- O+ is the most common blood type except in India



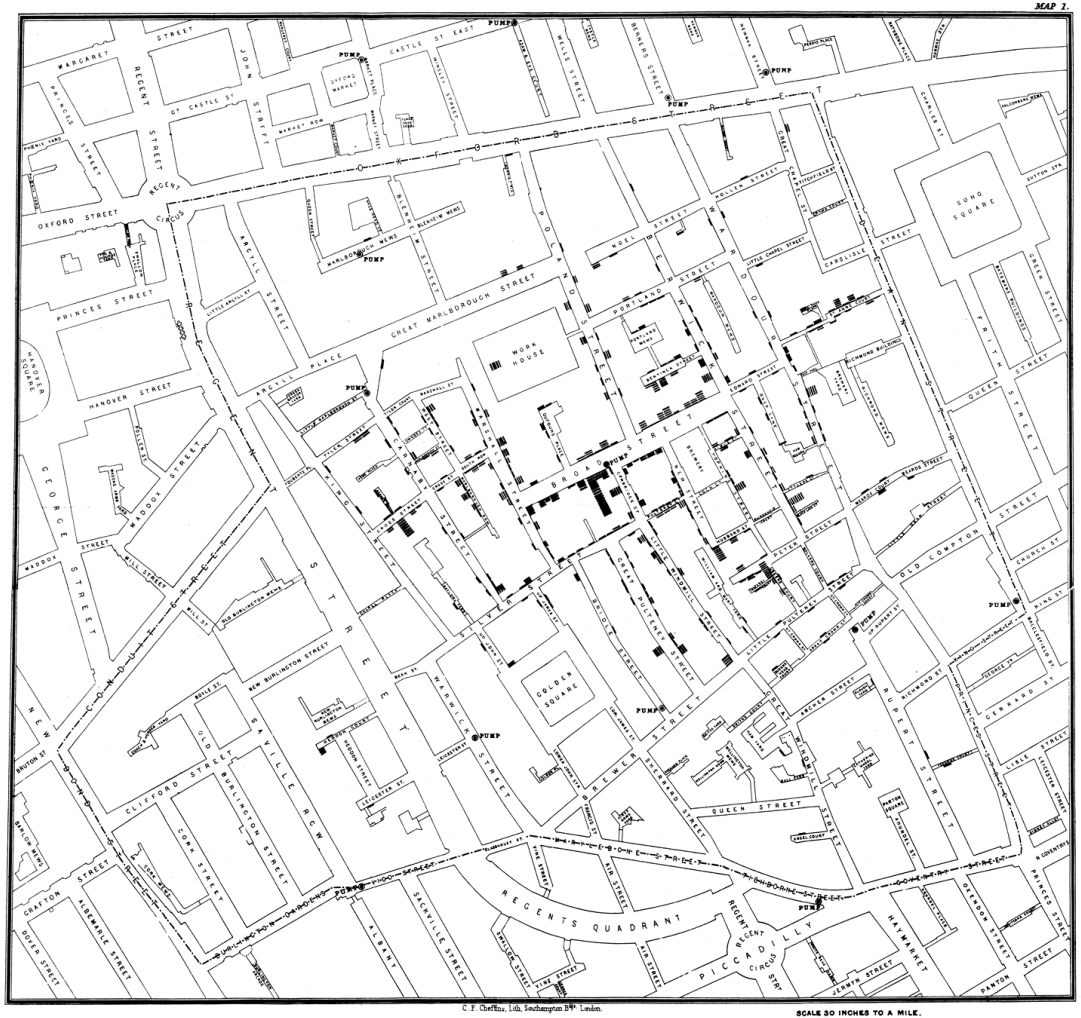
Wikipedia. Available from: https://pt.wikipedia.org/wiki/Distribui%C3%A7%C3%A3o_do_tipo_sangu%C3%ADneo_por_pa%C3%ADs (Accessed May 5, 2022)
CC BY-SA 3.0



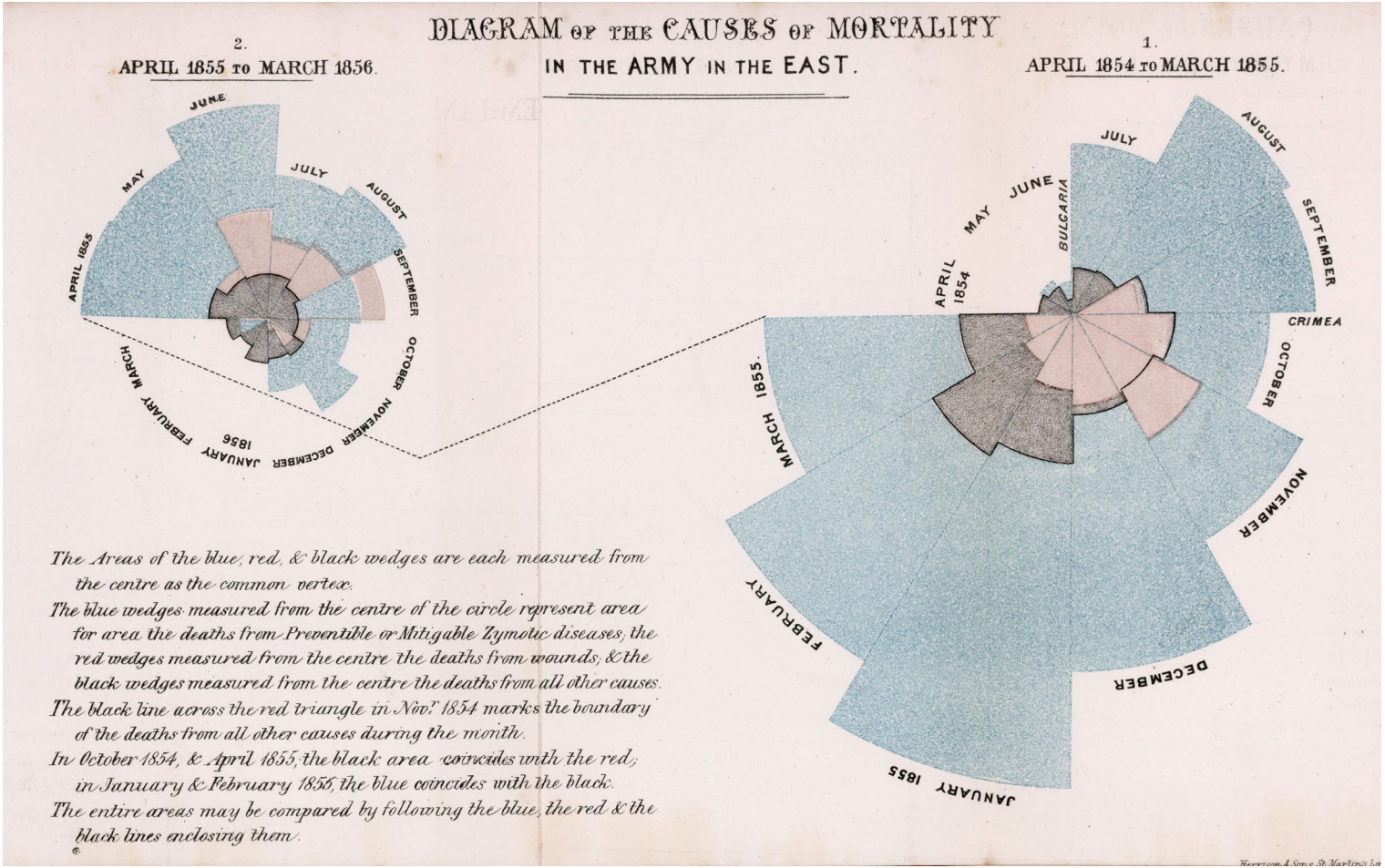
Visualizations engage audiences in our research

Visualization is not about making pretty pictures

Interactive visualizations deepen understanding and trust in data



Wikipedia. Available from: https://commons.wikimedia.org/w/index.php?curid=2278605 (Accessed May 5, 2022)



Wikipedia. Available from: https://commons.wikimedia.org/w/index.php?curid=1474443 (Accessed May 5, 2022)



Data visualization best practice

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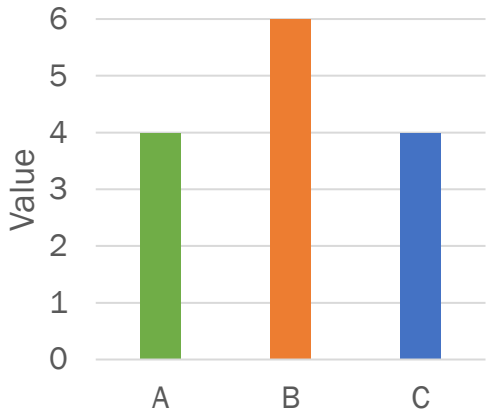


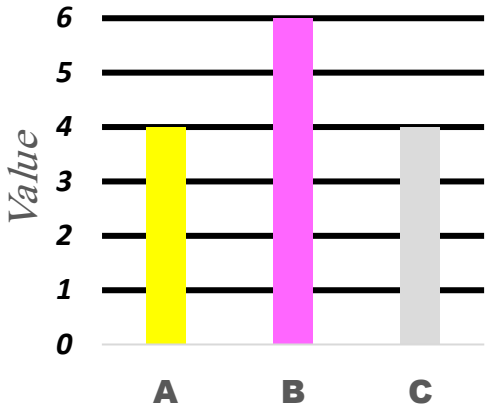
Data

Audience

Message

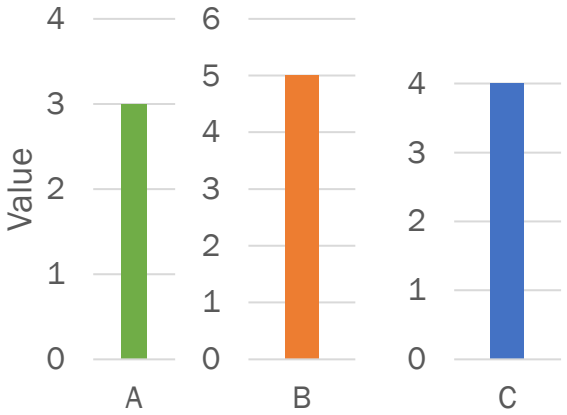
Channel

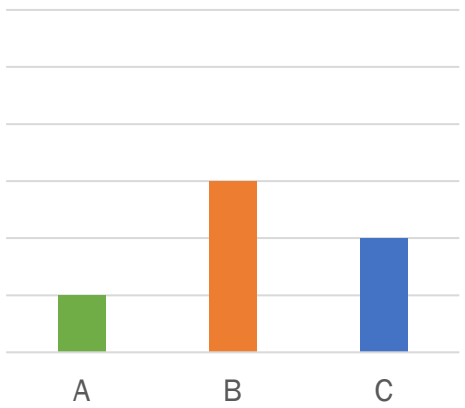




Ugly

Bad



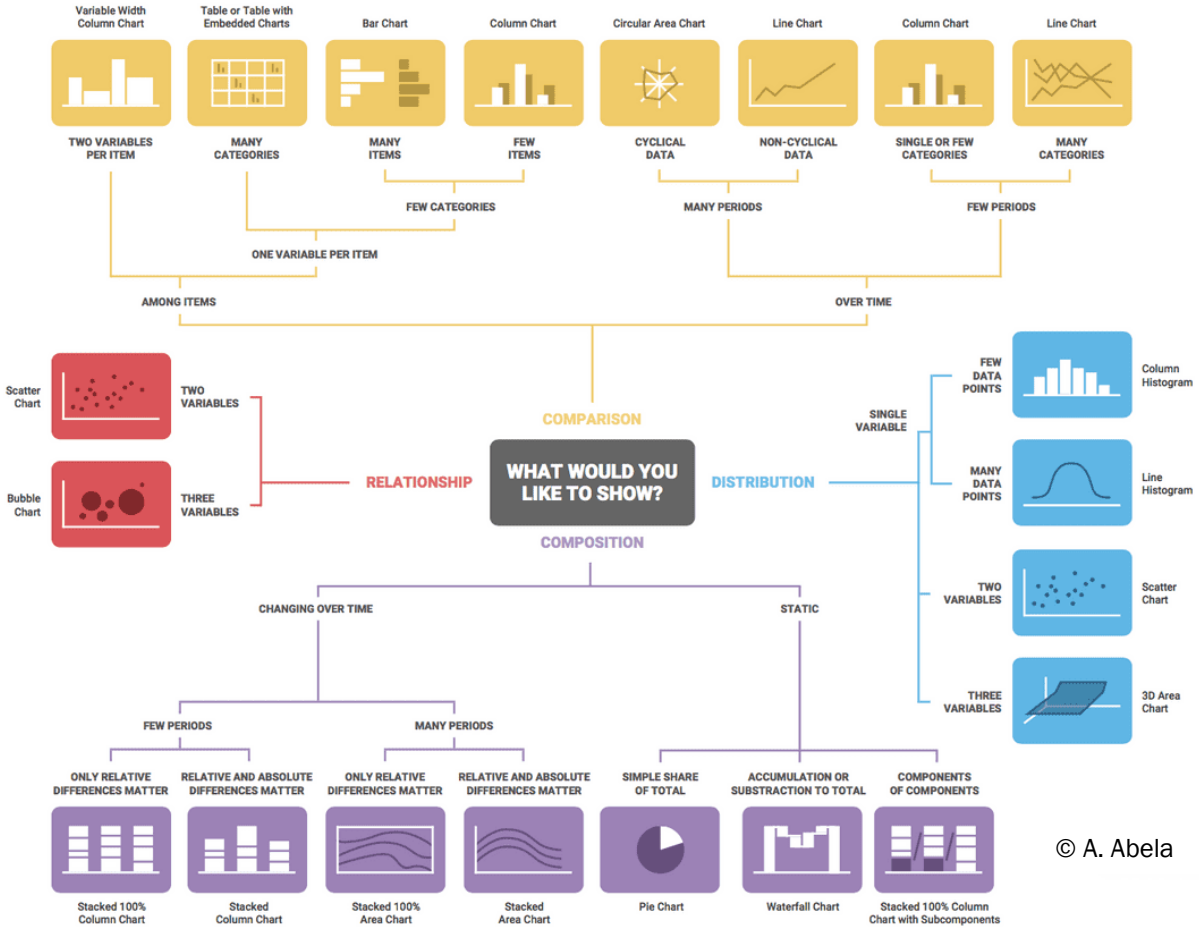


Wrong

Wilke CO. Fundamentals of Data Visualization. Available from: https://clauswilke.com/dataviz/introduction.html (Accessed May 4, 2022)
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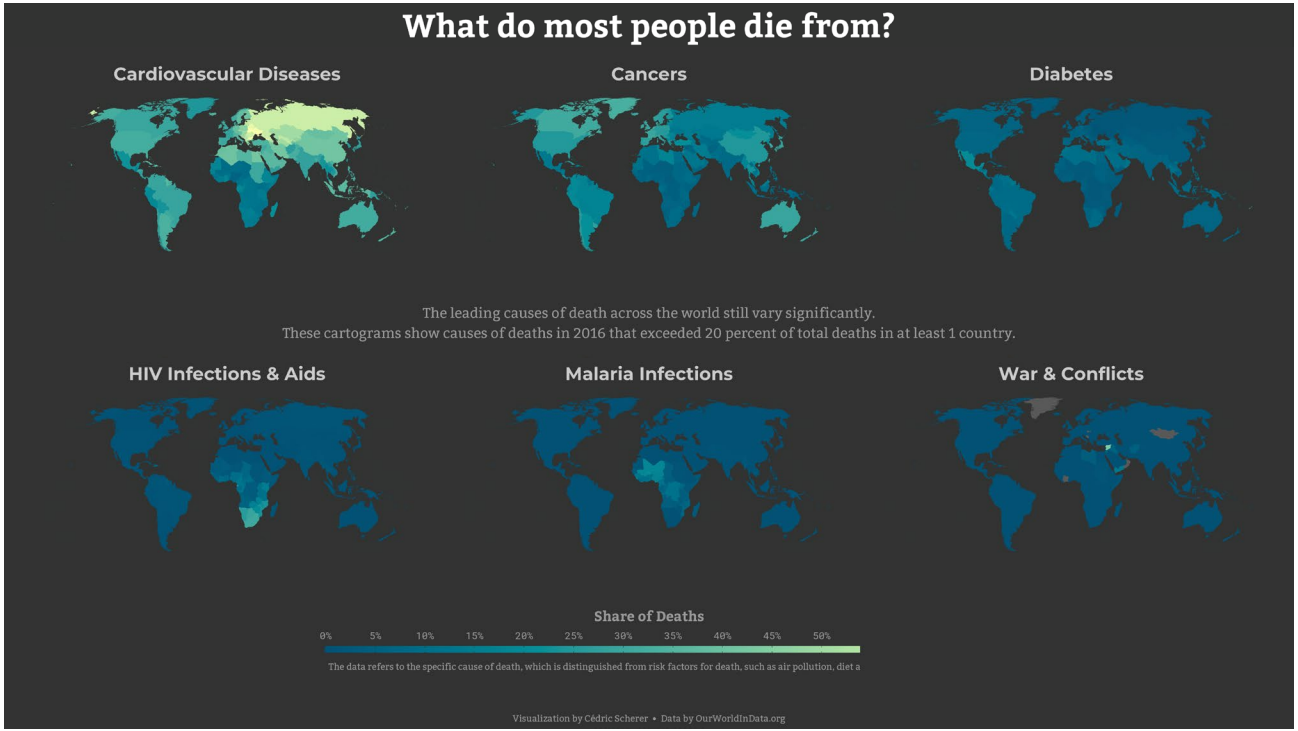
Choose the best chart type for your data



© A. Abela

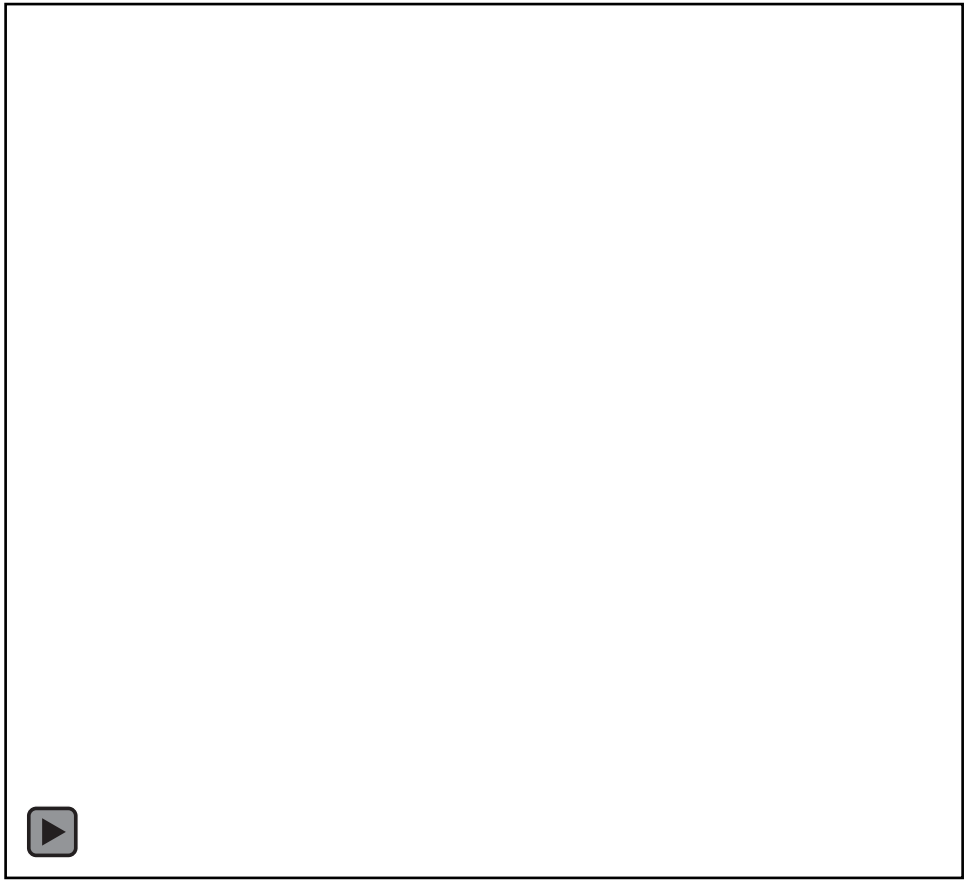
Biuwer. Available from: https://biuwer.com/en/blog/how-to-choose-the-right-chart-for-your-data/ (Accessed May 4, 2022)

Choropleth map

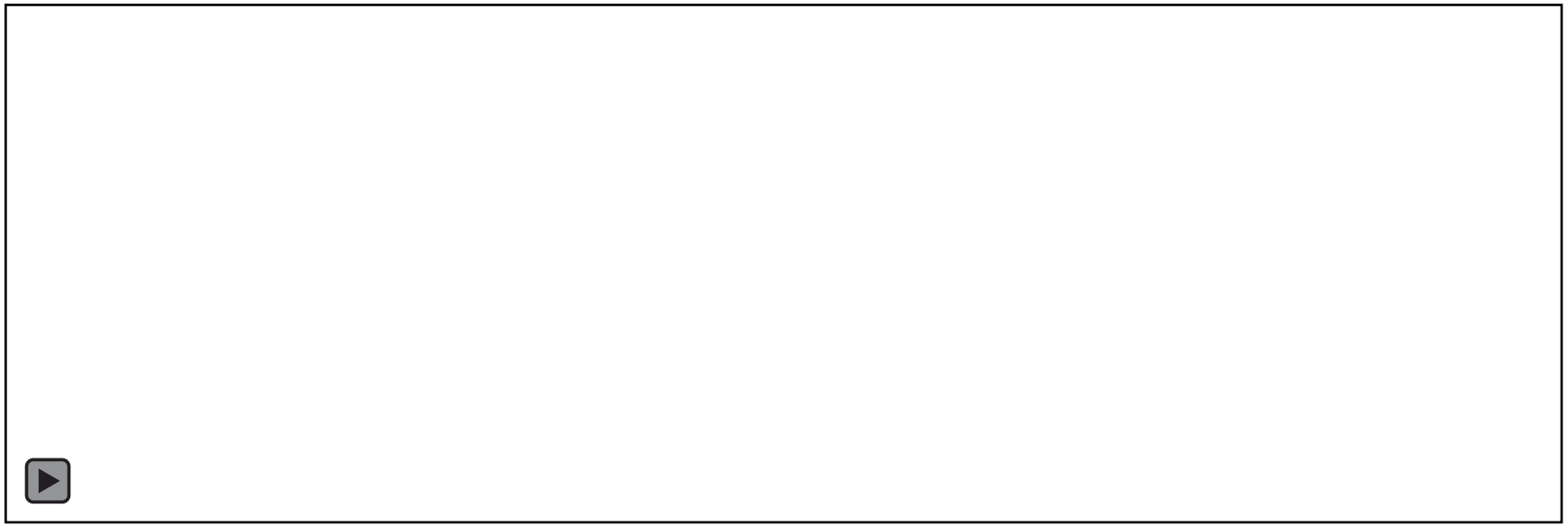


Cédric Scherer. Available from: https://github.com/Z3tt/30DayMapChallenge/tree/main/contributions/Day03_Polygons (Accessed May 4, 2022)

Treemap



Sankey plot



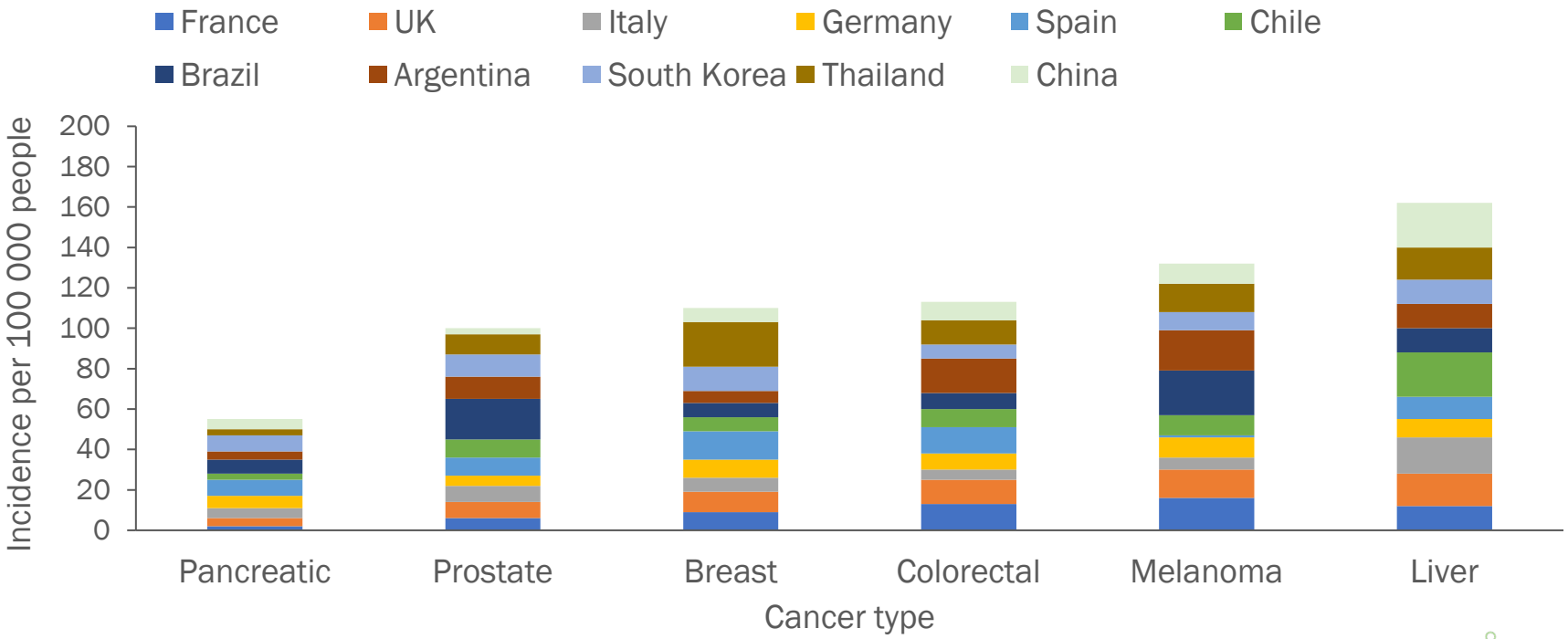
Circos plot





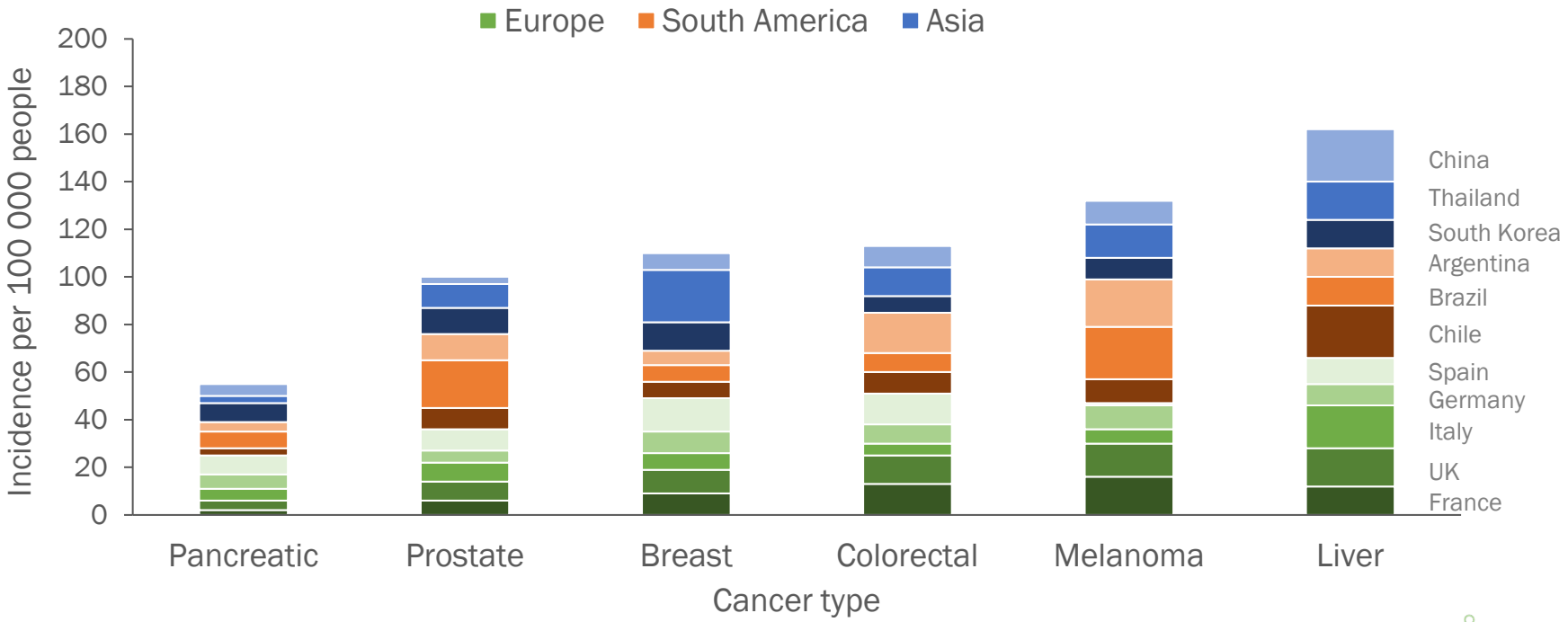
Appropriate use of color

Incidence of different cancer types by country (1/2)



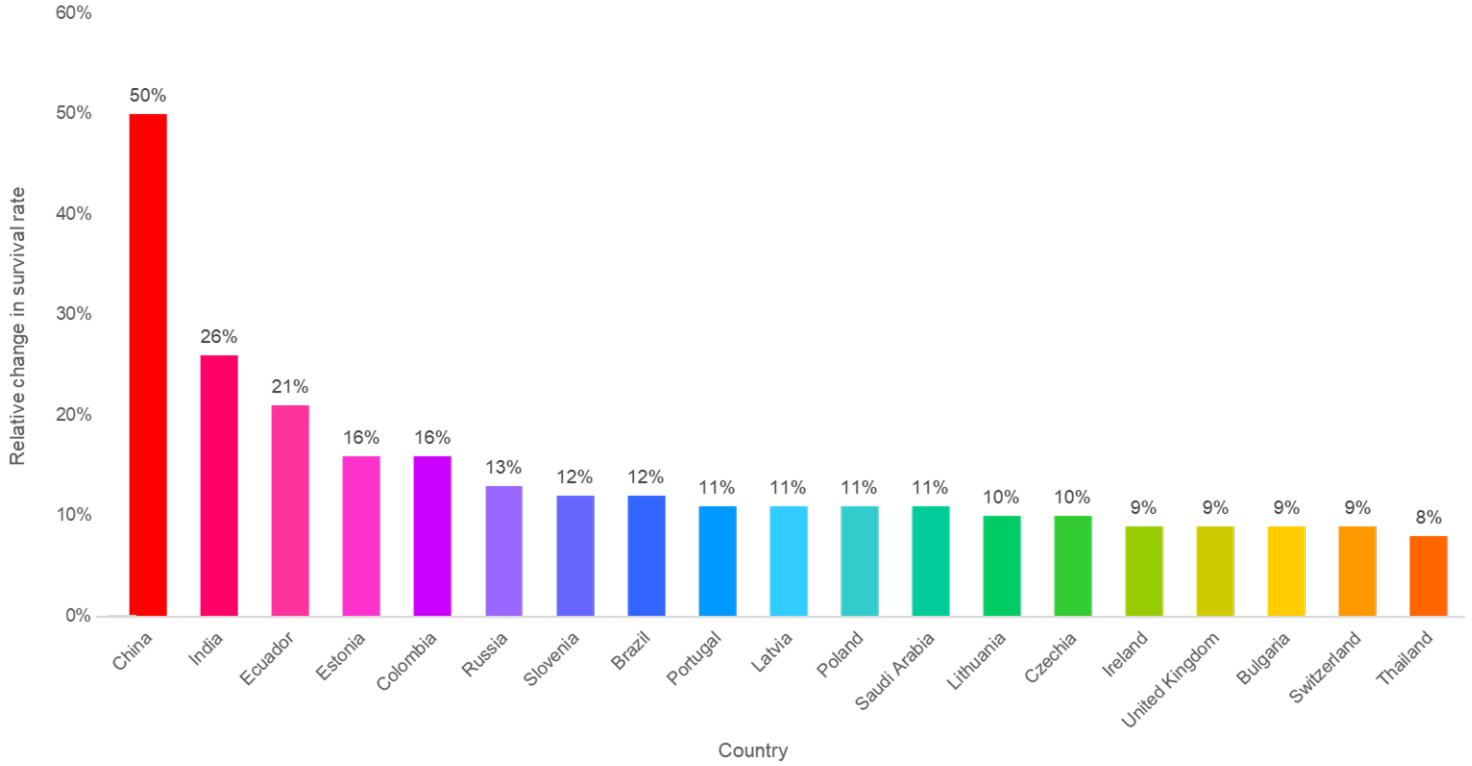
Illustrative data

Incidence of different cancer types by country (2/2)



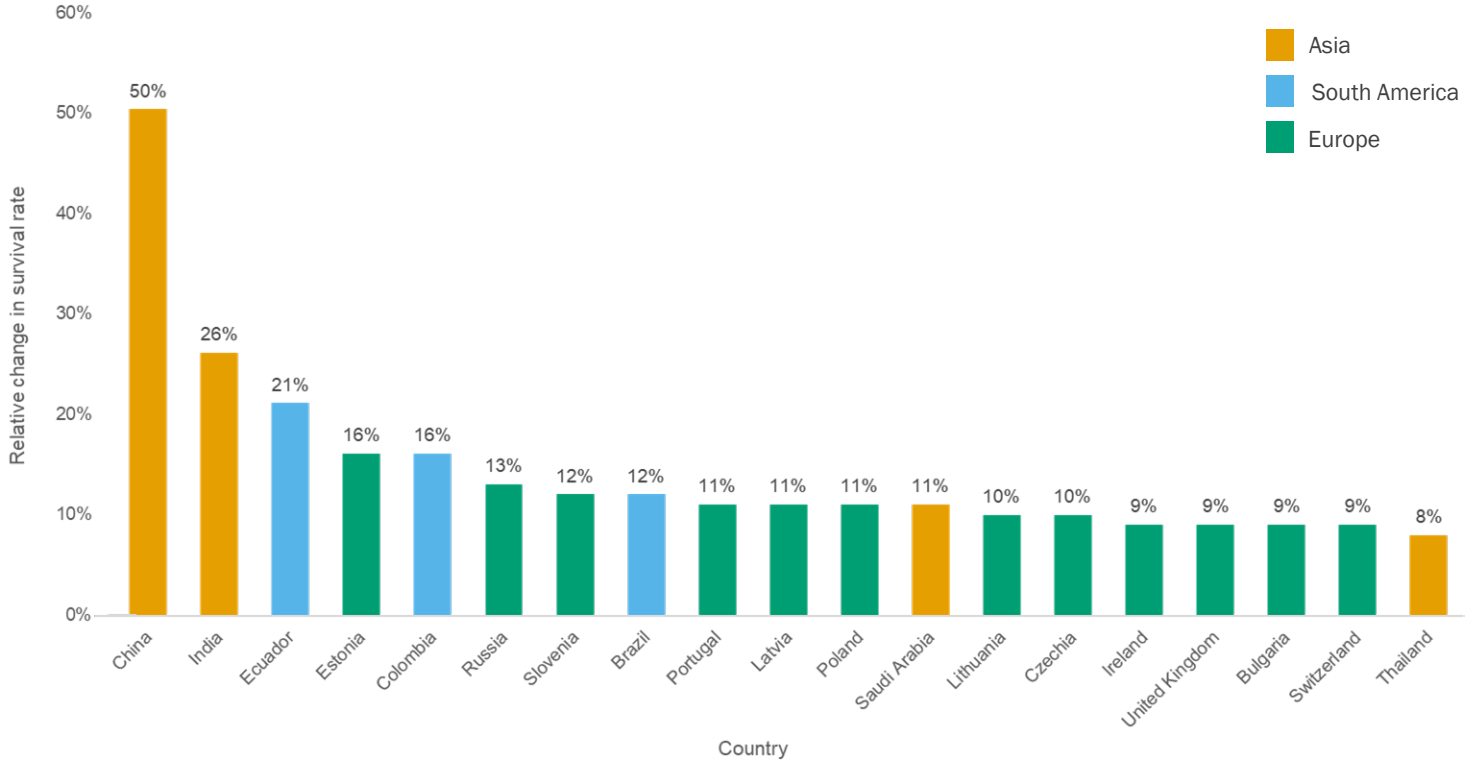
Illustrative data

Countries with the highest relative change in 5-year breast cancer survival rates between 1999 and 2009 (1/2)



Our World in Data. Available from: https://ourworldindata.org/grapher/five-year-survival-rates-from-breast-cancer?tab=table&time=1999..latest (Accessed May 4, 2022)

Countries with the highest relative change in 5-year breast cancer survival rates between 1999 and 2009 (2/2)



Our World in Data. Available from: https://ourworldindata.org/grapher/five-year-survival-rates-from-breast-cancer?tab=table&time=1999..latest (Accessed May 4, 2022)

rainbow scale



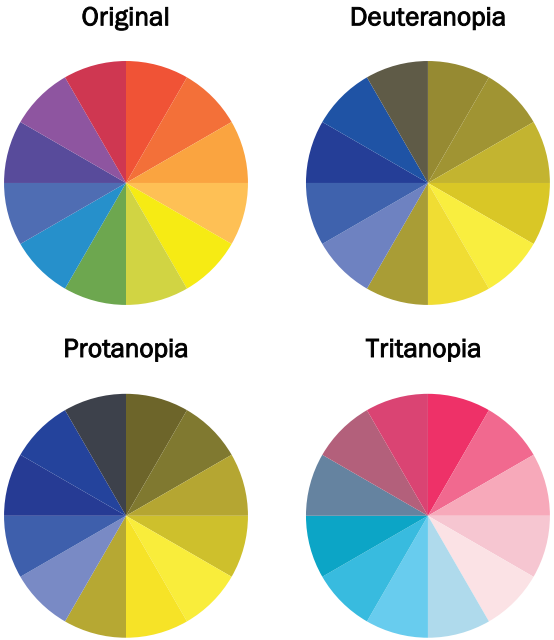
rainbow converted to grayscale



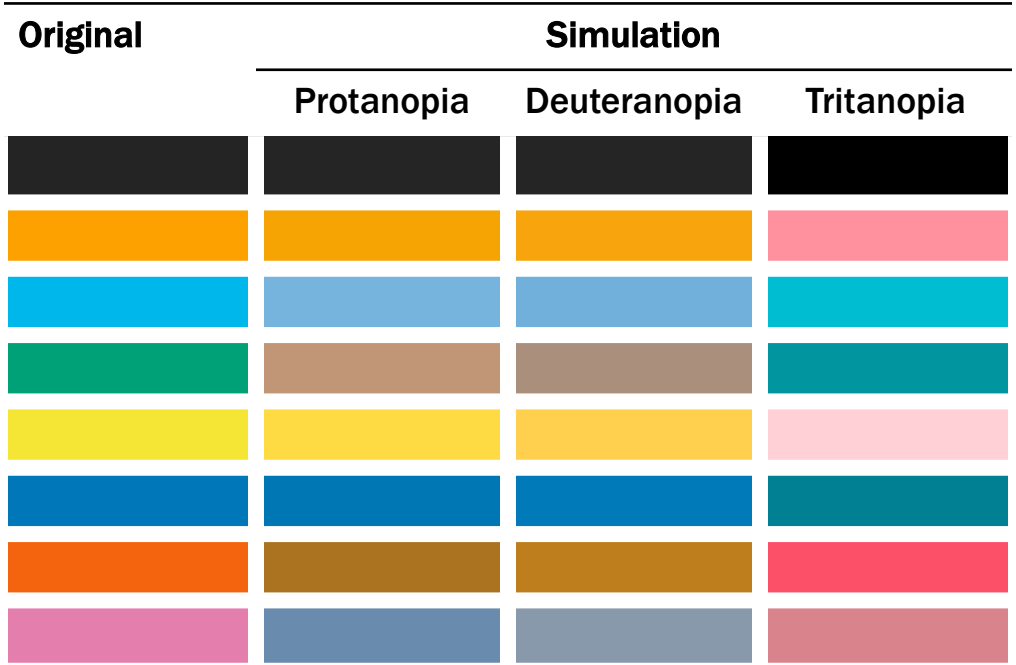
Wilke CO. Fundamentals of Data Visualization. Available from: https://clauswilke.com/dataviz/color-pitfalls.html (Accessed May 4, 2022)

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Types of color blindness[1]



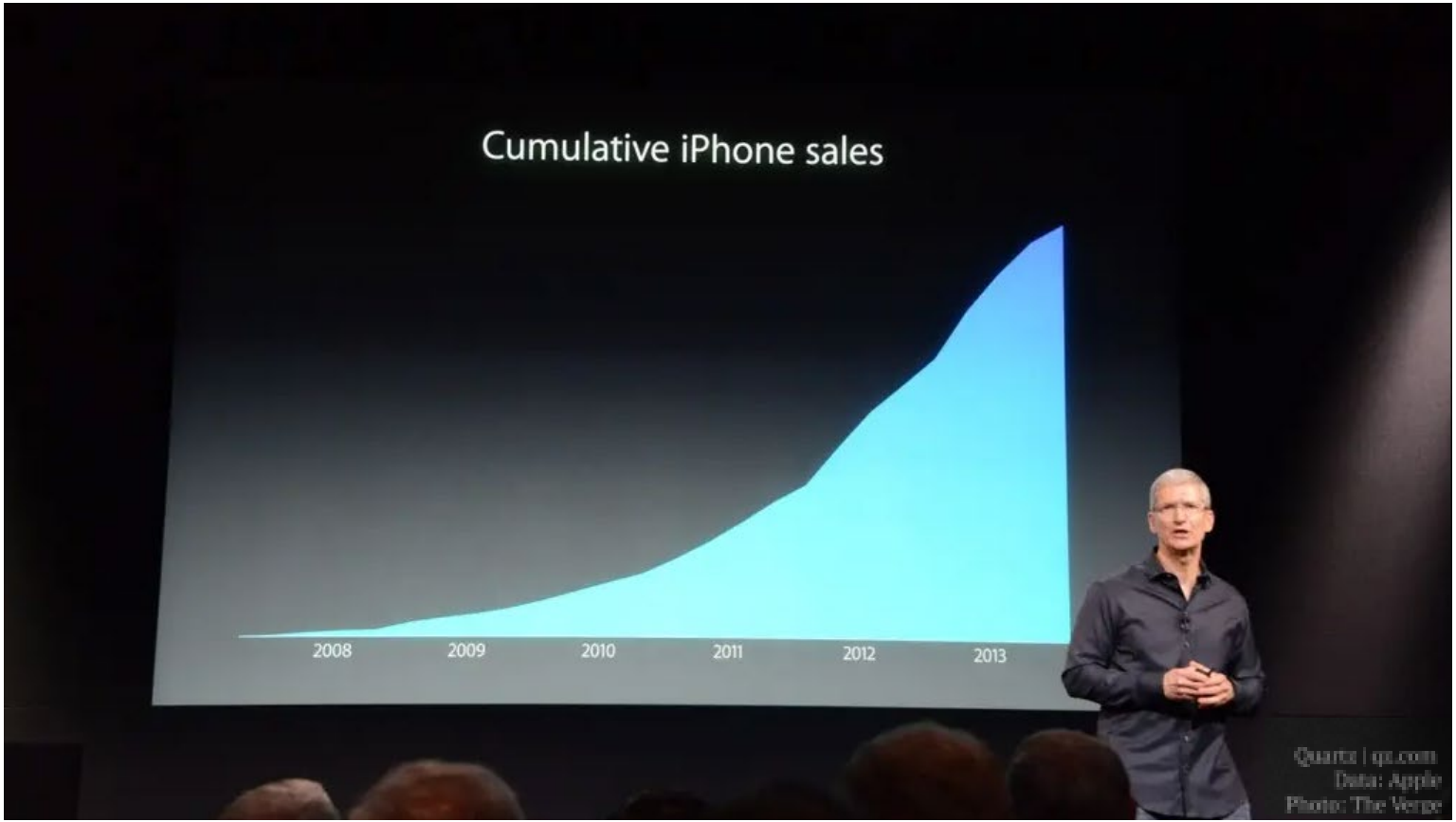
Unambiguous color palette[2]



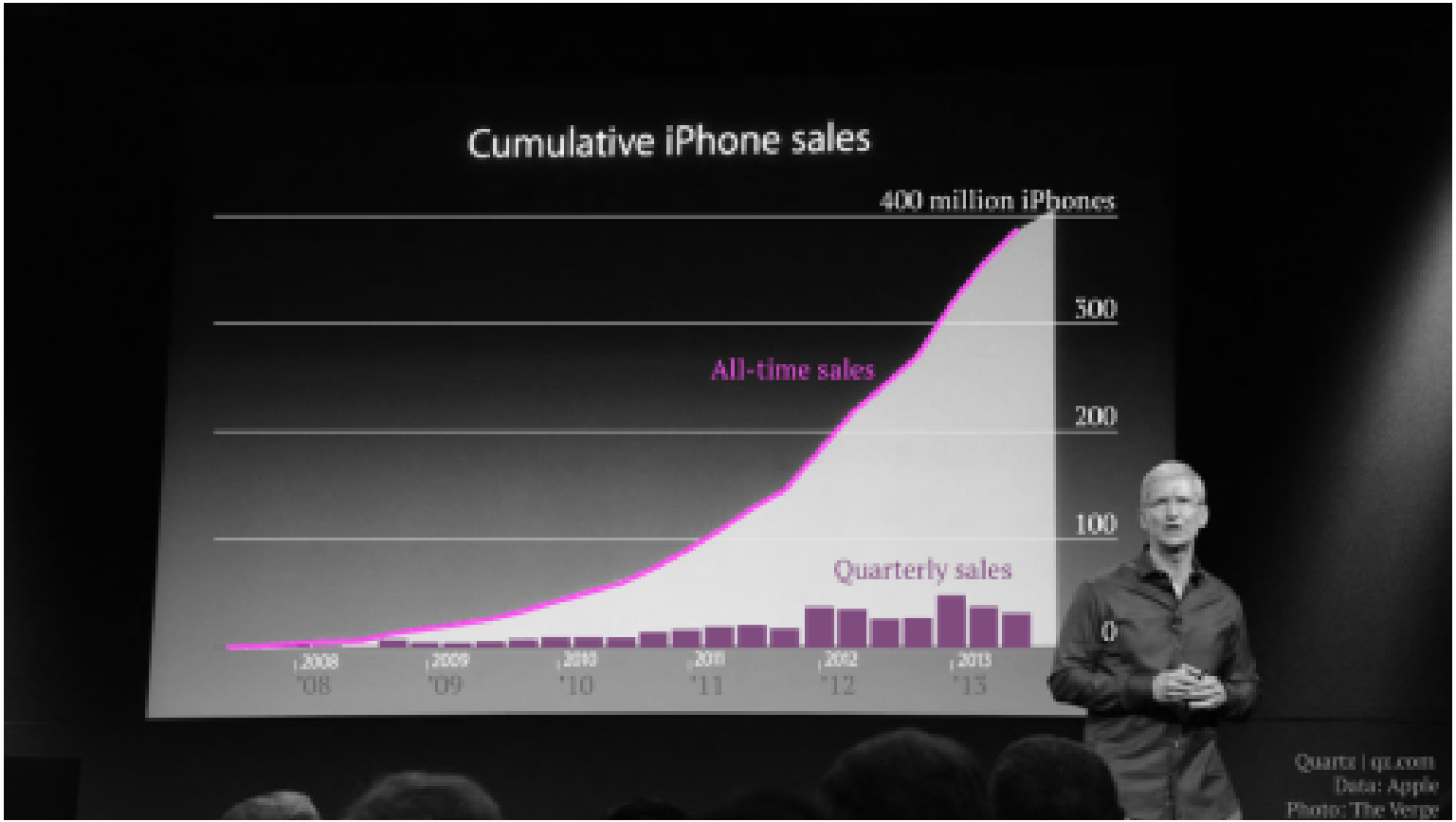
1. All About Vision. Available from: https://www.allaboutvision.com/conditions/color-blindness/types-of-color-blindness/ (Accessed May 4, 2022)
2. Jfly. Available from: https://jfly.uni-koeln.de/color/ (Accessed May 4, 2022)



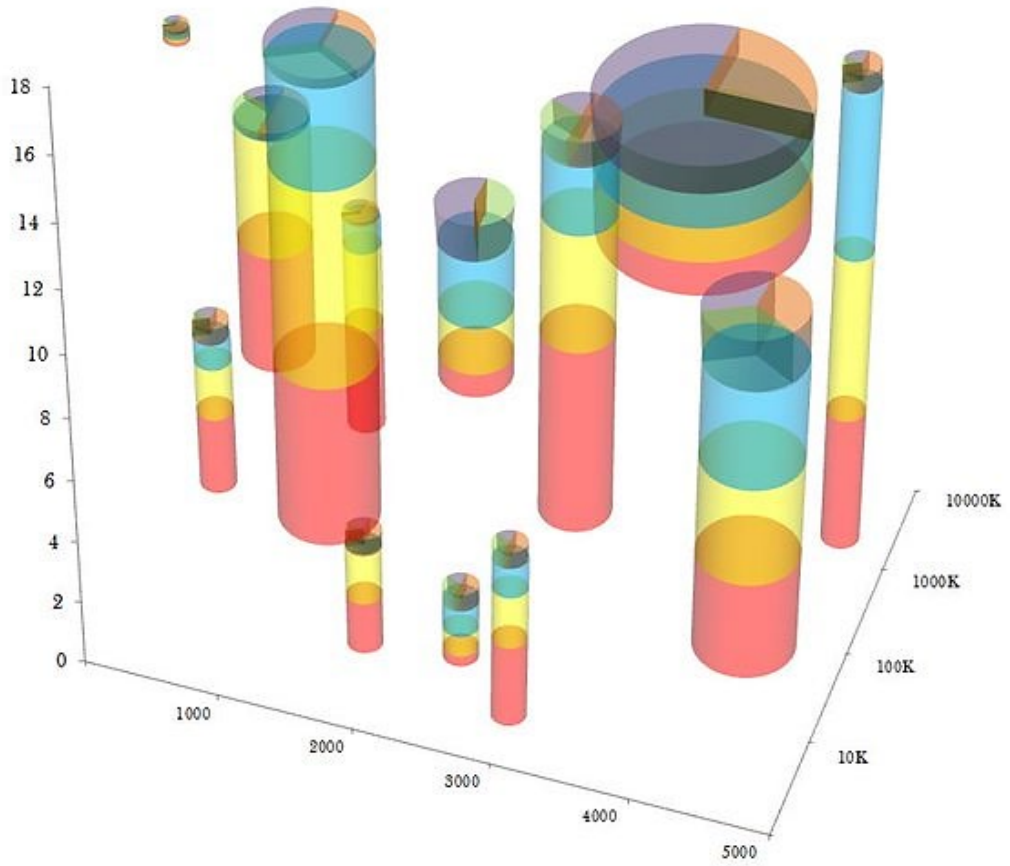
Bad data visualization



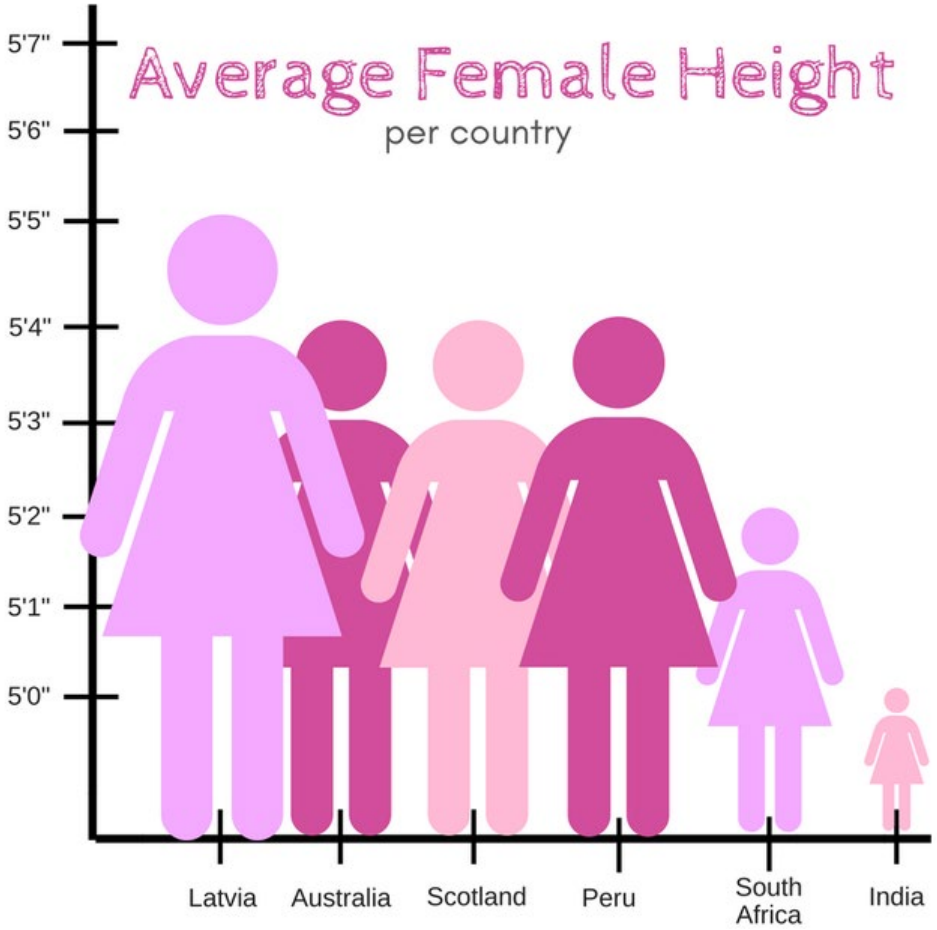
Quartz. Available from: https://qz.com/122921/the-chart-tim-cook-doesnt-want-you-to-see/ (Accessed May 4, 2022)



Quartz. Available from: https://qz.com/122921/the-chart-tim-cook-doesnt-want-you-to-see/ (Accessed May 4, 2022)



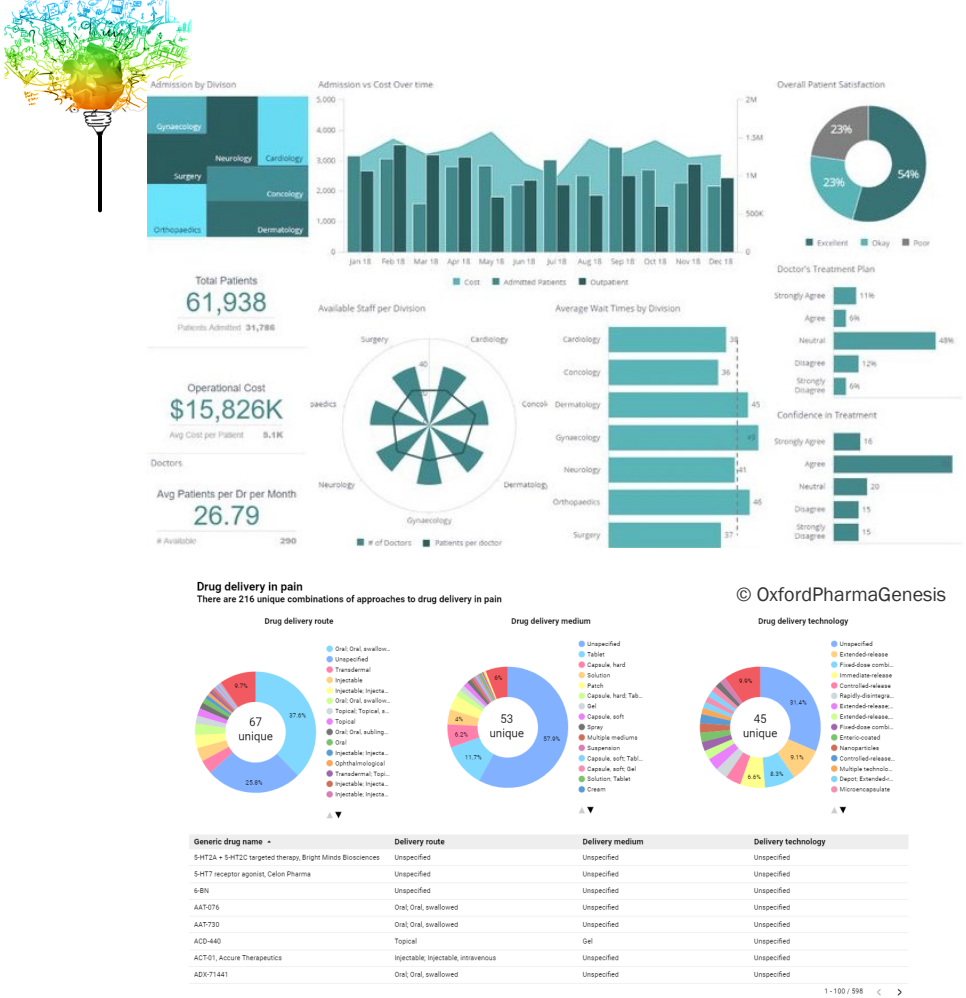
Reddit. Available from: https://www.reddit.com/r/CrappyDesign/comments/9ck7v3/the_worst_bit_is_that_its_from_a_math_book/ (Accessed May 4, 2022)

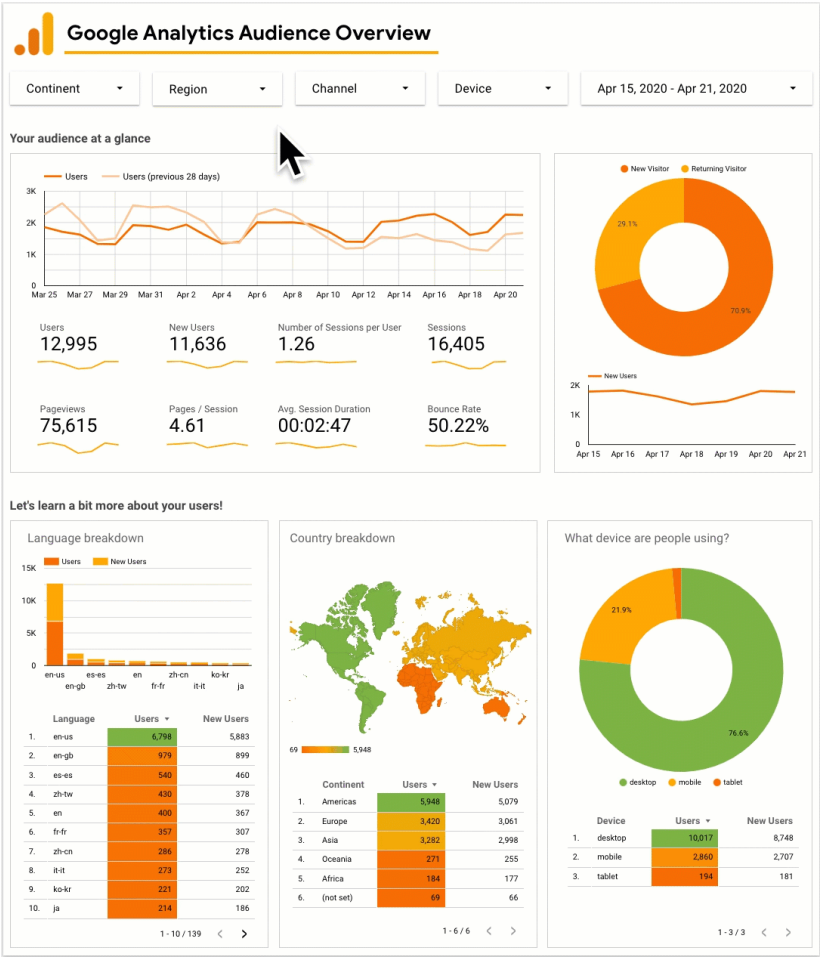


More Than Height. Available from: http://www.laboratorium.eus/en/aggregator?page=7 (Accessed May 4, 2022)



Dashboarding best practice





Sisense. Available from: https://www.sisense.com/dashboard-examples/healthcare/ (Accessed May 4, 2022); Google Analytics. Available from: https://support.google.com/analytics/answer/9849873?hl=en (Accessed May 4, 2022)

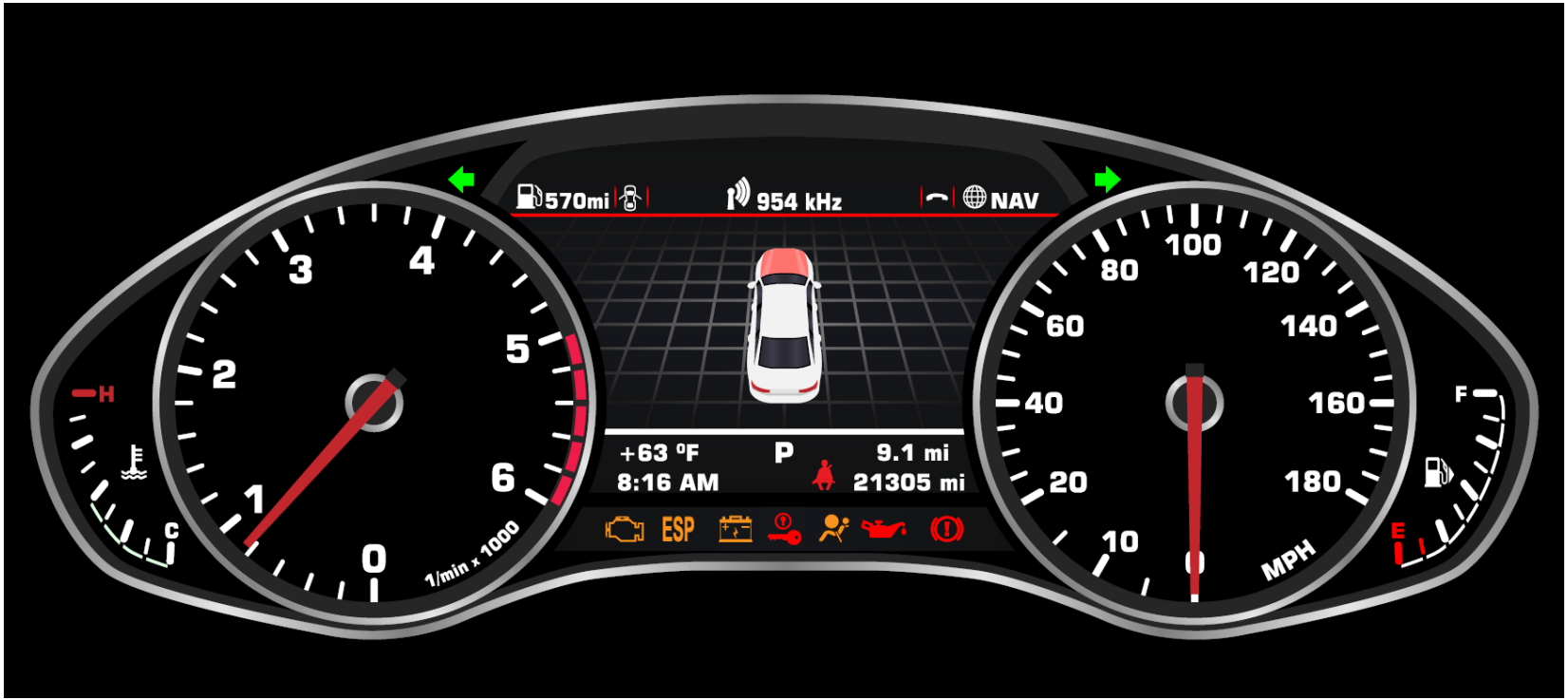
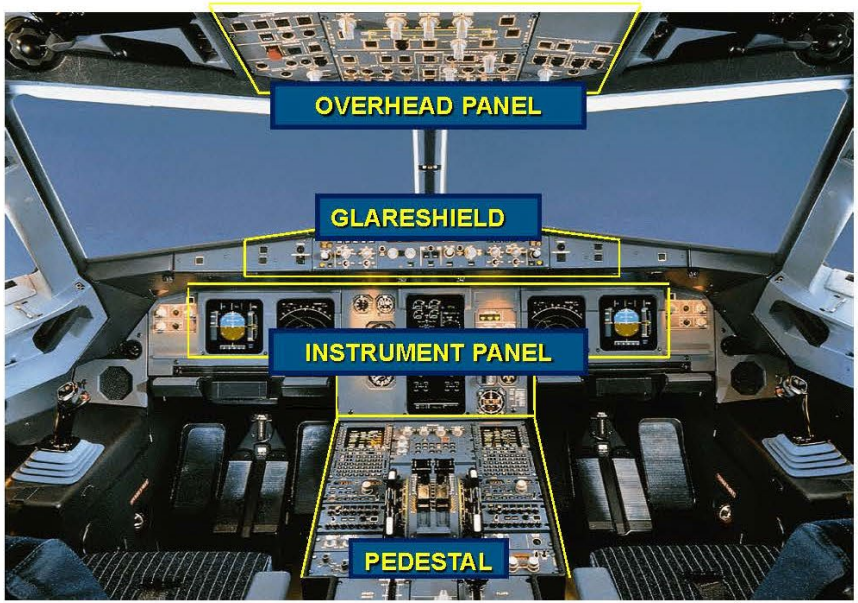


Image from Shutterstock

Arrangement of Panels

- **Location of the main controls takes into account:**
  - The relative **importance** of each system
  - The **frequency of operation** by the pilots
  - The **ease** with which controls **can be reached**
  - The **shape** of the control
  - The **duplication** of controls, if required



International Civil Aviation Organization. Available from: https://www.icao.int/ESAF/Documents/meetings/2017/AFI FOSAS 2017/Day 1 Docs/Day_1_2_Airbuspihlo.pdf (Accessed May 4, 2022)

Main Instrument Panel

- Controls Display units are located to be in full view of both pilots
- Mainly supports the Display Units necessary to:
  - FLY (PFD/HUD)
  - NAVIGATE (ND)
  - COMMUNICATE (ATC)
  - MONITOR (ECAM)



International Civil Aviation Organization. Available from: https://www.icao.int/ESAF/Documents/meetings/2017/AFI FOSAS 2017/Day 1 Docs/Day_1_2_Airbuspihlo.pdf (Accessed May 4, 2022)

Best practices for dashboards

I. Avoid overcrowding

II. Optimize layout/flow

III. Prioritize simplicity

IV. Provide context

V. Use the right data visualization

VI. Consider accessibility

VII. Consistent labeling

VIII. Use interactivity

IX. Consider functionality

X. Never stop evolving



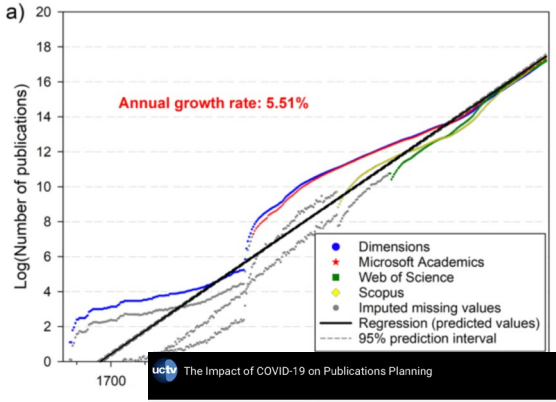
Using ”DIY” Data Analytics and Visualizations for Publication Management

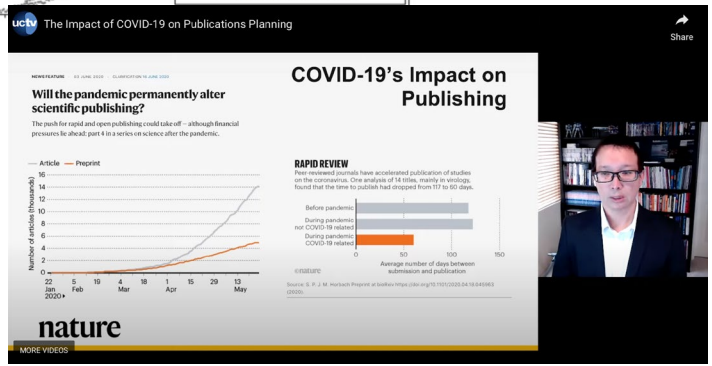
An Academic Lab and Government Research Services Contractor Perspective

Tim Mackey

ISMPP International Society for Medical Publication Professionals

Background – Investigator





- **Professor, CEO, Director and Editor-in-Chief**
- Author of over 200 publications, including in top-tier journals (Science, Cell, JAMA, Nature series, etc.)
- Have reviewed for over 100 different journals
- Current EIC of JMIR Infodemiology, prior editor with Springer/Nature, etc.

Background – Lab and Company



- **UCSD Research Lab and Global Health Policy and Data Science Institute**
- Academic and research lab at UC San Diego and non-affiliated institute
- Primarily focus on grant submission, research and publication, translation and dissemination
- NIH, TRDRP (CA), RWJF

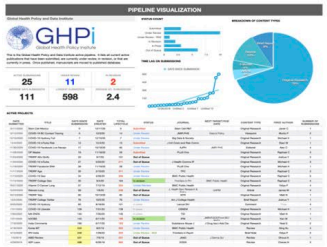
S-3 Research

- **S-3 Research LLC**
- Minority owned small business originally created with startup award from NIH
- Primarily focused on data science and research services (RaaS), solution generation, policy analysis
- U.S. FDA, NIH-NIDA, Snap Inc., Google, State of Colorado, WHO, etc.

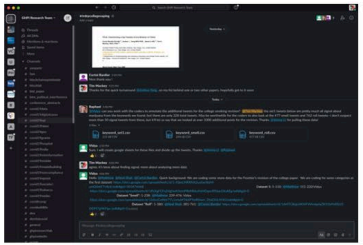
Research Management

Administrative

Pipeline



Lab Management



Research Team

Public Health

Social Sciences

Technology

Data Science

Statistics

SME Coding

Research Methods

AI/Big Data

Quantitative Core

GIS

Qualitative Core

SNA

Data Viz

DATA SCIENCE AND GLOBAL HEALTH INTERDISCPLINARY LAB

International Society for Medical Publication Professionals

Idea Generation

Key Elements ("NAT")

N A T

- "Novelty"
- Topic in the headlines
- Topic that is cutting-edge
- Topic that takes new angle on existing subject

- "Approach"
- Original: Strong methods either innovative or well conformed
- Commentary: Logical subtopics and strong transitions

- "Translation"
- Translation of results or narrative into policy analysis
- Strong/innovative policy response that is evidence-based

Altmetrics in the Academy

Implementing strategies in the library to foster academic engagement, dissemination and measurement

Impact

Google Scholar

Literature Review

UCSD ACADEMIC BIOGRAPHY/BIBLIOGRAPHY FORM

Mackey, Timothy Ken

Department: Anesthesiology Title(s): Associate Adjunct Professor

Section I: Employment History and Education

Previous Applicable Employment

Please provide a full account of your time from the date of your first academic (or otherwise relevant) employment to the present, including any periods when you were not employed. Include part-time appointments. Provide salary or approximate annual earnings in all cases. Please include all previous University of California employment. You may provide supplementary information if necessary.

Period of employment From: To:	Institution, firm or organization	Location	Rank, title, or position
7/02 - 6/03	Yokohama Board of Education – JET Program	Yokohama, Japan	Assistant Language Teacher
6/04 - 6/06	Nobel Ltd.	Carlsbad, CA	Corporate Paralegal
7/01 - Present	RasMed Inc.	San Diego, CA	Senior Legal and Compliance Specialist
11/10 - Present	California Western School of Law	San Diego, CA	Senior Research Associate
6/11 - 8/11	World Health Organization	Geneva, Switzerland	Intern, Non-Salaried
8/1/12 - 9/30/13	University of California	San Diego, CA	Clinical Instructor, Non-Salaried
10/1/13 – 6/30/17	University of California	San Diego, CA	Assistant Adjunct Professor, Non-Salaried
7/1/17 - Present	University of California	San Diego, CA	Associate Adjunct Professor, Non-Salaried
11/1/18 – Present	UCSD Extension	San Diego, CA	Continuing Educator II, Director

Education

School, college, university, or hospital (internship, residency, or fellowship)	Dates of attendance	Location	Major subject or field	Degrees or certificates	Date received
University of California	10/98-6/02	San Diego, CA	Political Science-International Relations	B.A.	6/02
University of California	10/07-6/09	San Diego, CA	Health Law	MAS	6/09
University of California	9/10-6/13	San Diego, CA	Global Health	Ph.D.	6/13

Please indicate areas of sub-specialization or board certification, if any. Also include a list of special licenses or permits and the dates received.

Paralegal Professional Certificate – June 2004
Certified Legal Assistant (CLA/CP) #133811 – July 2004
Global Health Diplomacy, Executive Course, The Graduate Institute, Geneva – June 2011

Section II: Professional Data

Please list your activities in each of the following eight categories. Please provide dates of awards or service.

(a) University Service (Include service at the departmental, college, Academic Senate, campuswide, and systemwide levels.)

2014 – Present: Associate Program Director of the Master's program ("MAS Program")UC San Diego – California Western School of Law – Joint Master's Degree in Health Policy and Law
2014 – Present: Academic Program Representative, University of California, San Diego, Office of Graduate Studies Commencement
Present: Member, Advisory Board for Medical Writing and Editing Certificate, UC San Diego – Extension
esent: Global Health Program Advisory Committee, UC San Diego – Global Health Program (undergraduate), Committee Member

berships (Include scholarly societies, professional boards, civic organizations, etc.)

resent: American Public Health Association, member
012: Scholars Without Borders, student member

Translation 4

Publication → Press Release → News Coverage



Publication in special supplement of AJTMH [B7] | *UCSD Health Sciences Press Release on research* | *News article coverage*

1. Citation Software

Software that help you organize your literature review and citations. Allows you to collect literature and auto format citations into a manuscript draft.

2. Data Analysis Tools

- Various software that allows you to conduct different types of data analyses. These tools will allow you to apply a certain methodology to your question.
- Statistics: SPSS, SAS, Stata, R
- GIS: ArcGIS
- Qualitative: Nvivo
- Survey: SurveyMonkey
- Network Analysis: GEPHI, NodeXL
- Visualization: Omnigraffle, Coggle

3. Tools to Help you Submit

Will describe automated targeting and copyright services offered through special contractor with MAS



Target Characteristics Equation

IF + Fr + OA

- Impact
- How famous the journal is
- How many people will notice the piece
- Difficulty in publishing

- Frequency
- How fast the piece can get published and published
- How many pieces the journal publishes

- Open Access
- How much money it will cost to publish the piece
- Expands journal targets

Publication



Most scientists regarded the new streamlined peer review process as 'quite an improvement.'

First Element

Scientific Abstract

- **Purpose:** Summarizes your research within 150-300 words for main results and so that people don't have to read anything else!
- **Types:** Primarily there are "structured" and "unstructured" abstracts. Structured follow IMRaD format and unstructured are simply a summary paragraph. Both contain similar elements of Intro, results and discussion, with original research also having methods.

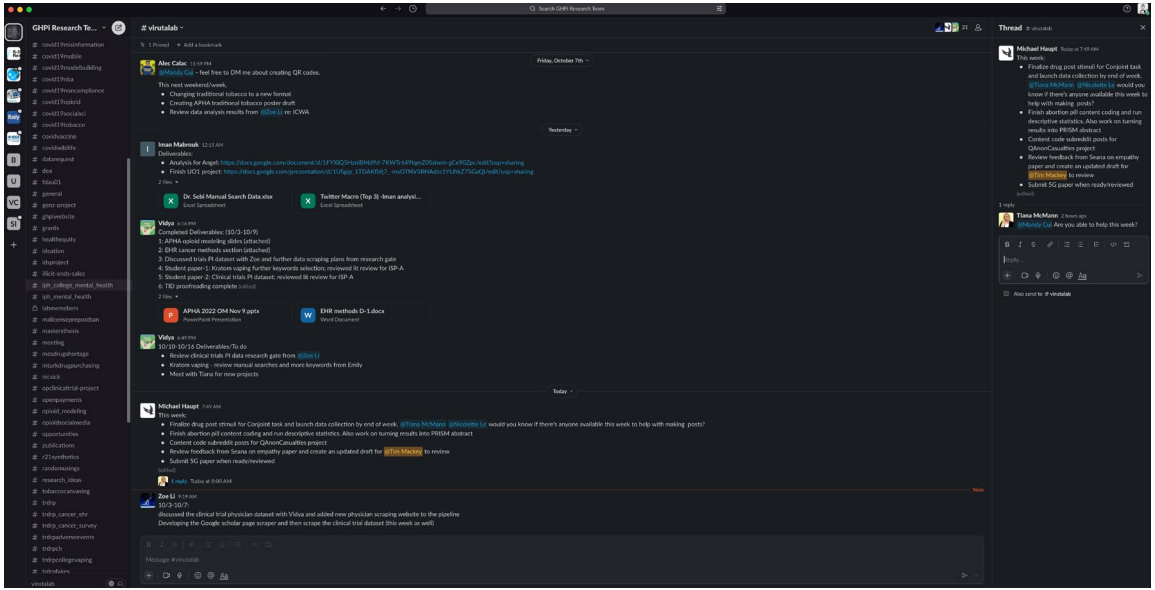


Key Tips

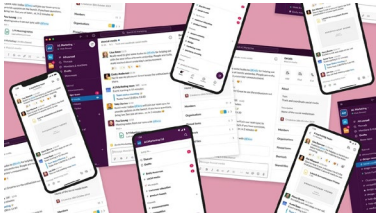
1. Your powerpoint is not the presentation, you are! Memorize and use slides as only as visual aids.
2. Don't worry about reciting presentation word-for-word or if you miss something, the fun stuff is often in Q&A
3. What's your story? Focus on the narrative, why is your topic important, where does it go, and what is its policy implications for the future?

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Research Collaboration - Slack

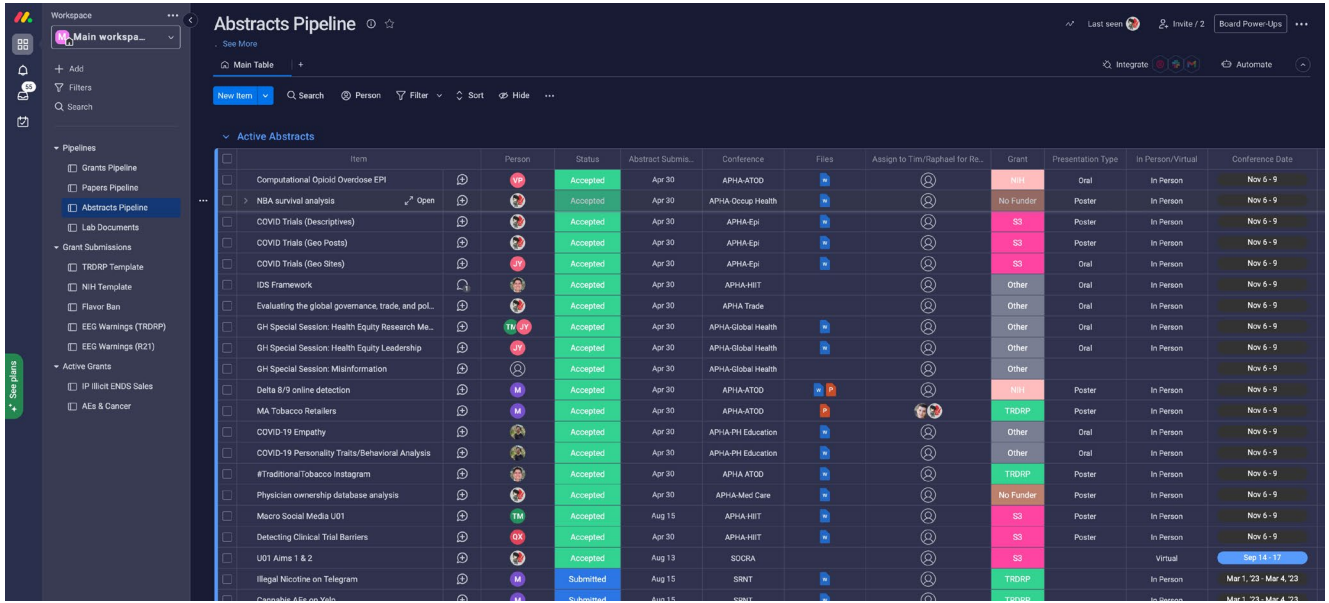






- Team (academic) Slack account with lab/company members (also external)
- Used for day-to-day collaboration, working on projects, doc/data sharing, etc.

Project Management Tracking

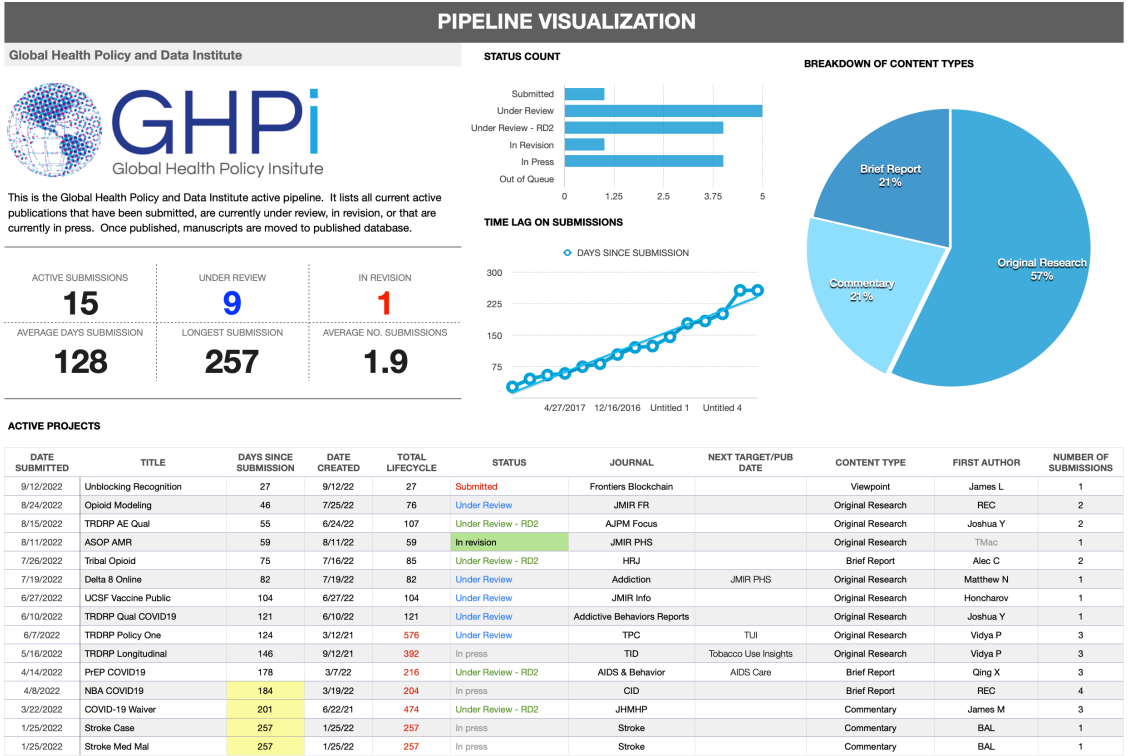


- Simple Monday.com project management online tool (subscription)
- Primarily used for research team to PM grants, abstracts, papers

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Publication Pipeline

- Simple numbers worksheet to track submissions and status
- Primarily used to plan for research workflows and pub performance
- Displays active submissions, status, time since submission, targets, etc.
- Software: Numbers (mac)



PIPELINE VISUALIZATION

Global Health Policy and Data Institute

GHPi Global Health Policy Insitute

This is the Global Health Policy and Data Institute active pipeline. It lists all current active publications that have been submitted, are currently under review, in revision, or that are currently in press. Once published, manuscripts are moved to published database.

ACTIVE SUBMISSIONS	UNDER REVIEW	IN REVISION
15	9	1
AVERAGE DAYS SUBMISSION	**LONGEST SUBMISSION**	**AVERAGE NO. SUBMISSIONS**
128	257	1.9

STATUS COUNT

TIME LAG ON SUBMISSIONS

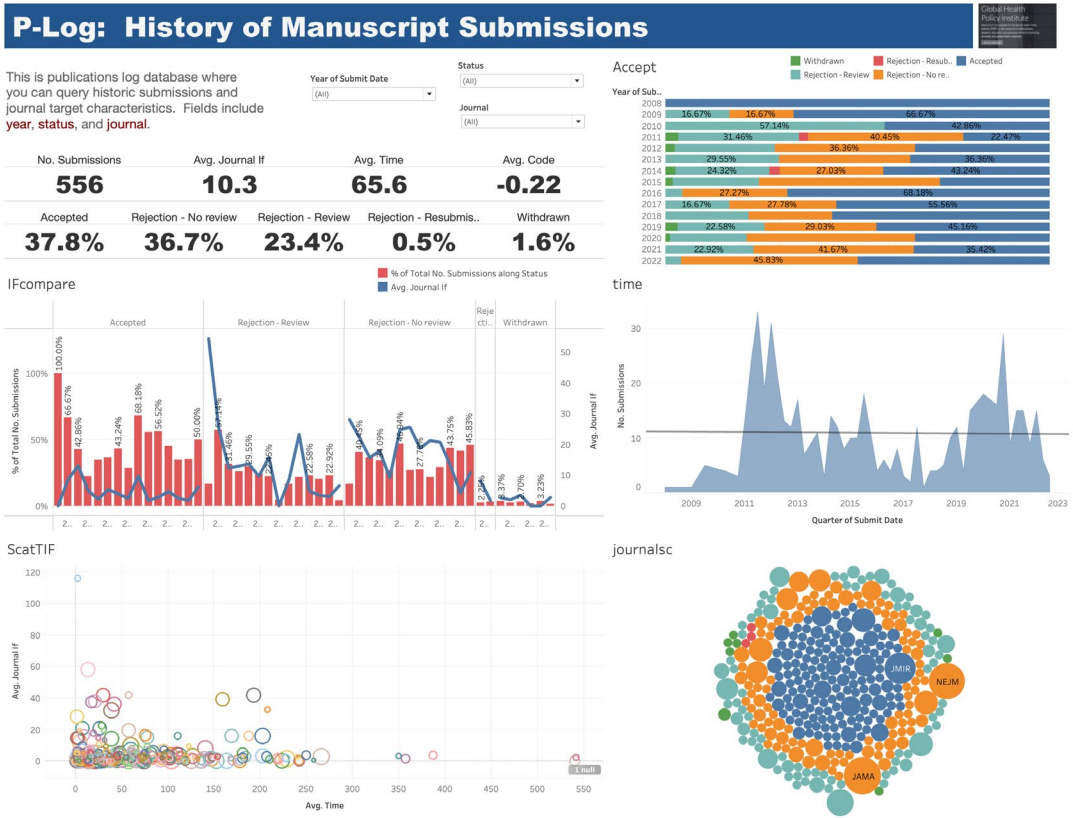
BREAKDOWN OF CONTENT TYPES

ACTIVE PROJECTS

DATE SUBMITTED	TITLE	DAYS SINCE SUBMISSION	DATE CREATED	TOTAL LIFECYCLE	STATUS	JOURNAL	NEXT TARGET/PUB DATE	CONTENT TYPE	FIRST AUTHOR	NUMBER OF SUBMISSIONS
9/12/2022	Unblocking Recognition	27	9/12/22	27	Submitted	Frontiers Blockchain		Viewpoint	James L	1
8/24/2022	Opioid Modeling	46	7/25/22	76	Under Review	JMIR FR		Original Research	REC	2
8/15/2022	TRDRP AE Qual	55	6/24/22	107	Under Review - RD2	AJPM Focus		Original Research	Joshua Y	2
8/11/2022	ASOP AMR	59	8/11/22	59	In revision	JMIR PHS		Original Research	TMac	1
7/26/2022	Tribal Opioid	75	7/16/22	85	Under Review - RD2	HRJ		Brief Report	Alec C	2
7/19/2022	Delta 8 Online	82	7/19/22	82	Under Review	Addiction	JMIR PHS	Original Research	Matthew N	1
6/27/2022	UCSF Vaccine Public	104	6/27/22	104	Under Review	JMIR Info		Original Research	Honcharov	1
6/10/2022	TRDRP Qual COVID19	121	6/10/22	121	Under Review	Addictive Behaviors Reports		Original Research	Joshua Y	1
6/7/2022	TRDRP Policy One	124	3/12/21	576	Under Review	TPC	TUI	Original Research	Vidya P	3
5/16/2022	TRDRP Longitudinal	146	9/12/21	392	In press	TID	Tobacco Use Insights	Original Research	Vidya P	3
4/14/2022	PrEP COVID19	178	3/7/22	216	Under Review - RD2	AIDS & Behavior	AIDS Care	Brief Report	Qing X	3
4/8/2022	NBA COVID19	184	3/19/22	204	In press	CID		Brief Report	REC	4
3/22/2022	COVID-19 Waiver	201	6/22/21	474	Under Review - RD2	JHMHP		Commentary	James M	3
1/25/2022	Stroke Case	257	1/25/22	257	In press	Stroke		Commentary	BAL	1
1/25/2022	Stroke Med Mal	257	1/25/22	257	In press	Stroke		Commentary	BAL	1

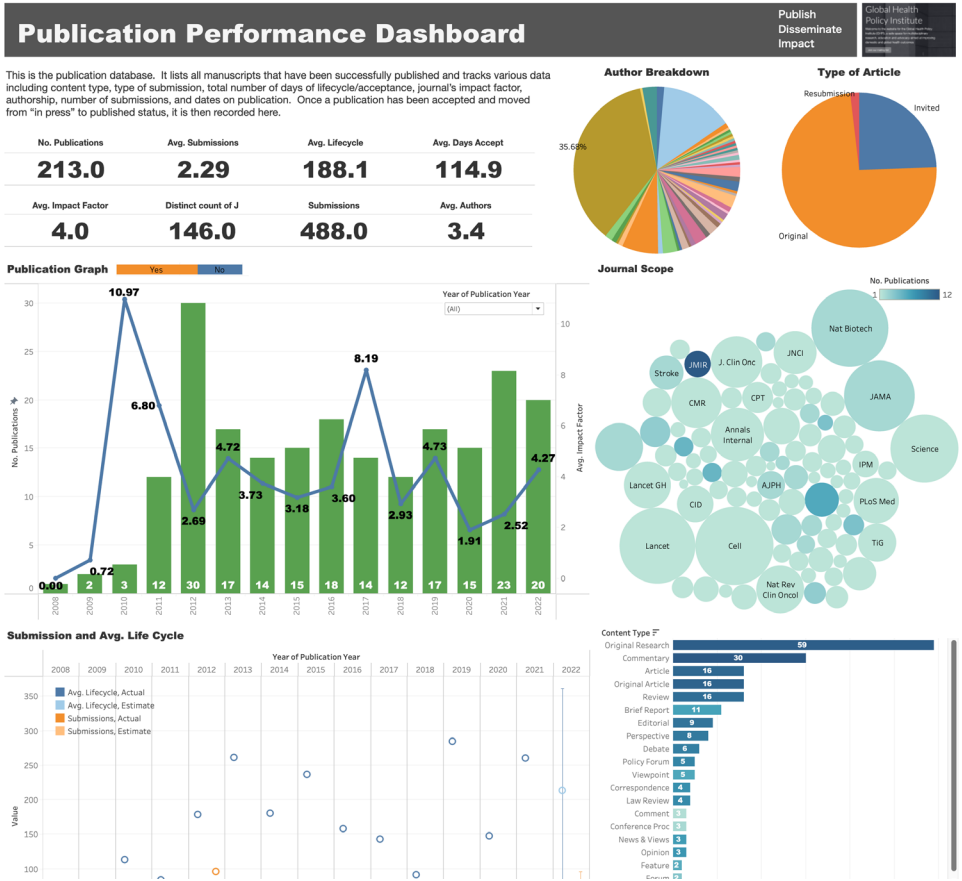
P-log and P-perform

- Set of customized Tableau visualizations of lab/company data
- **P-log** used to track all submissions and enable precision targeting



P-log and P-perform

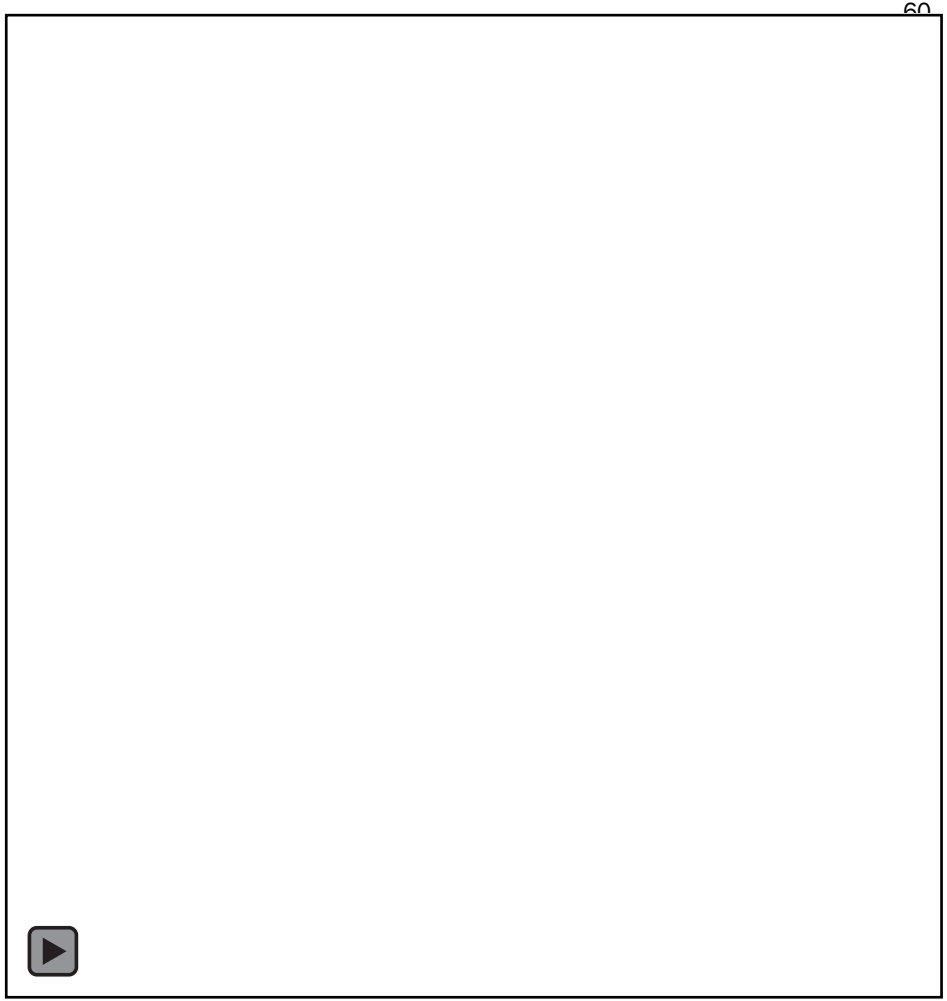
- Set of customized Tableau visualizations of lab/company data
- **P-perform** used for performance benchmarking and pub planning





Conclusions

- **Analytics are a must in publication management and planning:** Publication landscape is changing rapidly, without support of analytics, likelihood of successful publication diminished
- **Visualization takes many forms:** Data visualization builds vary between lab (internal) and company (external client facing – ReTool)
- **Tools are available:** Lots of tools available ranging from free, subscription, and license (customizable), we use a combination for different projects
- **Future considerations:** We are working on tools to better benchmark performance, develop prediction models for submission/targeting, and more robust data aggregation tools





Let’s get to know you…

How do Publication Managers use Data Visualization in Publication Management

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Audience Poll #1



- How much time do you spend per month creating dashboards, slides or reports to provide an update about publication status to stakeholders (ie, authors/publication teams/publication steering committees/management)?
  - a few hours
  - a few days
  - longer

Audience Poll #2



- What type of program do you **PRIMARILY** use to track and manage publications?
  - Spreadsheet
  - Project management program
  - Publication management program
  - One overarching company-wide collaboration program
  - Create a new publication management system

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Considerations

Publication Management Programs that include Data Visualization

- Easy to use
- Cost effective of budget/time
- Compliant with good publication practices
- Generate easily understandable Visualizations of Publication data
- Automatic update of visuals
- Could connect to other programs
- One overarching program used company-wide for multiple functions not just publications
- Create a new program to meet specific publication management needs



Audience Q&A

To ask a question, open the Q&A window, type your question into the Q&A box. Click Send.

Upcoming ISMPP U Webinars

October 26, 2022:

CMPP Program and Recertification Update

November 16, 2022:

External Digital Engagement: Omnichannel Considerations for Publication Professionals



ISMPP University

Leveraging Data Visualization to Optimize Publication Management and Strategy

October 19, 2022

International Society for Medical Publication Professionals™

Webinar will begin promptly at:
11 AM ET / 4 PM GMT

Thank you for attending!

We hope you enjoyed today's presentation.

After closing out of Zoom, please click the CONTINUE button on your screen to take our short survey. Thank you!



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Faculty Bios

Richard White



- Champion for the clear and transparent communication of complex data to non-specialists and lay audiences
- Led multiple ISMPP sessions showcasing novel approaches to presenting HEOR, RWE and PRO studies
- Guided foundation of dedicated Informatics & Data Science practice at Oxford PharmaGenesis

Timothy Mackey



- Professor, educator, innovator, and entrepreneur in public health, data science, and research strategy
- Author of over 200 publications, Editor-in-chief of JMIR Infodemiology
- Passionate about generating analytics to optimize publication and research strategy

Donna Simcoe



- 25+ years managing and developing medical publications and has provided medical writing support for 40+ journal articles
- Advisor/adjunct faculty for UCSD Extended Studies Medical Writing Certificate program
- Provides volunteer caregiver support locally in San Diego

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Backup

READING

SCAN ME

Fundamentals of data visualization
Claus Wilke

SCAN ME

The visual display of quantitative information
Edward Tufte

SCAN ME

Dashboarding best principles and examples
datapine

COURSES

SCAN ME

Become a data visualization specialist: concepts

SCAN ME

Become a data visualization specialist: tools