

HANDS ON DATENVISUALISIERUNG

LETTY, KAREN OTTE

AGENDA HEUTE

- ▶ Besprechung der Aufgaben

Pause

- ▶ Arbeiten mit Vektorgraphiken
- ▶ Fonts, Farben und mehr
- ▶ (The good, the bad and the don't)

AUFGABEN 3

- ▶ Vorstellung eurer Visualisierungen / Konzepte
- ▶ Feedback aus der Gruppe! Was ist gut? Ist die Graphik verständlich? Was fehlt? Was könnte anders gemacht werden?

ARBEITEN MIT VEKTORGRAPHIKEN

VEKTORGRAPHIK PROGRAMME

Adobe Illustrator (<https://www.adobe.com/>):

- ▶ Industriestandard für das Erzeugen von Vektorgraphiken

Affinity Designer (<https://affinity.serif.com/>) :

- ▶ Kostengünstigere Alternative zu Adobe Illustrator

InkScape (<https://inkscape.org/>):

- ▶ Kostenlose Alternative zu Adobe Illustrator, u.U. höhere Lernkurve

Microsoft PowerPoint:

- ▶ Unterstützt einiges an Vektorgraphikoperationen

**FONTS,
FARBEN UND MEHR**

RESSOURCEN – FARBEN

- ▶ Fertige Farbpaletten und Farbschemas:

<https://colors.co/generate>

<https://colorpalettes.net/>

<https://www.design-seeds.com/>

<https://colorbrewer2.org/>

<https://www.instagram.com/mr.pugo/>

RESSOURCEN – FARBEN

- ▶ Selbst auswählen / generieren:
https://en.wikipedia.org/wiki/List_of_RAL_colors
<https://www.materialpalette.com/>
<https://mycolor.space/>
<https://www.colorhexa.com/>

RESSOURCEN – FARBEN

- ▶ Gradienten generieren:
<https://colorbox.io/>
<https://mycolor.space/>
<http://paletton.com/>

RESSOURCEN – FONTS

- ▶ <https://fonts.google.com/>
- ▶ <https://www.1001freefonts.com/>
- ▶ <https://www.dafont.com/de/>
- ▶ <https://fonts.adobe.com/fonts>
- ▶ <https://www.cufonfonts.com/>
- ▶ <https://www.myfonts.com/WhatTheFont/> Fonts identifizieren

RESSOURCEN – ICONS (UND ILLUSTRATIONEN)

- ▶ <https://fontawesome.com/>
- ▶ <https://icons8.com/>
- ▶ <https://thenounproject.com/>
- ▶ <https://symbolikon.com/>
- ▶ (<https://biorender.com/>)
- ▶ (<https://undraw.co/illustrations>)

THE GOOD

VORWORT

Was eine gute Visualisierung ausmacht hängt von vielen Faktoren ab.

- ▶ Kontext
- ▶ Erwartungshaltung
- ▶ Medium / Technologie

JOURNAL STYLE GUIDES



Guidelines for Table of Contents/Abstract Graphics

Updated July 30, 2020

A graphic must be included with each manuscript for display in the table of contents (TOC) and the abstract. This graphic should capture the reader's attention and, in conjunction with the manuscript title, should give the reader a quick visual impression of the essence of the manuscript without providing specific results.

JOURNAL STYLE GUIDES



Guidelines for Table of Contents/Abstract

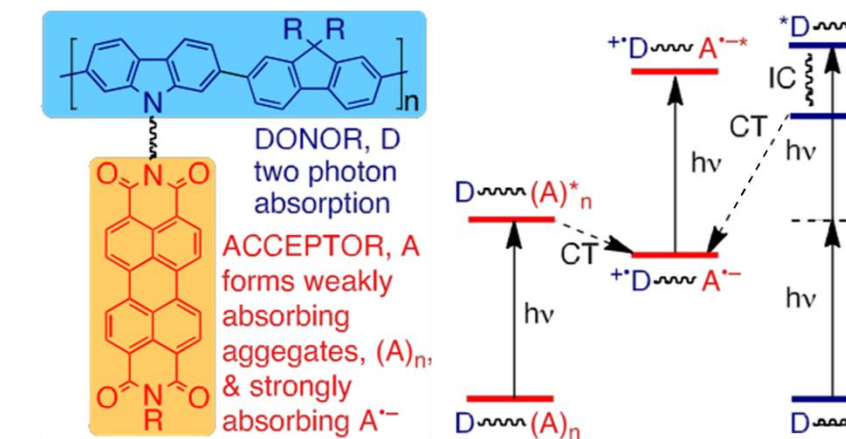
Updated July 30, 2020

A graphic must be included with each manuscript for display in the Table of Contents/Abstract. This graphic should capture the reader's attention and, in conjunction with the title, provide the reader a quick visual impression of the essence of the manuscript.

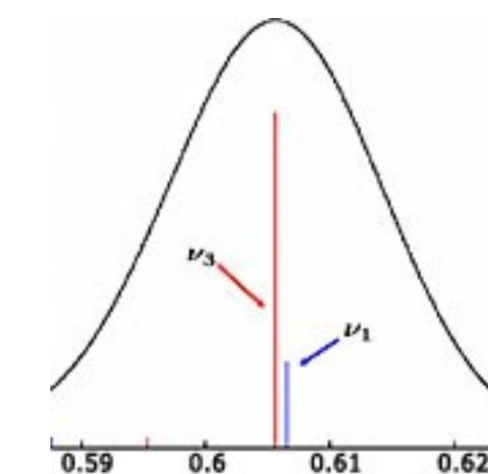
Examples of Good and Poor TOC/Abstract Graphics

Authors are encouraged to examine a current issue of the journal for appropriate examples of TOC/abstract graphics. Some examples of good and poor TOC/abstract graphics are provided below.

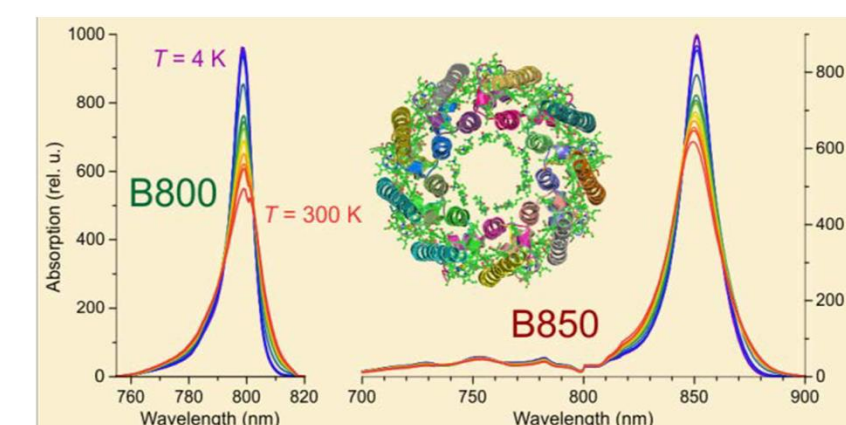
GOOD GRAPHICS



This graphic has a good balance of images and description. All of the type is crisp and easy to read.

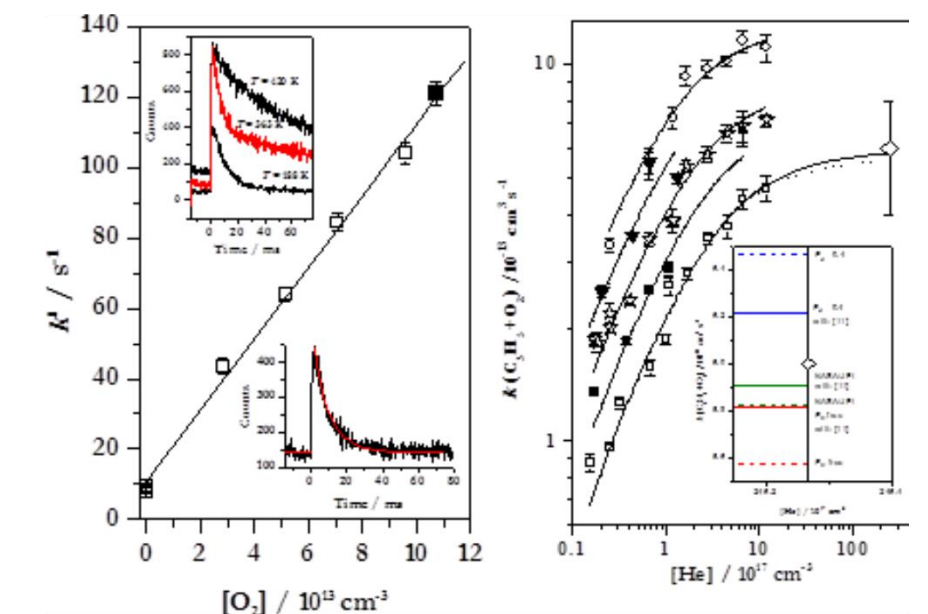


This graphic is simple and appealing.

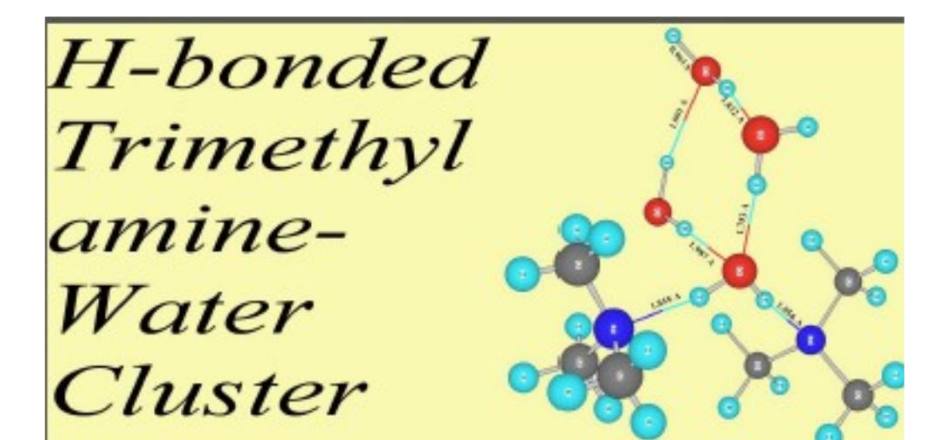


Appealing use of color and graphs. Even the smallest type is good quality and readable.

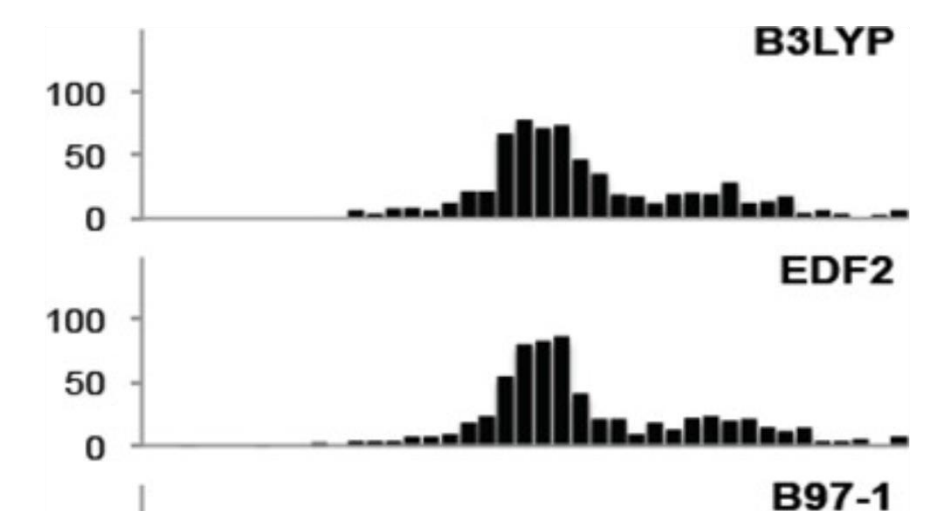
POOR GRAPHICS



Graphic is very cluttered and most of the fonts are too small or faint to be readable.



The font is too big, the image says nothing about the article, and the type on the image is unreadable.



Graphic is uninteresting and not informative.

MINIMALISMUS

Remove
to improve
(the **data-ink** ratio)

THE SHIFTING PATTERNS OF MOVEMENT

MIGRATION WAVES

WHEN EMIGRATION IS HIGHER

Black indicates more people leaving a country than foreign-born residents staying.



WHEN IMMIGRATION IS HIGHER

White indicates more foreign-born residents in a country than people leaving.

The ebb and flow of people across borders has long shaped our world. Data from the past 50 years of international migration help us understand why people make the choice to leave and where they go. Less than 10 percent of these migrants are forced to flee; most are seeking a better life and move only when they can afford to. Global migrants totaled fewer than 100 million in the 1960s, and although the number has increased substantially since then, it remains a fraction of the world's 7.6 billion people today.

258

MILLION PEOPLE IN 2017 LIVED OUTSIDE THEIR COUNTRY OF ORIGIN.

3%

OF PEOPLE WORLDWIDE ARE MIGRANTS; THE FIGURE HAS HELD FOR 50 YEARS.

ALBERTO LUCAS LÓPEZ, RYAN WILLIAMS, AND KAYA BERNE, NGM STAFF

POVERTY IMMOBILIZES, MONEY MAKES MOVING POSSIBLE

Bangladesh. Millions fled conflict in the 1970s, and in the 1980s millions more began to leave for work in the Gulf states. Remittances from overseas fuel the economy.

Mexico. Higher incomes have encouraged many to seek U.S. jobs. Factors such as a weak U.S. market and stronger border enforcement after the 9/11 attacks slowed migration.

Vietnam. Economic growth since the end of the war, in 1975, has spurred in- and out-migration. Nearly half the four million Vietnamese living abroad are in the U.S.

STRONG LABOR MARKETS DRAW MIGRANTS

Thailand. Migrant workers and refugees are attracted to Thailand's wages and unfilled jobs. There was a brief outflow in 1992 of refugees who went home to Cambodia.

Spain. Economic growth, rising demand for labor, and integration into what became the EU led to a surge in migrants from developing countries in the 1990s.

Saudi Arabia. The 1970s oil boom brought foreign workers to the kingdom. The 1990s saw dwindling oil revenues and a crackdown on undocumented migrants.

U.A.E. Oil wealth, political stability, and a construction boom in the 2000s drew foreign workers. But soon after that, when oil prices fell, many of them left.

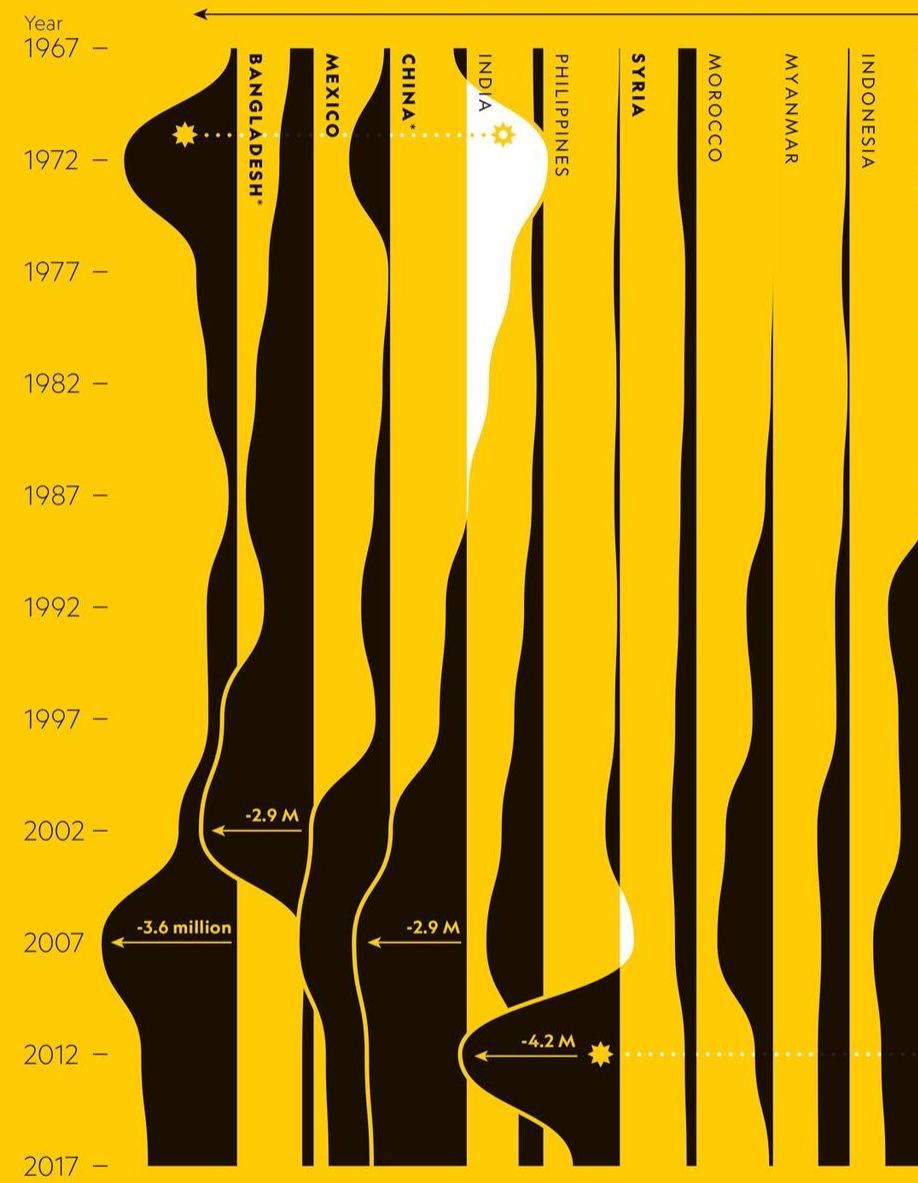
Germany. Millions of Eastern Europeans arrived when the Iron Curtain was lifted. The next surge came in the late 2000s as the robust economy drew migrants and refugees.

Russia. An exodus was reversed in the 1970s with the discovery of resources such as oil and gas. The 1991 Soviet collapse brought new arrivals from former republics.

United States. Some 1.6 million new jobs came with a strong postrecession economy in the 1990s. In 2002 a slowdown slashed both jobs and immigration.

HIGHER EMIGRATION

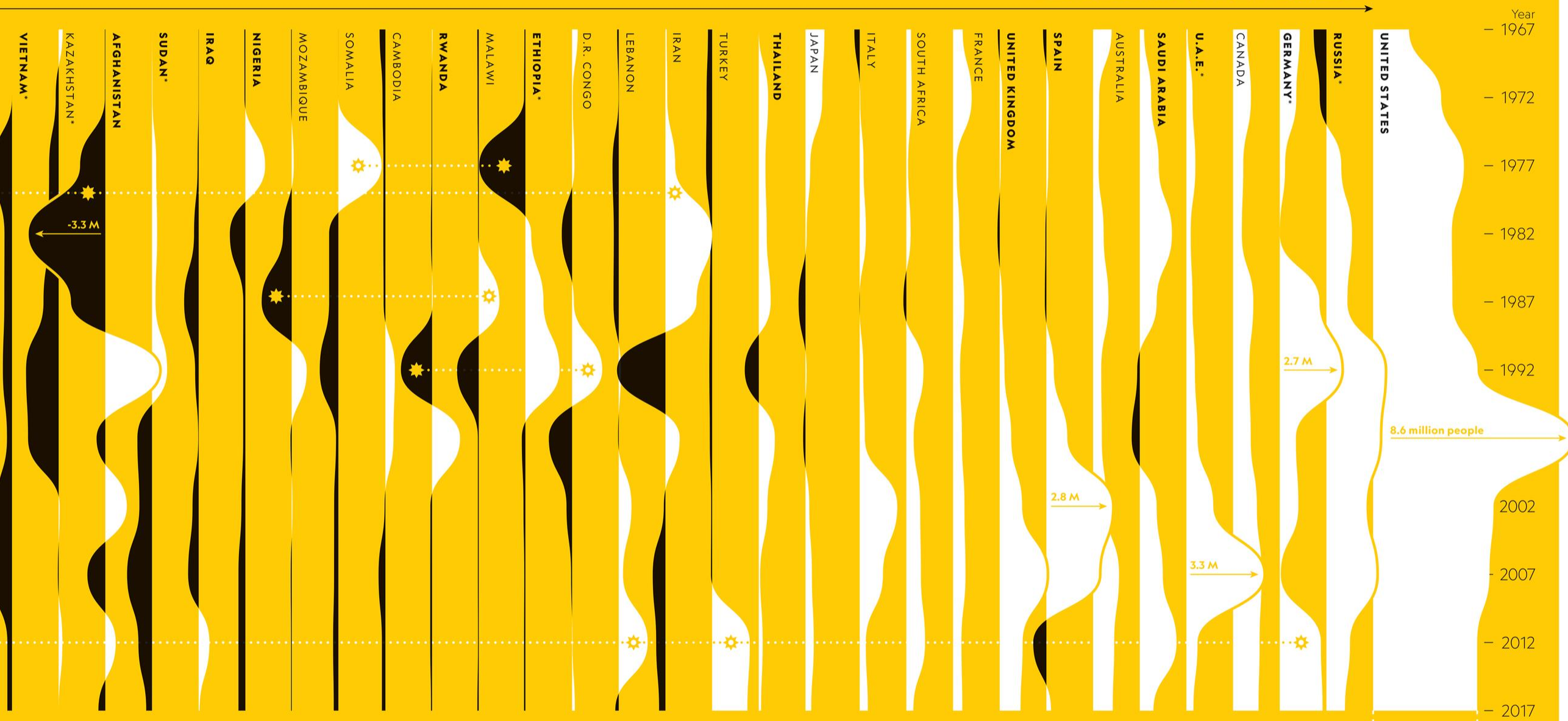
More people leaving a country than foreign-born residents staying



Top 10 net-emigration countries

HIGHER IMMIGRATION

More foreign-born residents in a country than people leaving



20 other selected countries

Top 10 net-immigration countries

0 1 2 3 4
Millions of people

Charts track net emigration (black) or immigration (white), 1967 to 2017.

★ ★
Nation in conflict Destination
Larger refugee crises shown above

INSTABILITY FORCES PEOPLE OUT

Syria. Unrest and civil war have pushed millions into countries such as Turkey, Jordan, and Lebanon. Syria's outflow in 2012 is mirrored in Turkey's inflow.

Afghanistan. The Soviet Union's 1979 invasion sent millions into Pakistan and elsewhere in the region. Many later returned, only to face further violence.

Sudan. Refugees from neighboring countries have contributed to Sudan's inflows, but cycles of civil war in the mid-1990s created greater net outflows.

Iraq. Instability following the 2003 U.S.-led invasion displaced millions of Iraqis. More recently, Iraq has taken in some 250,000 refugees from war-torn Syria.

Nigeria. A violent uprising in the 1980s curbed migrant arrivals and prompted departures. Today terrorist groups such as Boko Haram are spurring outflow.

Rwanda. Nearly two million Rwandans fled during the genocide that took some 800,000 lives in 1994. The conflict fueled war in the Dem. Rep. of the Congo.

POLICIES SHIFT MIGRATION FLOW

China. An end to "whites only" policies overseas that had long blocked migration, and emigration reforms at home in the 1980s opened the world to Chinese workers.

Ethiopia. The government outlawed emigration in 1981 after famine and revolution forced people out of the country. Many returned once the regime fell, in 1991.

United Kingdom. A change in policies in the 1990s eased restrictions on immigration and asylum. By 2002, a skilled immigrant could get a visa without a job offer.

*NET MIGRATION DATA BASED ON CURRENT COUNTRY BORDERS. SOURCES: WORLD BANK; IOM; UNHCR; ILO; MIGRATION POLICY INSTITUTE; PEW RESEARCH CENTER; SONJA FRANSEN AND HEIN DE HAAS, INTERNATIONAL MIGRATION INSTITUTE

SAMMLUNGEN

- ▶ <https://www.informationisbeautifulawards.com/>
- ▶ <https://www.economist.com/graphic-detail/>
- ▶ <https://www.nationalgeographic.com/> data points series
- ▶ <https://twitter.com/nytgraphics>
<https://twitter.com/PostGraphics>
<https://twitter.com/ReutersGraphics>
<https://twitter.com/PostGraphics>
<https://twitter.com/ftdata>
<https://twitter.com/WSJGraphics>

INTERAKTIV

- ▶ <https://codex-atlanticus.it/#/>
- ▶ <https://ig.ft.com/coronavirus-global-data/>
- ▶ <https://www.nytimes.com/interactive/2015/01/09/sports/the-dawn-wall-el-capitan.html>
- ▶ <https://www.zeit.de/politik/deutschland/2019-09/bundestag-jubilaum-70-jahre-parlament-reden-woerter-sprache-wandel#s=frauenquote>
- ▶ <https://graphics.reuters.com/JAPAN-AGING/010091PB2LH/index.html>

THE BAD

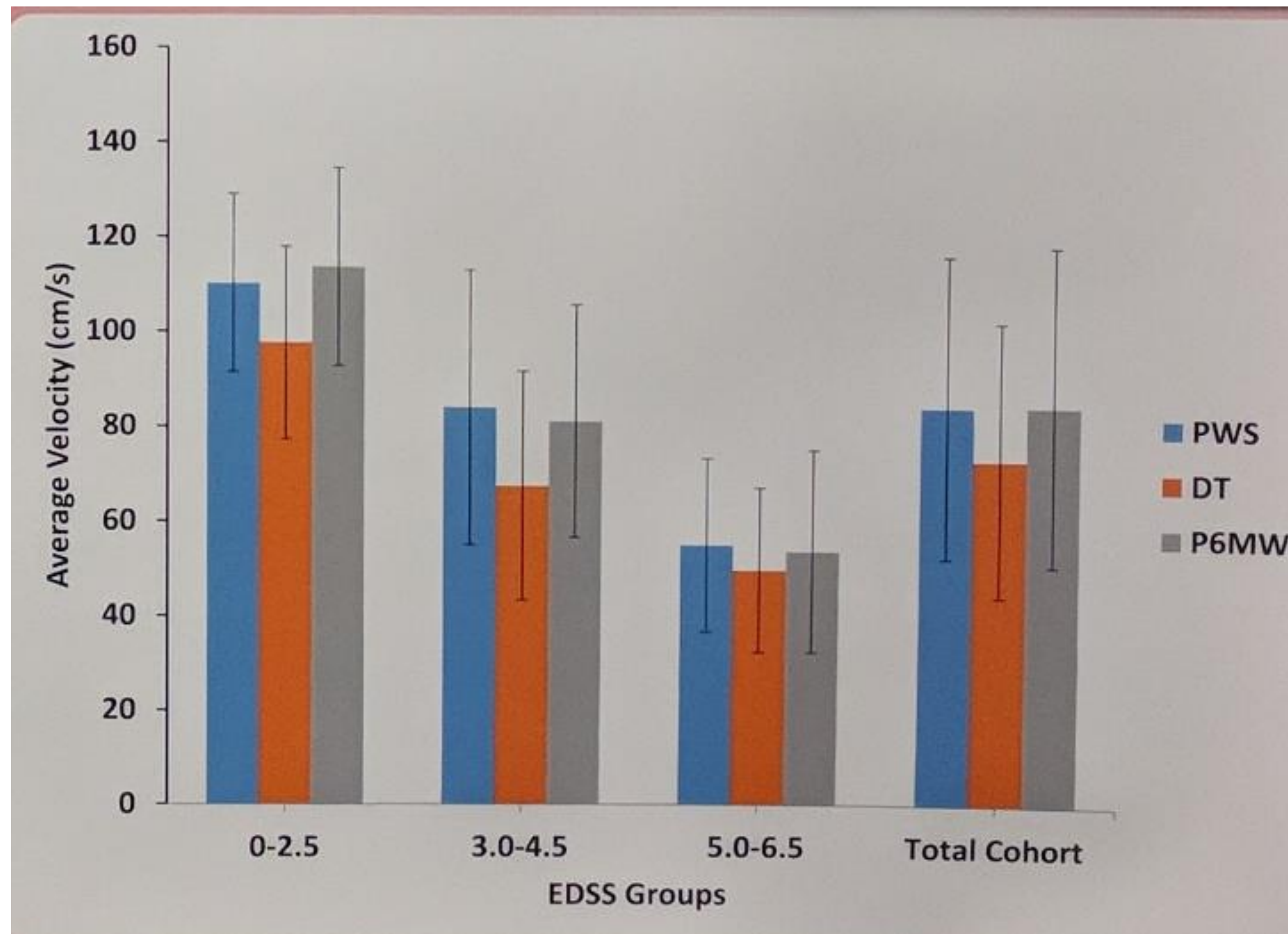
TABELLEN

Table 1: % Change P-Values from 2 tail unequal variance t-test (Patient vs Control)							
Significant $p < .05$ Not Significant = NS		Cadence (steps/min.)	Gait Cycle Time (sec.)	Step Length (cm.)	Stride Width (cm.)	Total D. Support %	Velocity (cm./sec.)
PWS -> DT	Low	NS	NS	NS	NS	0.018	NS
	Medium	NS	NS	NS	NS	0.028	NS
	High	NS	NS	0.030	NS	0.024	NS
	Total	NS	NS	NS	NS	0.021	NS
PWS -> SMW	Low	NS	NS	NS	0.001	NS	NS
	Medium	NS	NS	NS	NS	NS	NS
	High	NS	NS	NS	NS	0.026	NS
	Total	NS	NS	NS	0.012	0.021	NS

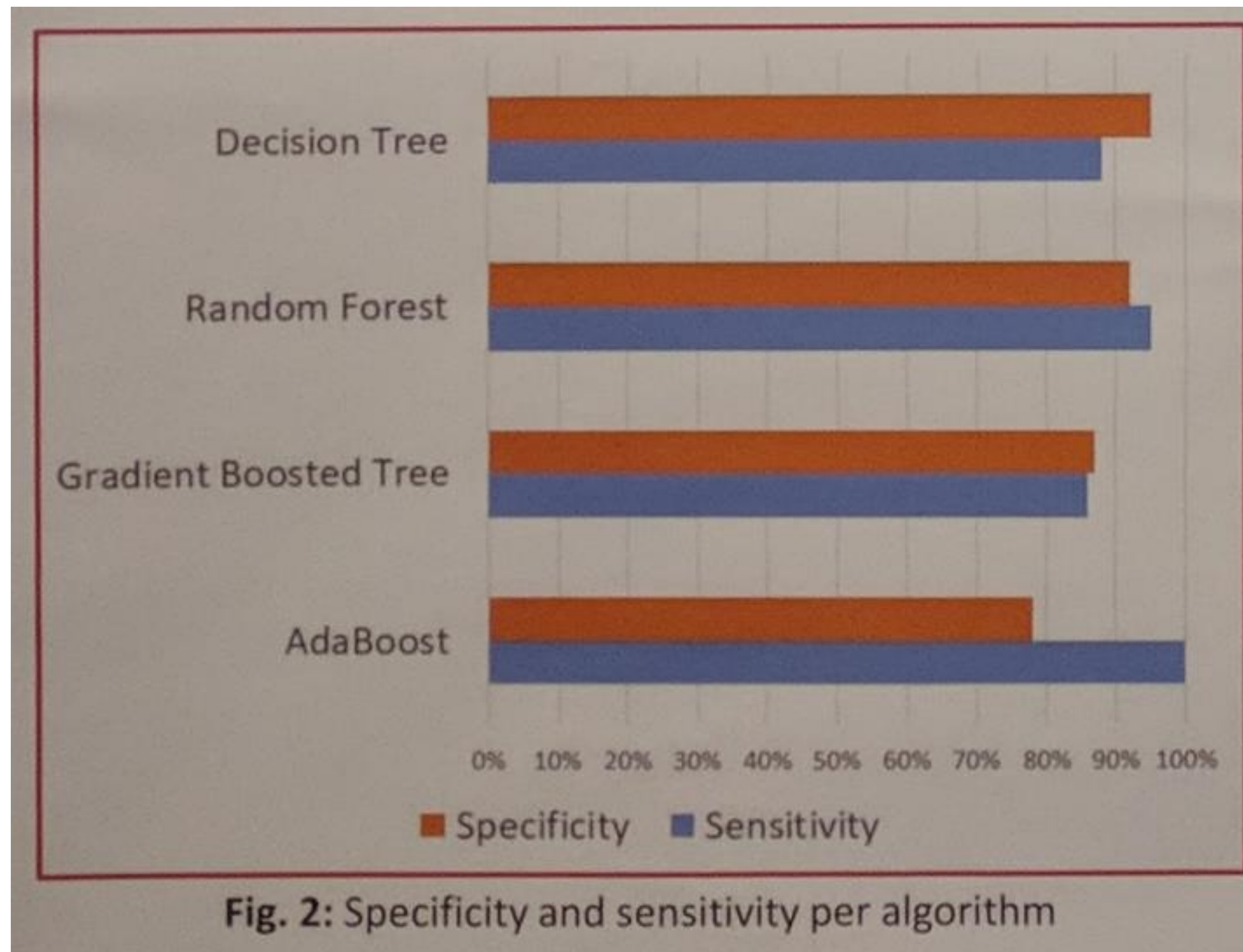
TABELLEN

Table 2: Significant changes in MS population between PWS and P6MW RWW							
EDSS Groups ↓	Velocity (cm./sec.)	Step Length (cm.)	Total D. Support %	Stride Width (cm.)	Gait Cycle Time (sec.)	Cadence (steps/min.)	FAP
0-2.5	NS	NS	NS	S	NS	NS	S
3-4.5	NS	NS	NS	NS	NS	NS	NS
5-6.5	NS	NS	NS	NS	NS	NS	NS
All	NS	NS	S	S	NS	NS	NS

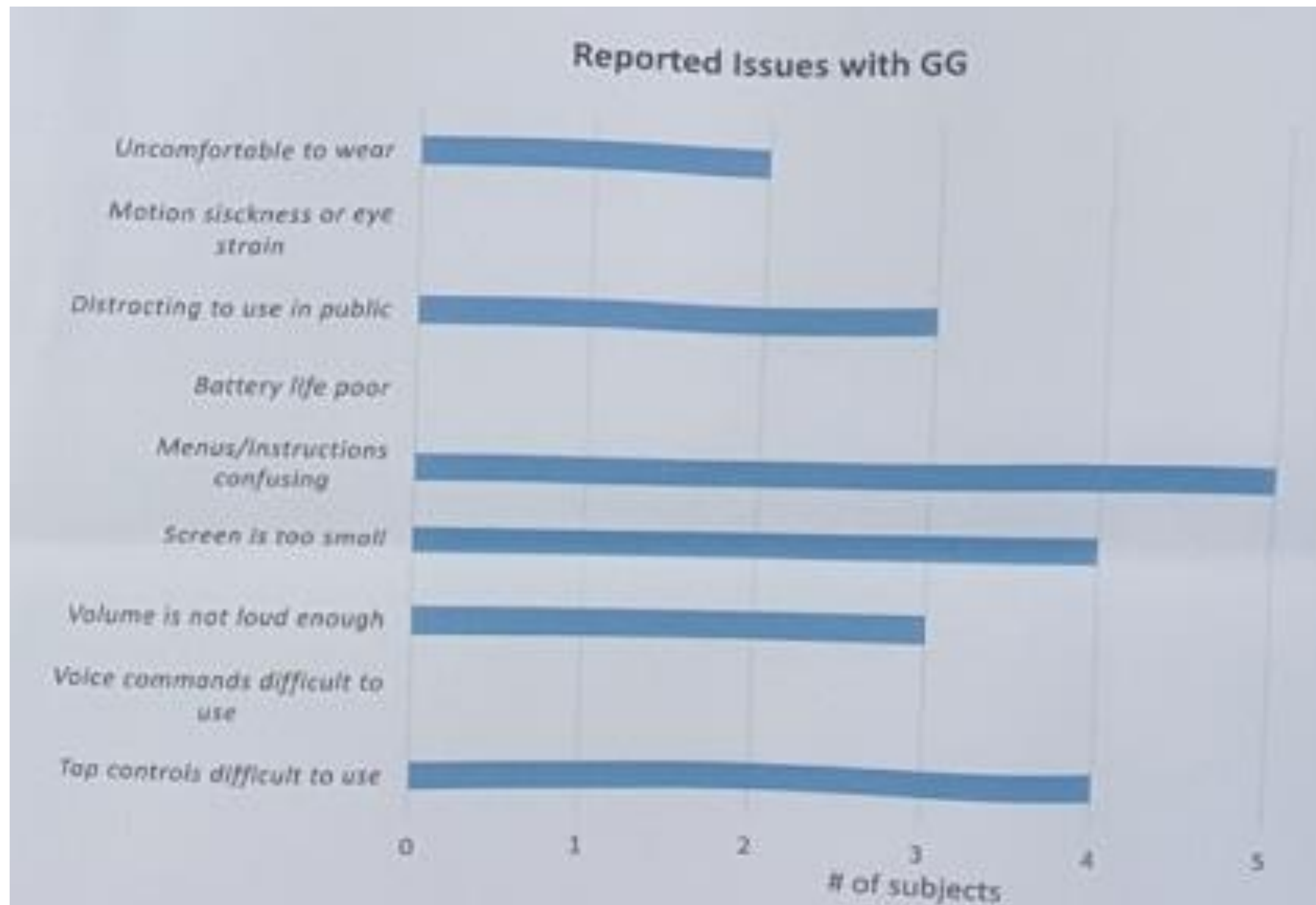
WARUM BAR CHARTS? BOXPLOT



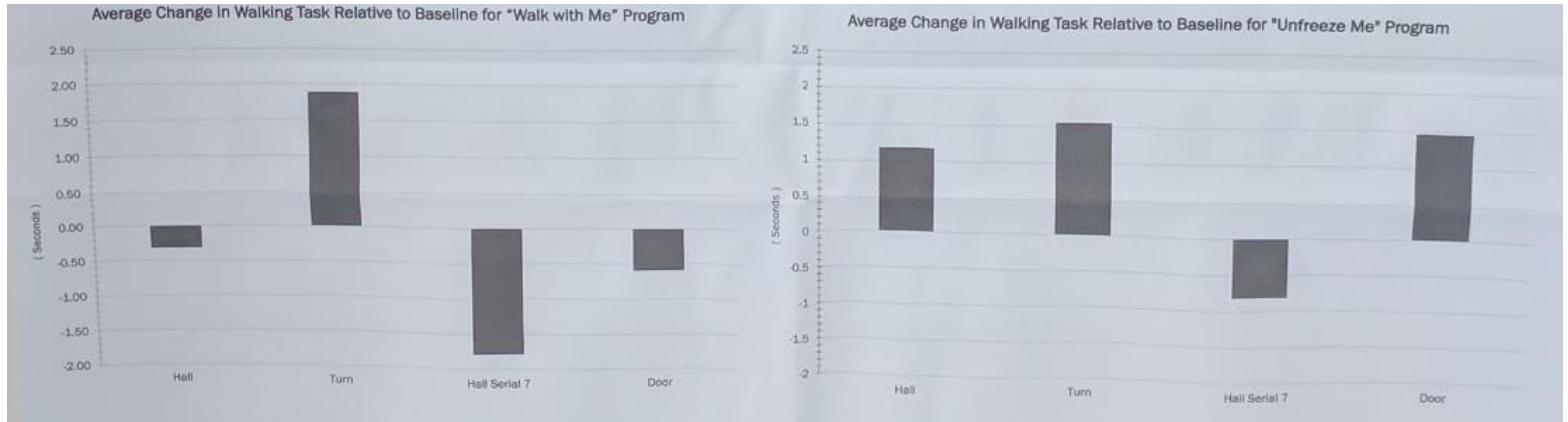
WARUM BAR CHARTS? EINZELWERTE



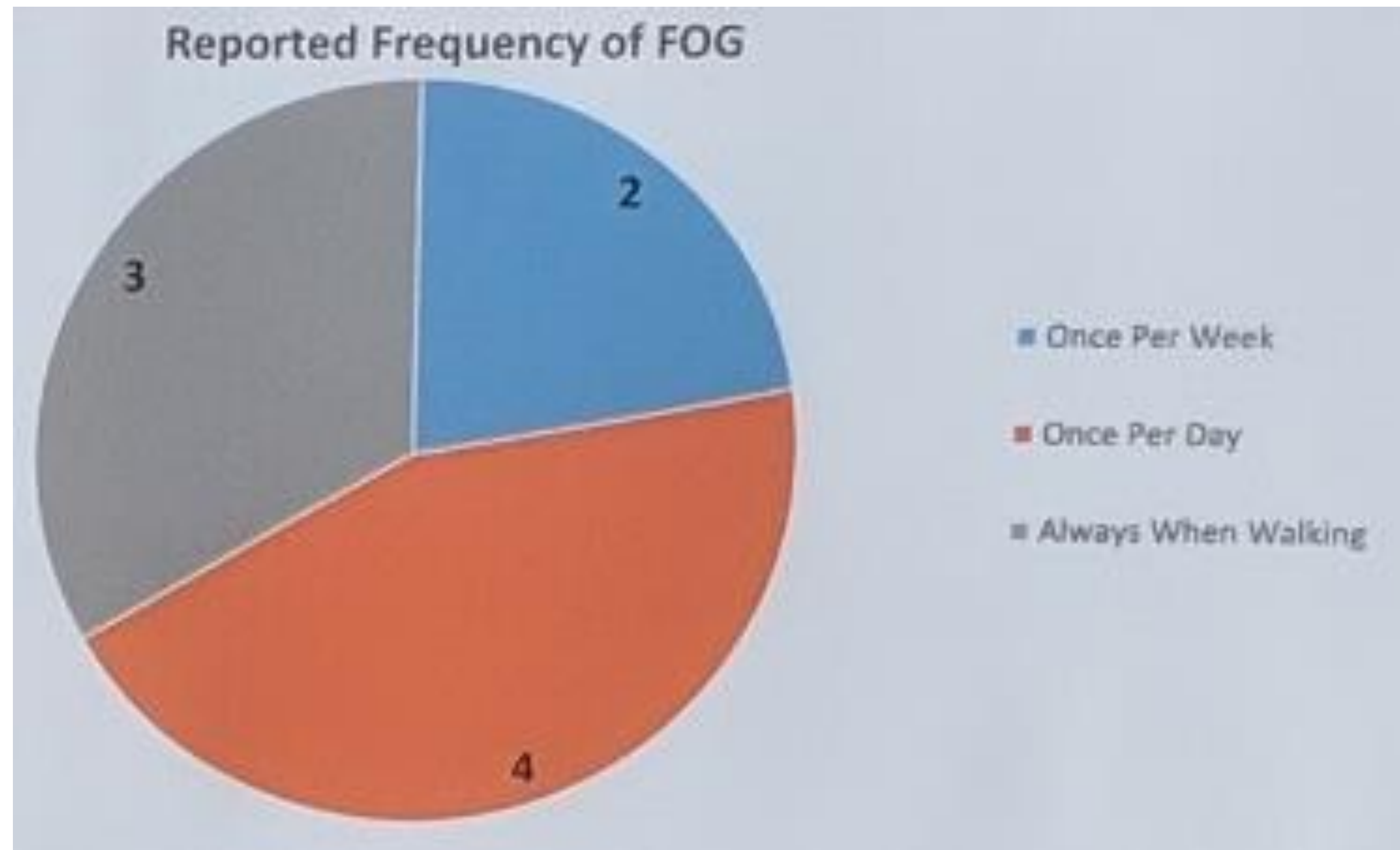
WARUM BAR CHARTS? ORDNUNG

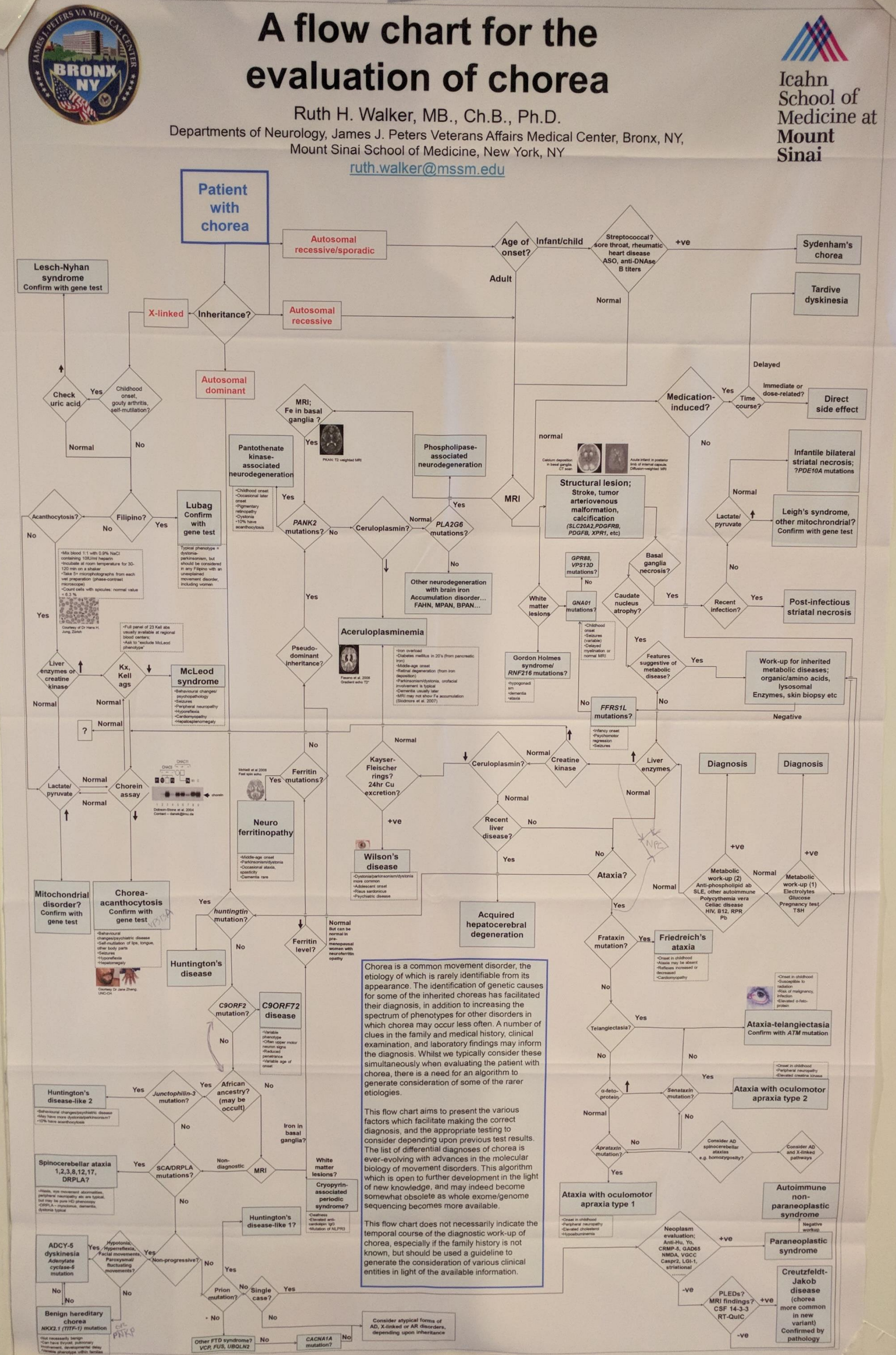


WARUM BAR CHARTS? ABSTÄNDE



KEIN KUCHEN





ES GEHT BESSER

- ▶ <https://informationisbeautiful.net/beautifulnews/>

Children in Pre-School Programs Stay in Education Longer, Earn Higher Incomes

America's 'Head Start' program supports kids from birth to age 5 in:



early learning



health



family well-being

Increase in rate of high school graduation

+4%

Chance of earning above the poverty line

+6%

Payoffs are greatest for women, Blacks and Hispanics, helping those who need it the most.

THE DON'T

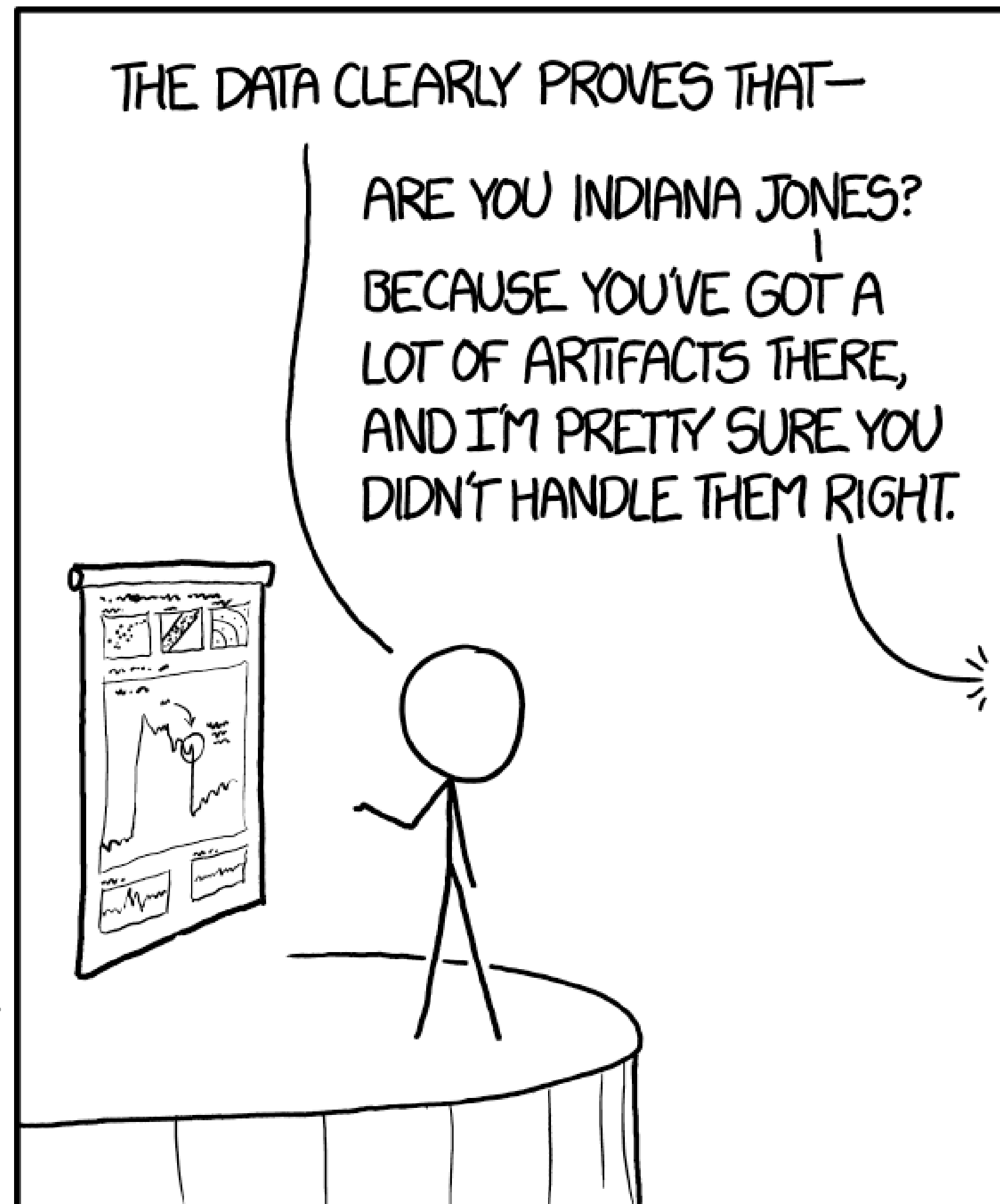
LUSTIGE, SCHLECHTE GRAPHIKEN

- ▶ <https://viz.wtf/>
- ▶ <https://www.welt.de/satire/article161643356/Die-besten-Statistiken-der-Welt.html>
- ▶ <https://twitter.com/TerribleMaps>

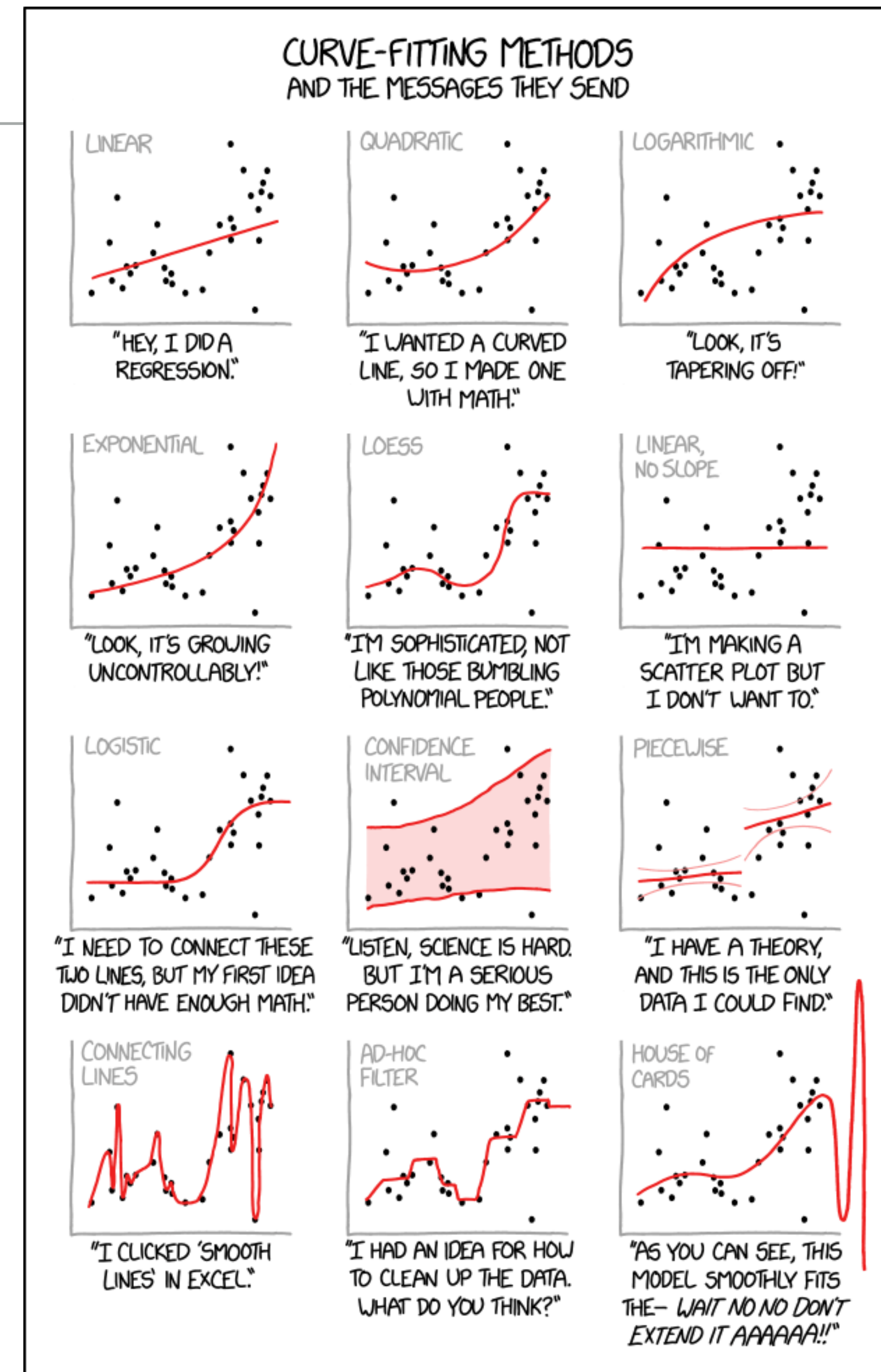
DATEN ANALYSE FEHLER

- ▶ <https://www.tylervigen.com/spurious-correlations> Korrelation ist nicht gleich Kausalität
- ▶ <https://www.data-to-viz.com/caveats.html>
- ▶ <https://www.theguardian.com/world/interactive/2012/may/08/gay-rights-united-states>

XKCD COMICS



Quelle: <https://xkcd.com/1781/>



Quelle: <https://xkcd.com/2048/>

VIELEN DANK

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