

Knowledge Is Beautiful

sampler

David McCandless

hello

Welcome to this sampler of my latest infographic book.

I love ideas, truth & beauty. I love to understand the world. So both tomes are full to the brim with data-visualizations & information designs driven by my own questions and ignorance. They free-range across science, nature, thought, food, pop – anything strange and interesting.

I was out to sate my thirst for knowledge with this book. I hope you find some of these graphics rich and complex enough to sate yours.

David McCandless

Sep 2016

TYPE
ART

data

VISUALISATION



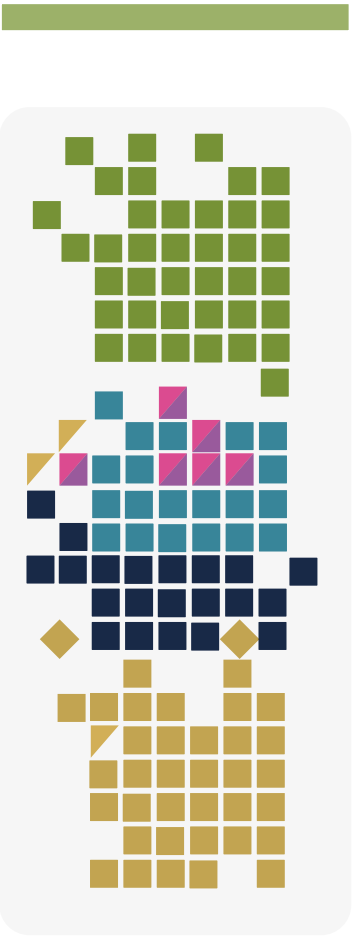
PROCESS

mine
gather
measure

METAPHOR

atoms

structured
data



examine
recognise
classify

molecules

information

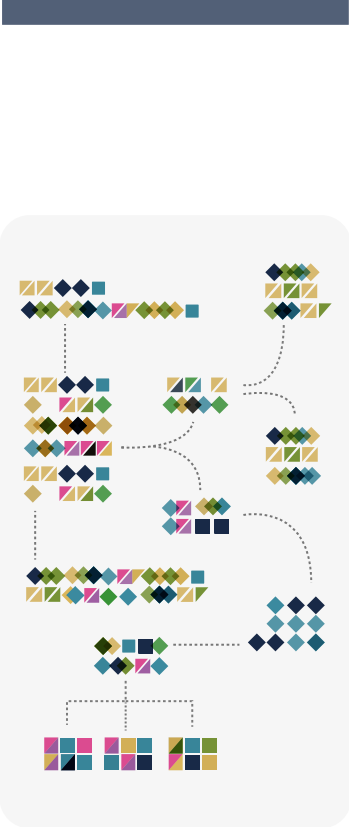
DESIGN



filter
interpret
arrange

DNA

linked
information

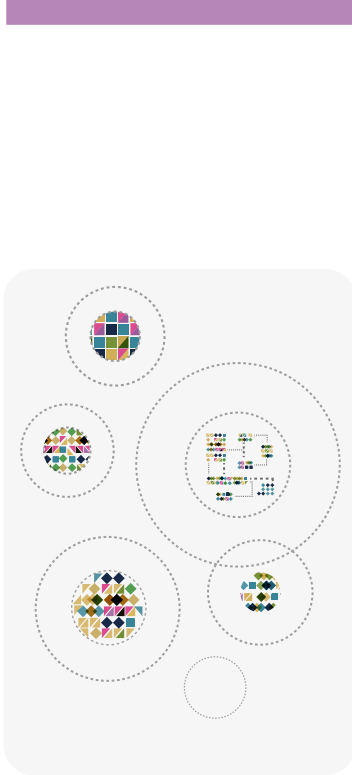


connect
sequence
condense

chromosomes

knowledge

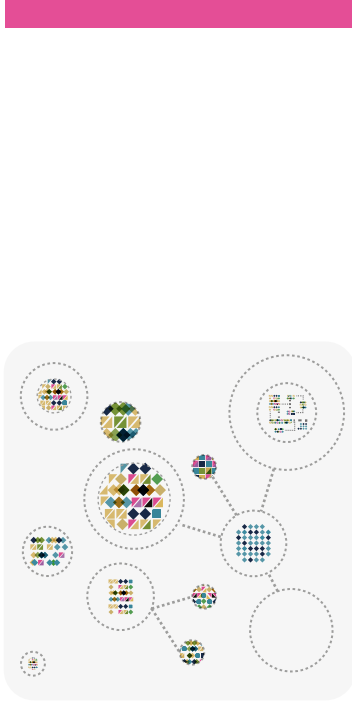
MAPPING



evaluate
understand
explain

cells

inter-connected
knowledge

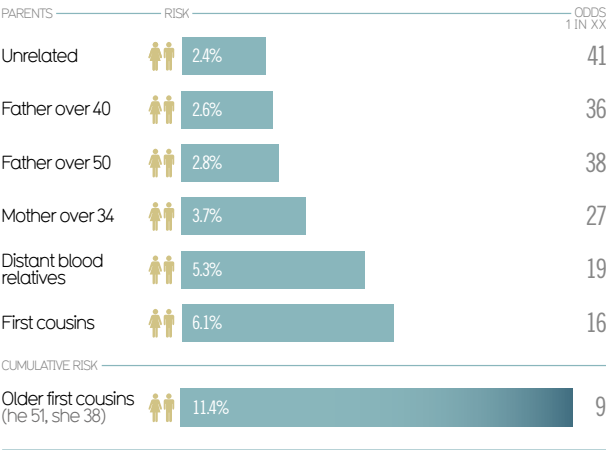


integrate
extrapolate
generate

organisms

Birth-defect chances

Risky business



sources: The Lancet, Sheridan et al (2013), Yang et al (2007)

Child Killers

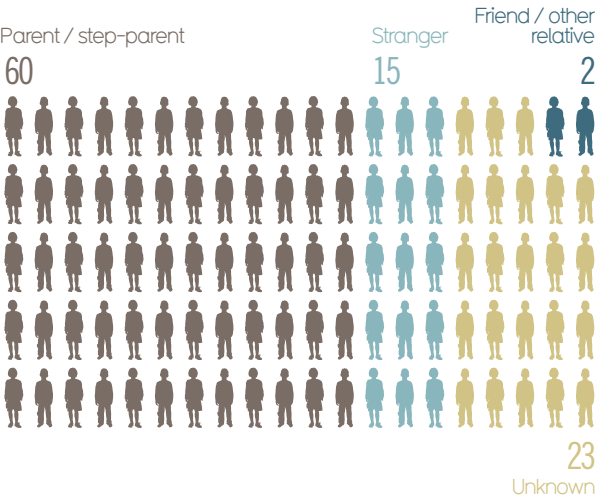
Main causes of death



source: US Centers for Disease Control and Prevention, US Data (2010)

Child Murderers

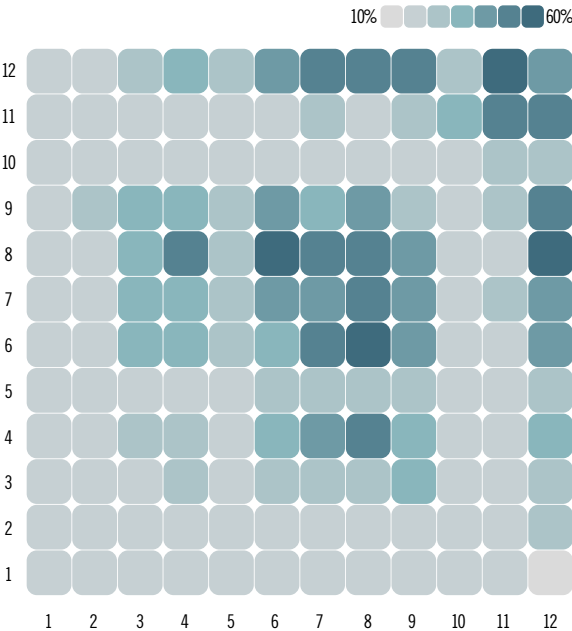
Who does it?



source: UK Office of National Statistics, 2011-12. Warning: small sample size

Times Tables Times

Error rate



source: private study by Caddington School of 232 children, 5-8 years old

Salt

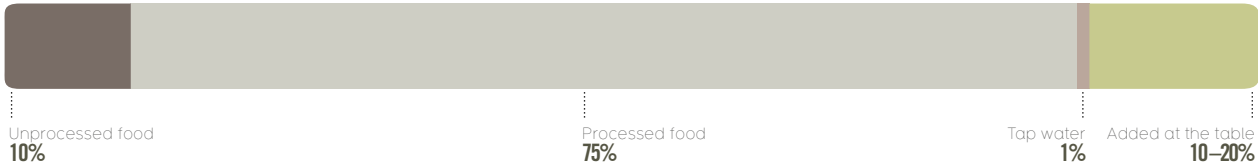


Sodium



sources: World Health Organisation, Institute of Food Research, Campbell et al (2012)

Pass the Salt



Big Country



source: NASA, Google Maps

Death Rows

Total cost of death penalty for California 1978-2010



source: 'Executing the Will of the Voters', Alarcón & Mitchell (2010)

Executions



Cost per execution



The Stellar Nursery

- Star
- 'Exotic' Star
- Galaxy object
- Exploding object (nova)
- Black Hole-type object
- Cloud



Young Stellar Object
A star in an early stage of evolution.



Main Sequence Star
Stars in the hydrogen-burning main phase of their life. Often called dwarves.



Brown Dwarf
Lacks the bulk to trigger reactions necessary to shine. Often a companion to a larger star.



Planetary Nebula
A glowing shell of electrified gas expanding from a dying star.



Protoplanetary Nebula
A glowing shell of electrified gas generated as a star runs out of nuclear fuel.



Protostar
A contraction in a molecular cloud that precedes the birth of a star.



Herbig Ae/Be Star
Young star inside a gas-dust envelope.



Magnetar
Small, ultra-dense star with gigantic magnetic field spinning 100's of times per second.



Pulsar
Highly magnetic neutron star emitting pulsed beams of light like a lighthouse.



Supernova Imposter
A massive stellar explosion that has not destroyed its parent sun.



Soft Gamma Repeater
Unknown object emitting large, irregular bursts of gamma radiation & X-rays.



Extreme Helium Star
Very rare stellar entity, with almost no hydrogen, the most common element.

SMALL



Gravastar
A gravitational vacuum star – a theoretical alternative to black holes.



Dark Energy Star
Black-hole replacement made from vacuum or maybe dark energy.



Dark Star (Dark Matter)
Theoretical object that may have existed in the early universe before normal stars formed.



Giant
Large hydrogen-fusing star a few hundred times the radius of the Sun.



Sub Giant
Bright & on its way to becoming a supergiant. Rich in metals & often with planets.



T. Tauri
A proto-star about 100 million years into its growth, before it becomes a full star.



Bright Giants
Somewhere in between giants & supergiants, very bright but not overly massive.



Blue Straggler
Slightly mysterious stars that don't follow the usual curve of star evolution.



Neutron Star
Rapidly spinning collapsed core of a massive star, dense & made mostly of neutrons.



Dwarf Nova
A small dwarf star sucking material from a giant star, causing flares & belches.



Luminous Red/Blue Nova
Explosion caused by the colossal merging of two stars.



Stellar Black Hole
Ultra-dense object formed when a massive star gravitationally collapses on itself.



Bok Globule
Dense dark cloud of cosmic dust & gas-like cocoons where stars can be born.



Supernova Remnant
A star in mid-explosion, forming a bubble-like shockwave.



Cataclysmic Variable Star
Two stars, a white dwarf & a very close 'donor' star that feeds the host dwarf star.



Dark Star (Newtonian)
An alternative & more stable object than a traditional black hole.



Preon Star
Small, compact star made of theoretical particles.



Electroweak star
I can't explain this one. It's far too complicated for this little box.



Supergiant
Biggest & brightest of stars. Massive, hot & destined to explode into supernovae.



Hyper Giant
Short-lived but incredibly bright & massive stars, shedding huge amounts of mass.



Flare Star
Type of flickering star with very unpredictable & dramatic increases in brightness.



Peculiar Star
Stars unusually high in metals such as mercury & manganese.



Supernova
Exploding star, often briefly outshining the brightness of a entire galaxy.



Hypernova
Massively high-energy stellar explosion. May create deadly gamma-ray bursts.



Pulsating / Variable Star
Brightness appears to flicker & fluctuate as seen from Earth.



Wolf-Rayet Star
Massive, very bright old stars shedding massive layers of their mass.



Molecular Cloud or H2 Region
Large interstellar cloud & often stellar nurseries where stars are birthed.



Compact Star
Very massive unknown type of star at the end of its life.



Micro Quasar
A very small quasar only a few times bigger than the Sun.



Luminous Blue Variable
Very large & unstable star prone to dramatic energetic outbursts.



Iron Star
Complex quantum effects turn light into iron inside this object, creating a metal star.



Quark Star
Massive neutron star so dense that the neutrons break down into 'strange matter'.



Thorne-Żytkow Object
Giant star with a second object, a neutron star, at its core.



Galactic Cluster
Unimaginably huge collections of thousands of galaxies bound together.



Open Star Cluster
Group of a few thousand stars of the same age, formed from the same cloud.



Spiral Galaxy
Billions of stars collected in a flat, rotating disc with a distinctive central 'bulge'.



Barred Spiral Galaxy
Common version, featuring a central bar-shaped structure made of stars.



Globular Cluster
Spherical group of stars orbiting in the outer halo of a galaxy.



Elliptical Galaxy
Oval masses of old stars without discs & with little new star formation.



Quasar
Very energetic & active nucleus of a galaxy – the brightest objects in the universe.



Blazar
Very compact quasar shooting two massive jets from its poles.



Lenticular Galaxy
Old, thin galaxies with both a bulge & a disk, but only very vague spiral arms.



White Dwarf
The burnt-out remains of a star once it's used up all its hydrogen.



Supermassive Black Hole
Over 1-10,000 million times bigger than a normal black hole.



Ultramassive Black Hole
Even bigger – a mere 10-40,000 million times bigger than your average black hole.

MASSIVE



Black Dwarf
When a white dwarf sufficiently cools & no longer emits heat or light.



Planck Star
Microscopic star residing at the centre of a black hole.

COMMON ← → RARE

THEORETICAL

sources: NASA, Space.com, Wikipedia

data: bit.ly/KIB_Stellar

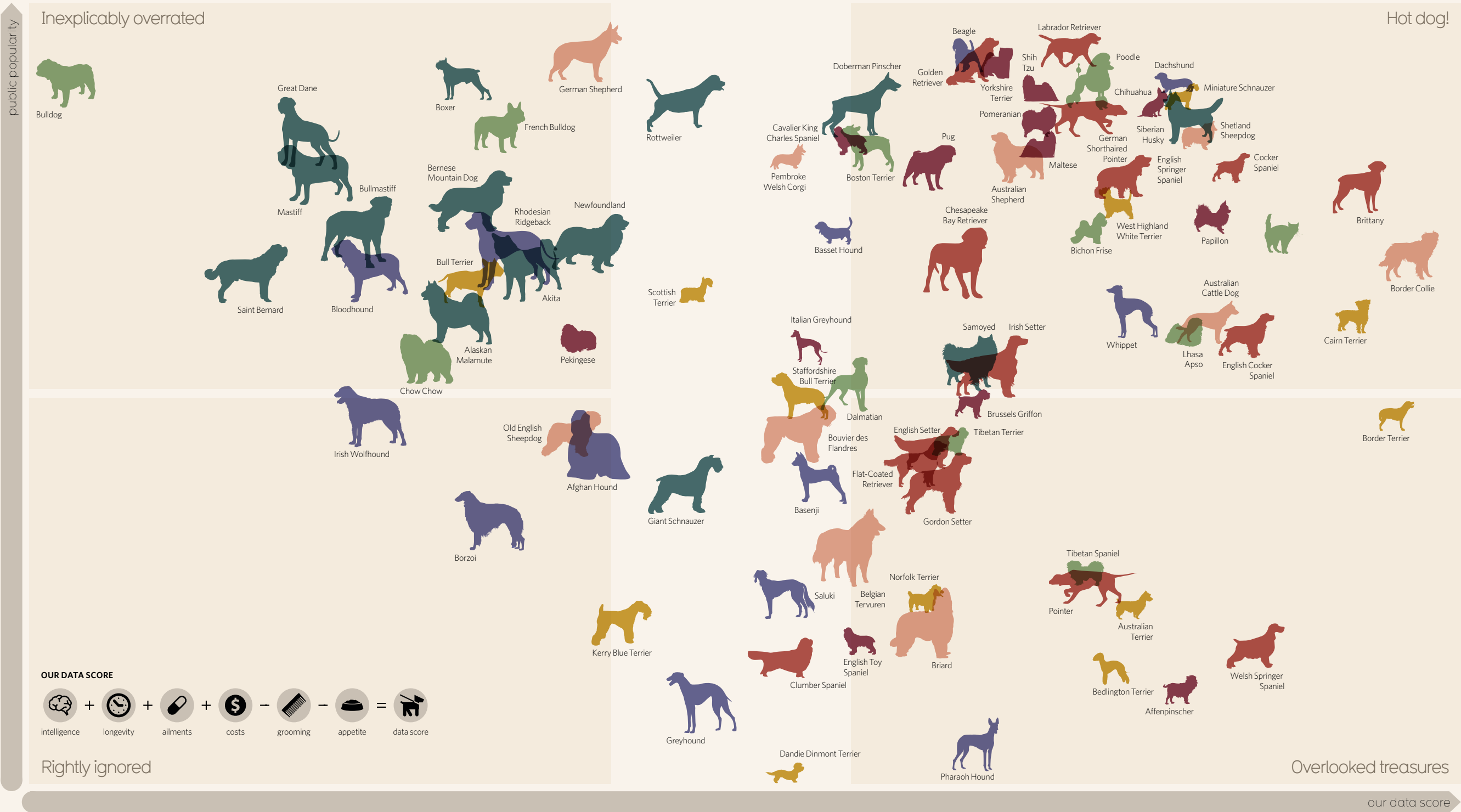
Best in Show

The ultimate data-dog

INTELLIGENCE



SIZE



Meditation

The Gist

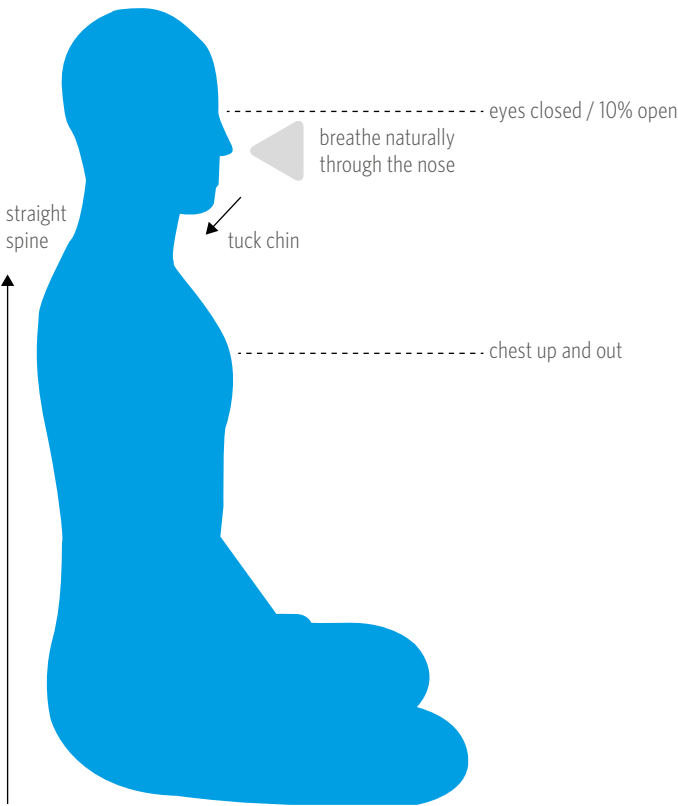
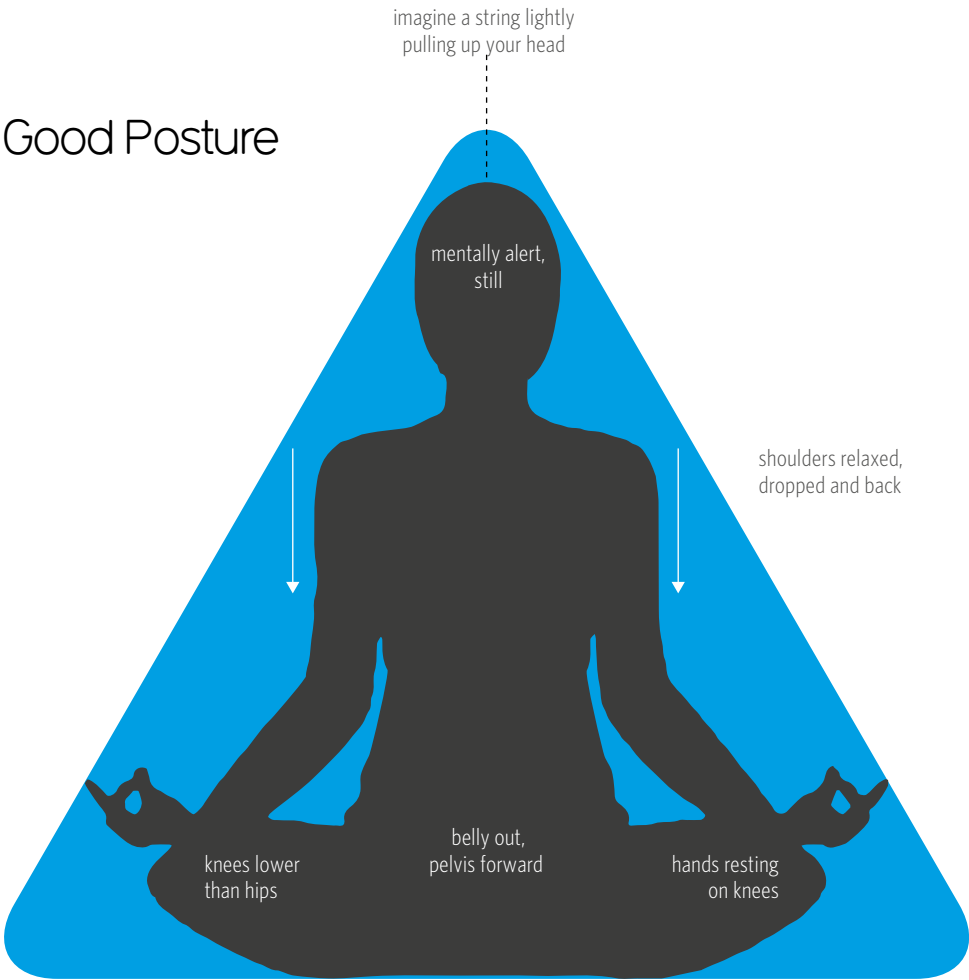
chill man
meditating is acknowledging and observing whatever happens – pleasant or unpleasant – in a relaxed way.

no 'no thoughts'
the goal of meditation is not to empty the mind, but to observe the present moment non-judgementally.

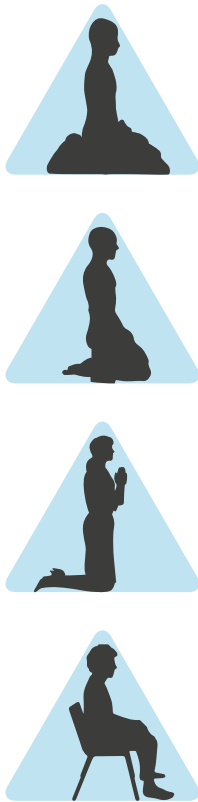
open
this gives insight into how the mind really works, reducing attachment, letting us relax more deeply...

microscope
...transforming the mind and using it as a device to explore itself and the nature of reality.

Good Posture

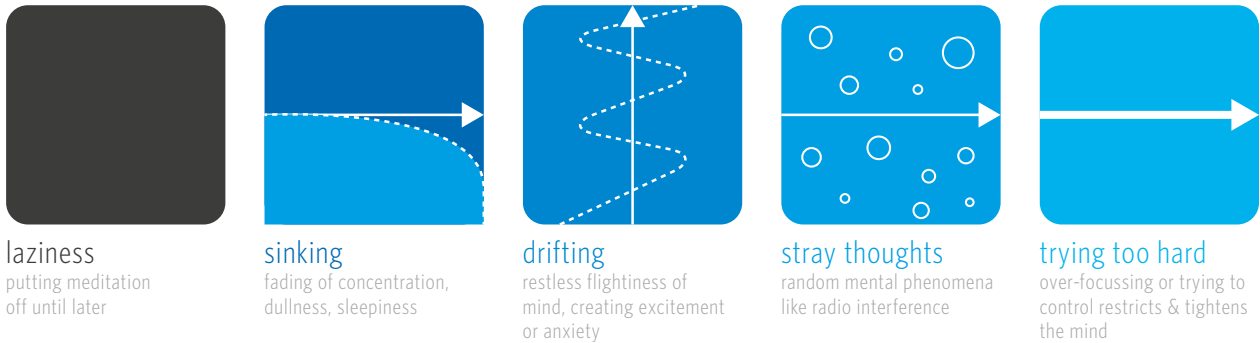


Also Good



SIT ————— relaxed but erect ————— comfortable —————>

Common Hindrances



Qualities of Mind Developed in elemental Eastern terms

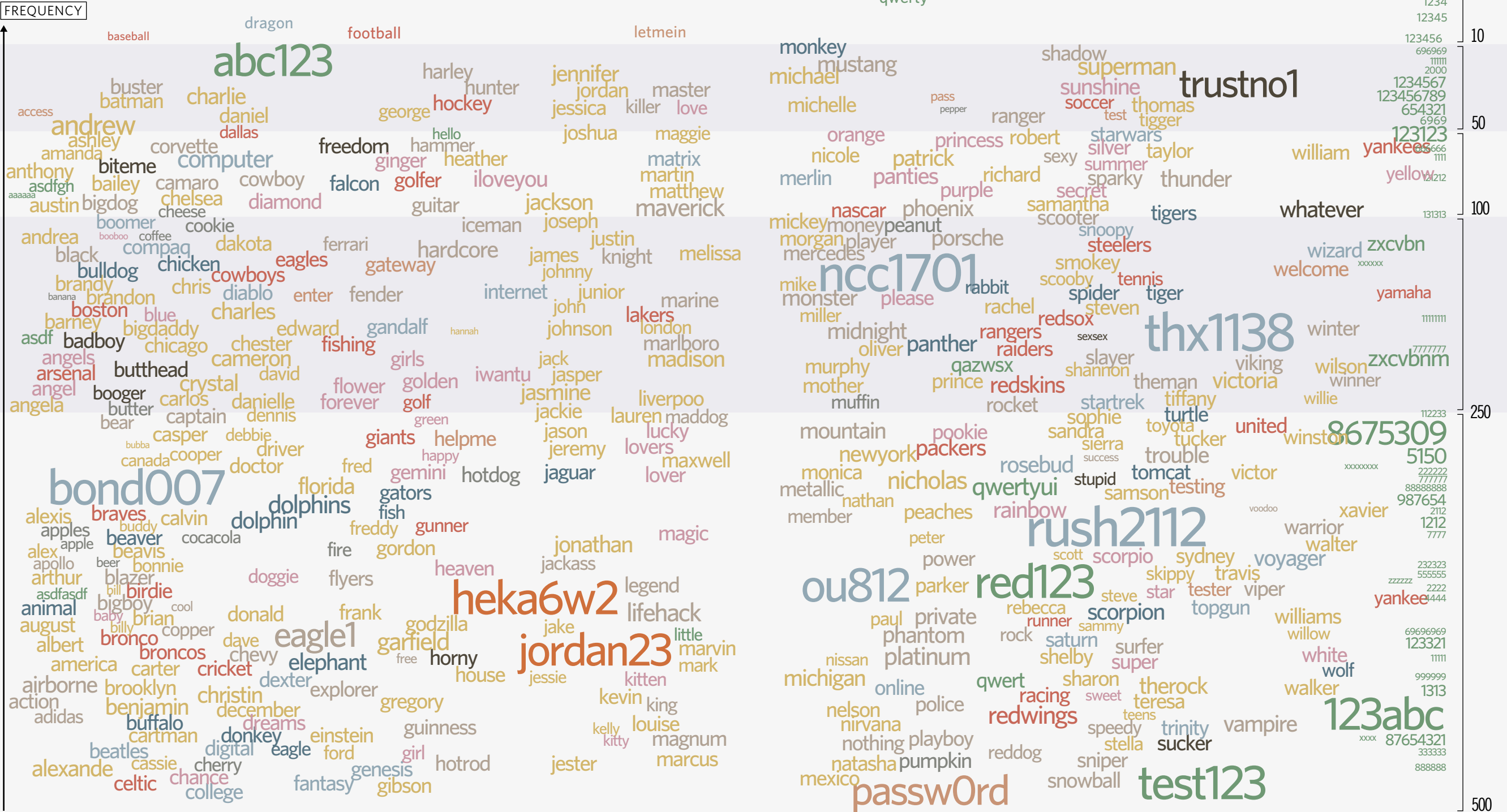


Types of Meditation

Types of Meditation				object of concentration				
				BODY	BREATH	HEART	MANTRA	MIND
								
meditation name <i>alternative name</i>	concentration <i>focussed attention</i>	mindfulness <i>open monitoring</i>	attending <i>open monitoring</i>	loving kindness for self <i>metta bhavana, cultivation of love</i>	silent gratitude <i>visualisation</i>	loving kindness for others <i>metta bhavana</i>	walking ---	
Simple, condensed instructions on how to practise the technique	Hold attention on a primary object, usually your breath. Mentally note the upward movement of your abdomen as 'rising', downward as 'falling'. That's it!	Watch your thoughts, let them come and go, without reacting, judging or holding on.	Concentrate while carefully naming thoughts, sensations and other mental processes and distractions.	Acknowledge whatever you're feeling. Playfully extend loving kindness to yourself by silently expressing feelings like: 'May I be happy / healthy / loved' etc. Maintain this flow of intention.	Imagine the face of someone you feel grateful to in great detail and silently thank them. Repeat for 4-5 people.	Picture someone you respect and love. Send a stream of metta (loving kindness) towards them using silent, suitable words. If a feeling of happiness arises, absorb yourself into it.	Feel every sensation in your feet while slow walking - contact, rolling, lifting etc. Add attending and name every distraction. Add 'loving kindness' and extend metta to everyone who appears in your view.	
<i>tradition of origin</i>	<i>Many</i>	<i>Buddhism</i>	<i>Buddhism</i>	<i>Buddhism</i>	<i>Buddhism</i>	<i>Buddhism</i>	<i>Buddhism</i>	
								
belly <i>kath, hara, tan t'ien</i>	three-part breath <i>long deep</i>	breath of fire <i>agni pran</i>	circular breathing -----	segmented breathing 1 ---	segmented breathing 2 ---	balancing ---	sensing loop <i>body scan, body contemplation</i>	
Just focus on the sensation of the breath in the belly as it rises and falls.	First fill the abdomen with air, then expand the chest, then lift ribs and collar bone. Exhale in reverse.	Rapid rhythmic breaths through the nose. Exhale explosively by contracting anus, inhale by relaxing abdominal muscles.	Inhale from the base of your spine up to the base of your neck. Exhale down the back of your spine.	Mouth in an 'o' shape. Make 8 small inhalations (sniffs) through the nose to form one breath. Exhale powerfully and deeply in one go. Repeat.	Focus on your brow point. Make 4 inhale sniffs, hold for a few seconds, exhale in 4 sniffs. Repeat.	Inhale deeply through the nose. Hold breath for 15 seconds. Exhale completely through the nose. Hold breath for 15 seconds. Repeat.	Feel into the sensations in your right foot and then work up around each segment of your body - lower leg, knee, thigh, hip, hand, arm, shoulder - in a loop.	
<i>Many</i>	<i>Yoga</i>	<i>Kundalini Yoga</i>	<i>Yoga</i>	<i>Kundalini Yoga</i>	<i>Kundalini Yoga</i>	<i>Kundalini Yoga</i>	<i>Sufism</i>	
								
alternate breath ---	zen <i>zazen, 'just sitting'</i>	microcosmic orbit ---	transcendental <i>TM</i>	mantra ---	eating ---	analytical <i>rushen, self-inquiry</i>		
Block right nostril with knuckle. Take 4 slow, even breaths through left nostril. Repeat on other side.	Counting your breaths (1 for inhalation, 2 for exhalation) up to 10. If your mind wanders, gently go back to 1. Just sit like this.	Use the breath to circulate energy through an oval 'microcosmic' orbit. Start at the throat, end at the forehead.	Silently, repeat a given, single, rhythmical sound-phrase (mantra) over and over again.	Chant a single, rhythmical sound-phrase (mantra) over and over again. Examples: 'Haum Mani-Padme-Om', 'Sa-Ta-Na-Ma', 'Sabbe Satta Sukhi Hontu', 'So Hum' (I am), 'Sat Chit Ananda'.	Take twenty minutes to eat 3 raisins. Savour every detail: the look, the anticipation, the chew, the taste, the swallow.	Sit with a deep question in your mind. 'Who am I?' is a good one. Explore who is thinking, hearing, seeing, wondering. What happens in the immediate moment as you ask this question?		
<i>Kundalini Yoga</i>	<i>Zen Buddhism</i>	<i>Taoism</i>	<i>Many</i>	<i>Many</i>	---	<i>Dzogchen (Tibetan Buddhism)</i>		

Top 500 Passwords

Is yours here?



A

Z09

THEMES

6%

ANIMAL

COOL/MACHO

FLUFFY

FOOD

NAME

NERDY/POP

PASSWORD/ACCESS

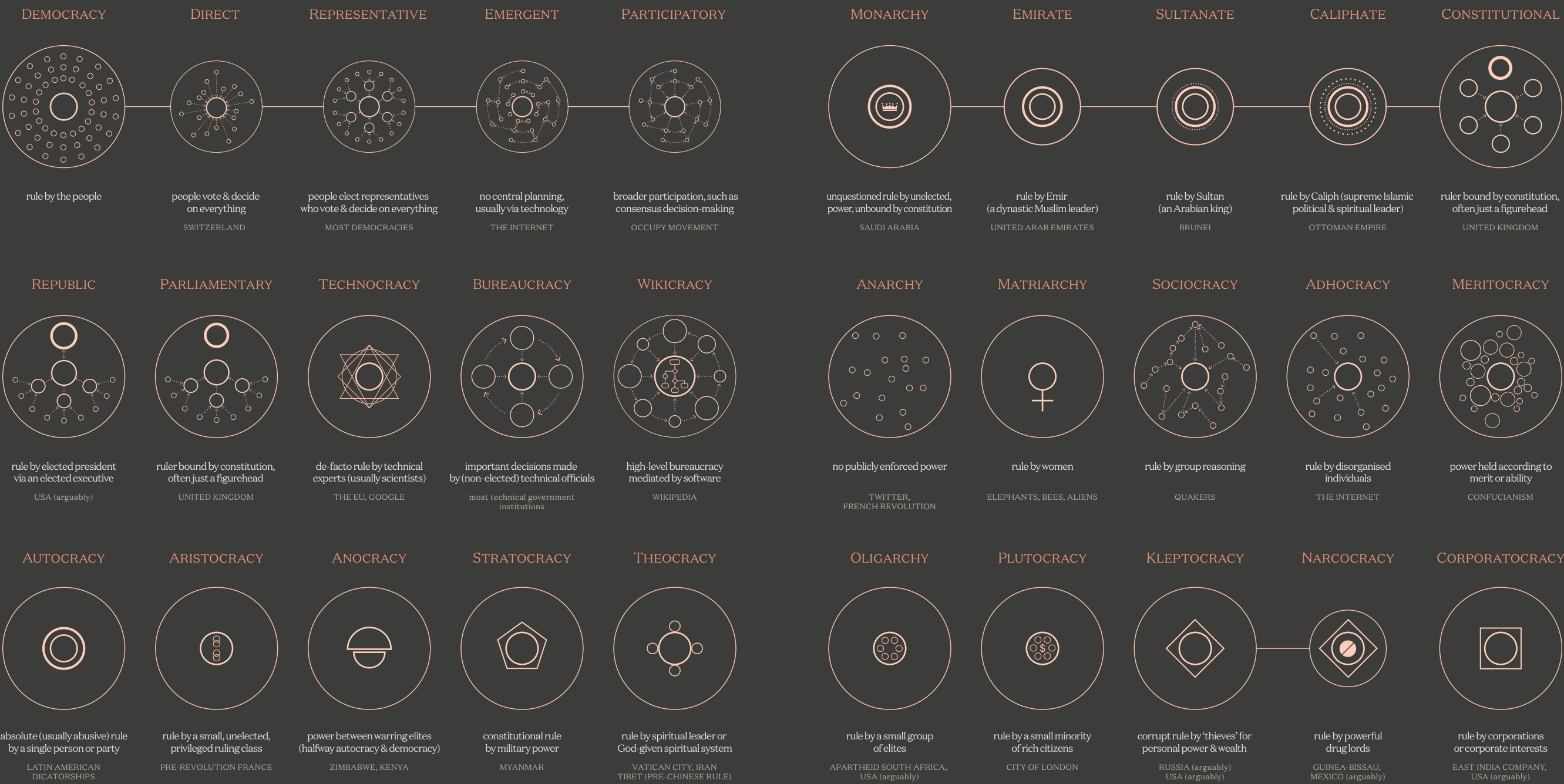
REBELLIOUS/RUDE

SIMPLE ALPHANUMERIC

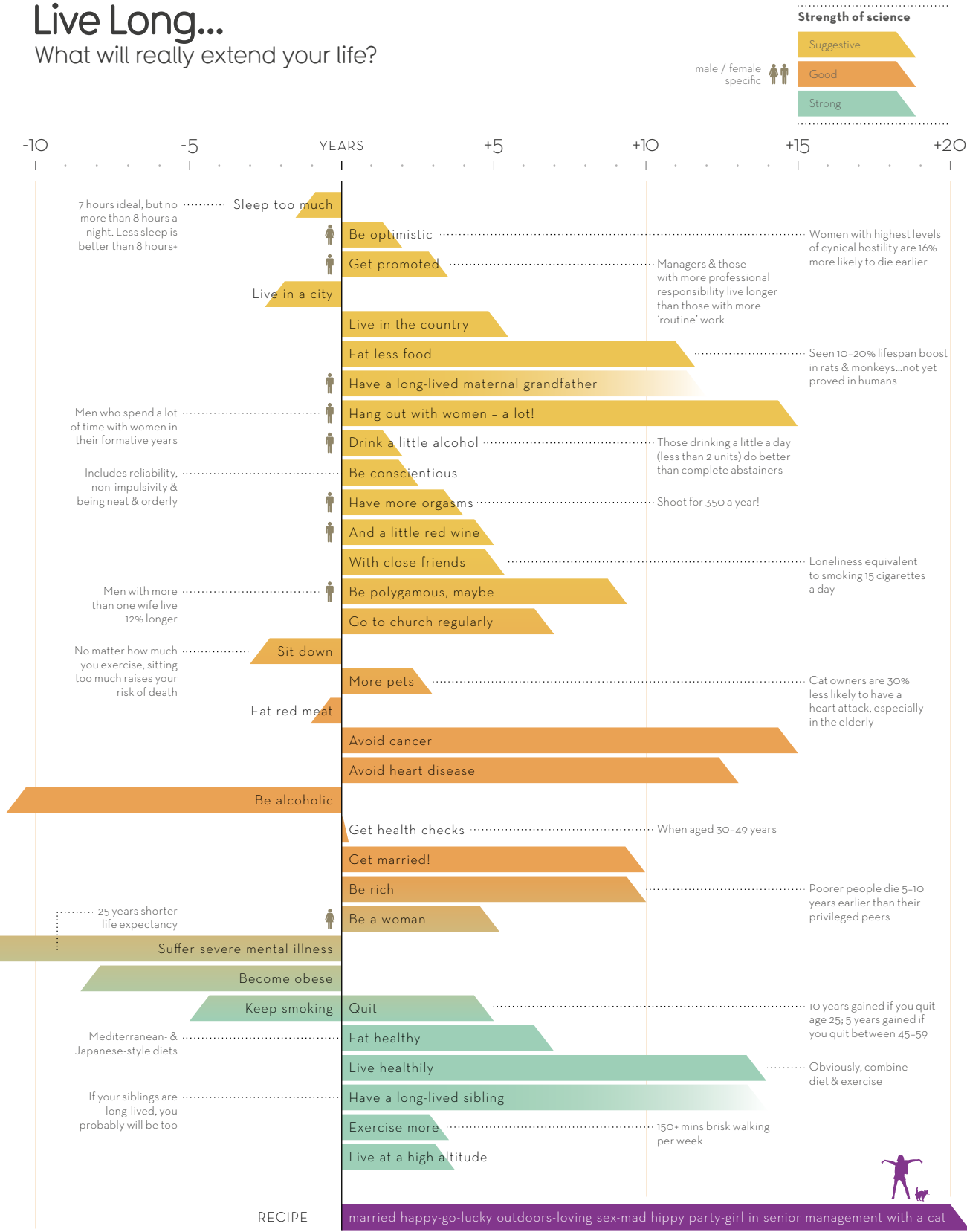
SPORT

TRULY RANDOM

Political Power Sources

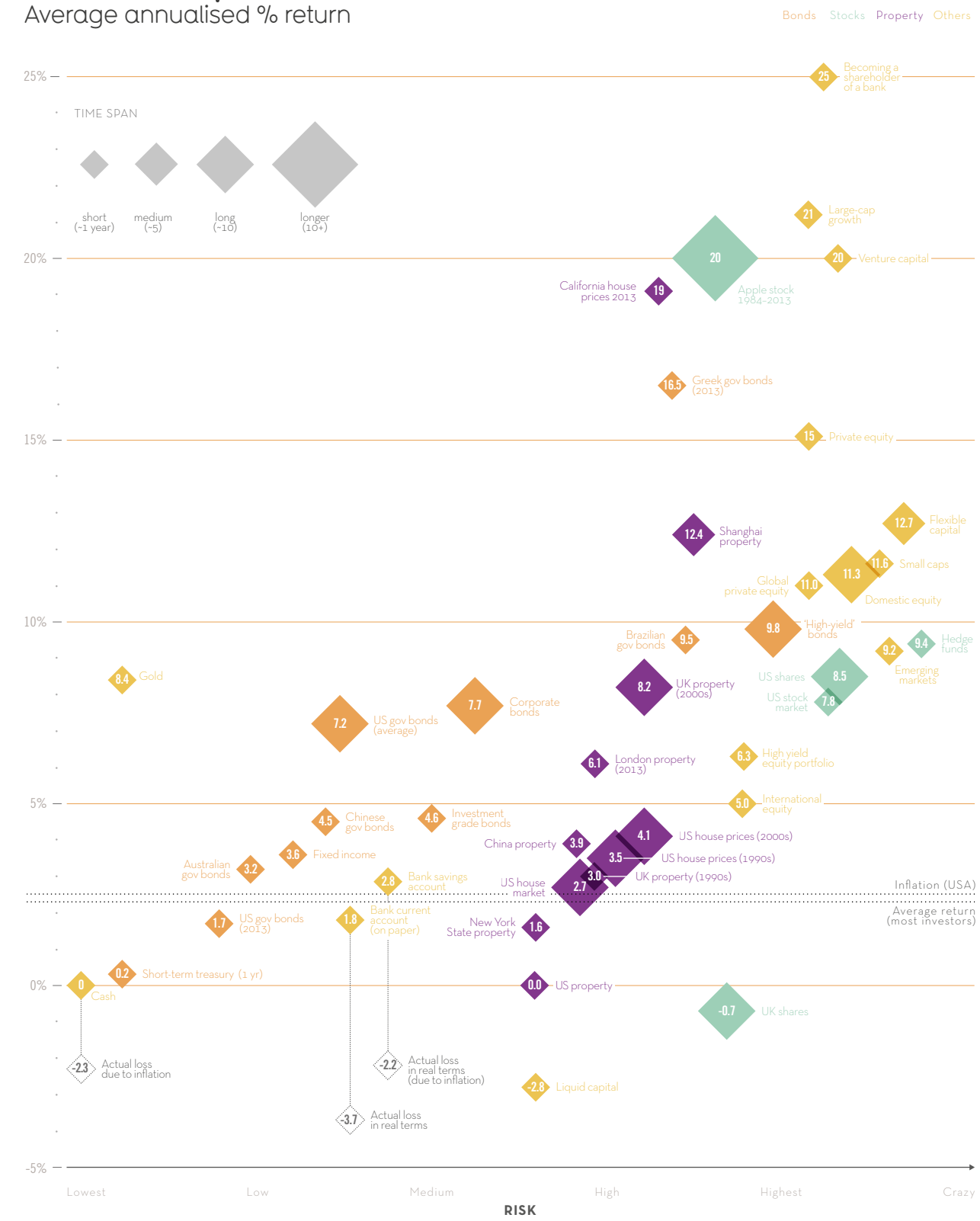


Live Long...
What will really extend your life?



sources: British Medical Journal, PLOS Medicine, New Scientist
data: bit.ly/KIB_LiveLong

...and Prosper
Average annualised % return



sources: Forbes, TradingEconomics.com, The Economist, Yahoo! Finance, USA Today
data: bit.ly/KIB_Gambling

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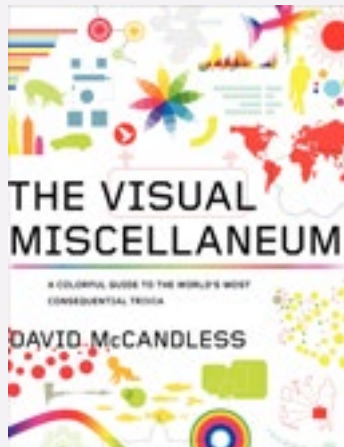
- learn concepting and designing appropriate & effective visualisations
- be broadly introduced to how to use dataviz, research and methods

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