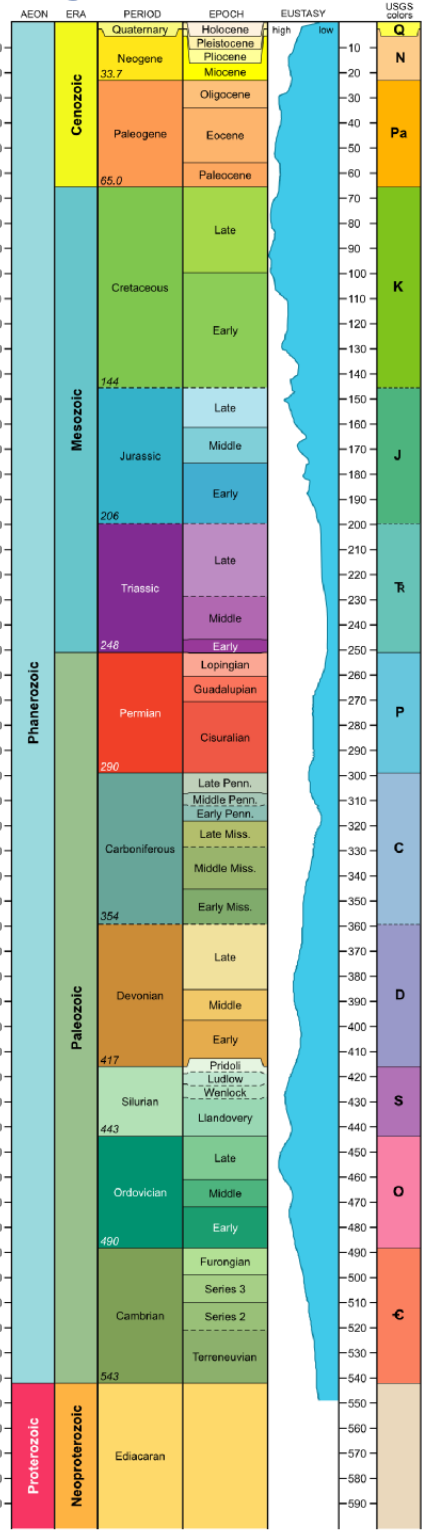
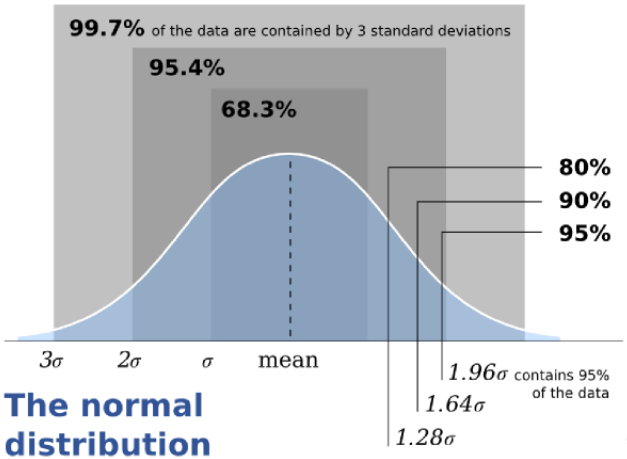
Geological timescale

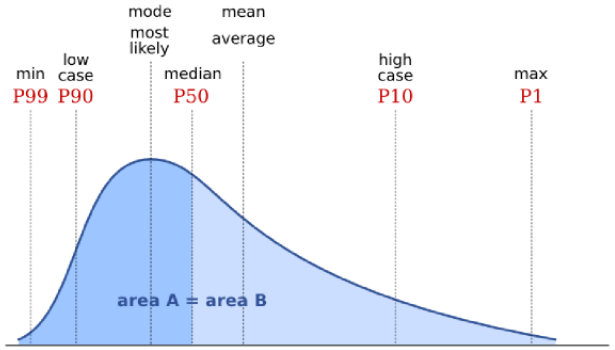


generated by TimeScale Creator

The normal distribution



Skewed distributions



For a log-normal distribution
Mode (most likely) < Median (P50) < Mean

SI prefixes

short scale is used in most English-speaking countries

Prefix	Symbol	1000^m	10^n	Decimal	Short scale	Long scale
yotta	Y	1000^8	10^{24}	1 000 000 000 000 000 000 000 000	Septillion	Quadrillion
zetta	Z	1000^7	10^{21}	1 000 000 000 000 000 000 000	Sextillion	Trilliard
exa	E	1000^6	10^{18}	1 000 000 000 000 000 000	Quintillion	Trillion
peta	P	1000^5	10^{15}	1 000 000 000 000 000	Quadrillion	Billiard
tera	T	1000^4	10^{12}	1 000 000 000 000	Trillion	Billion
giga	G	1000^3	10^9	1 000 000 000	Billion	Milliard
mega	M	1000^2	10^6	1 000 000	Million	
kilo	k	1000^1	10^3	1 000	Thousand	
hecto	h	$1000^{2/3}$	10^2	100	Hundred	
deca	da	$1000^{1/3}$	10^1	10	Ten	
		1000^0	10^0	1	One	
deci	d	$1000^{-1/3}$	10^{-1}	0.1	Tenth	
centi	c	$1000^{-2/3}$	10^{-2}	0.01	Hundredth	
milli	m	1000^{-1}	10^{-3}	0.001	Thousandth	
micro	μ	1000^{-2}	10^{-6}	0.000 001	Millionth	
nano	n	1000^{-3}	10^{-9}	0.000 000 001	Billionth	Milliardth
pico	p	1000^{-4}	10^{-12}	0.000 000 000 001	Trillionth	Billionth
femto	f	1000^{-5}	10^{-15}	0.000 000 000 000 001	Quadrillionth	Billiardth
atto	a	1000^{-6}	10^{-18}	0.000 000 000 000 000 001	Quintillionth	Trillionth
zepto	z	1000^{-7}	10^{-21}	0.000 000 000 000 000 000 001	Sextillionth	Trilliardth
yocto	y	1000^{-8}	10^{-24}	0.000 000 000 000 000 000 000 001	Septillionth	Quadrillionth

Conversion

from	to	× by
ft	m	0.3048
m	ft	3.281
in	mm	25.40
bbl	m^3	0.1590
m^3	bbl	6.290
lb	kg	0.4536
mile	km	1.609
acre	ha	0.4047
ha	acre	2.471
sq mi	ha	259.0
sq mi	km^2	2.590
sq mi	acre	640.0
Pa	Nm^2	1
bar	kPa	100
psi	kPa	6.895
at[1]	kPa	98.07
atm	kPa	101.3
Torr	kPa	0.1333

[1] technical atmosphere

Rule of 70

A quantity growing at *n*% per period doubles in size roughly every 70/*n* periods. For example, 10% growth per year means a doubling in ~7 yr.

Types of error

I or **α**	false positive: erroneously reject null hypothesis
II or **β**	false negative: erroneously accept null hypothesis
III	reject null hypothesis correctly, but for wrong reason

Null hypothesis: scenario to be refuted in order to support another

Bayes' theorem

$$P(A|B) = \frac{P(B|A) * P(A)}{P(B)}$$

posterior: $P(A|B)$; likelihood: $P(B|A)$; prior: $P(A)$; normalizing constant: $P(B)$

Fundamental principles of analytical design

Edward Tufte (2006), Beautiful Evidence, Cheshire, CT: Graphics Press

1 Show comparisons, contrast, differences | **2** Show causality, mechanism, explanation, systematic structure
3 Show multivariate data (more than two variables) | **4** Completely integrate words, numbers, images, diagrams
5 Thoroughly describe the evidence & your sources | **6** Ensure the quality, relevance & integrity of the content

Basic trig

sin	cos	tan	=
0°	90°	0°	0
1°	89°	0.9998°	0.01745
30°	60°	27.57°	0.5
35.26°	54.74°	30°	0.5774
45°	45°	35.26°	0.7071
60°	30°	40.89°	0.8660
89°	1°	45.00°	0.9998
90°	0°	45°	1
		60°	1.7321
		89°	57.29
		90°	∞

Keyboard shortcuts

[1] Alt + keypad, NumLock on
[2] Option

Symbol	Name	Win | Alt	Mac | Opt	HTML	LaTeX
×	times	0215 [1]		×	*
‰	permil	0137	Shift R [2]	‰	
–	en-dash	0150	-	–	-
—	em-dash	0151	Shift -	—	
°	degrees	0176	k	°	^\circ
±	plus or minus	0177	Shift =	±	\pm
²	squared	0178		²	^2
³	cubed	0179		³	^3
¼	quarter	0188		¼	\tfrac{1}{4}
½	half	0189		½	\tfrac{1}{2}
α	alpha	224		α	\alpha
π	pi	227	p	π	\pi
δ	delta	235	d	δ	\delta
∞	infinity	236	5	∞	\infty
φ	phi	237		φ	\phi
≥	greater or equal	242	.	≥	\geq
≤	less or equal	243	,	≤	\leq
≈	approx. equal	247	x	≈	\approx
√	square root	251	v	√	\sqrt{...}

Greek alphabet

Αα	Alpha	Νν	Nu
Ββ	Beta	Ξξ	Xi
Γγ	Gamma	Οο	Omicron
Δδ	Delta	Ππ	Pi
Εε	Epsilon	Ρϱ	Rho
Ζζ	Zeta	Σσς	Sigma
Ηη	Eta	Ττ	Tau
Θθ	Theta	Υυ	Upsilon
Ιι	Iota	Φϕ	Phi
Κϰ	Kappa	Χχ	Chi
Λλ	Lambda	Ψψ	Psi
Μμ	Mu	Ωω	Omega

SI derived units

SI units: metre, kilogram, second, kelvin, ampere, candela, mole

Name	Symbol	Quantity	Expression in terms of other units	Expression in terms of SI base units
hertz	Hz	frequency	1/s	s^{-1}
radian	rad	angle	m·m^{-1}	dimensionless
steradian	sr	solid angle	m^2·m^{-2}	dimensionless
newton	N	force, weight	kg·m/s^2	kg·m·s^{-2}
pascal	Pa	pressure, stress	N/m^2	m^{-1}·kg·s^{-2}
joule	J	energy, work, heat	N·m = C·V = W·s	m^2·kg·s^{-2}
watt	W	power, radiant flux	J/s = V·A	m^2·kg·s^{-3}
coulomb	C	electric charge or quantity of electricity	s·A	s·A
volt	V	voltage, electrical potential difference, electromotive force	W/A = J/C	m^2·kg·s^{-3}·A^{-1}
farad	F	electric capacitance	C/V	m^{-2}·kg^{-1}·s^4·A^2
ohm	Ω	electric resistance, impedance, reactance	V/A	m^2·kg·s^{-3}·A^{-2}
siemens	S	electrical conductance	1/Ω	m^{-2}·kg^{-1}·s^3·A^2
weber	Wb	magnetic flux	J/A	m^2·kg·s^{-2}·A^{-1}
tesla	T	magnetic field strength, magnetic flux density	V·s/m^2 = Wb/m^2 = N/(A·m)	kg·s^{-2}·A^{-1}
henry	H	inductance	V·s/A = Wb/A	m^2·kg·s^{-2}·A^{-2}
Celsius	°C	Celsius temperature	K – 273.15	K – 273.15

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