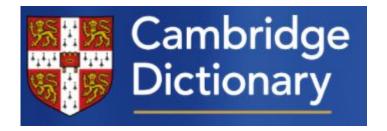
What is data?

The Data Scientist's Toolbox

"Information, especially facts or numbers, collected to be examined and considered and used to help decision making"





"A set of values of qualitative or quantitative variables"

"A set of values of qualitative or quantitative variables"

Set: In statistics, the population you are trying to discover something about

Variable: Measurements or characteristics of an item

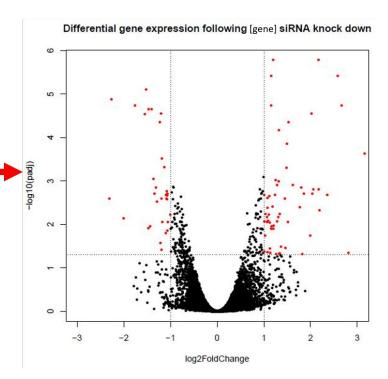
Qualitative variable: Measurements or information about qualities

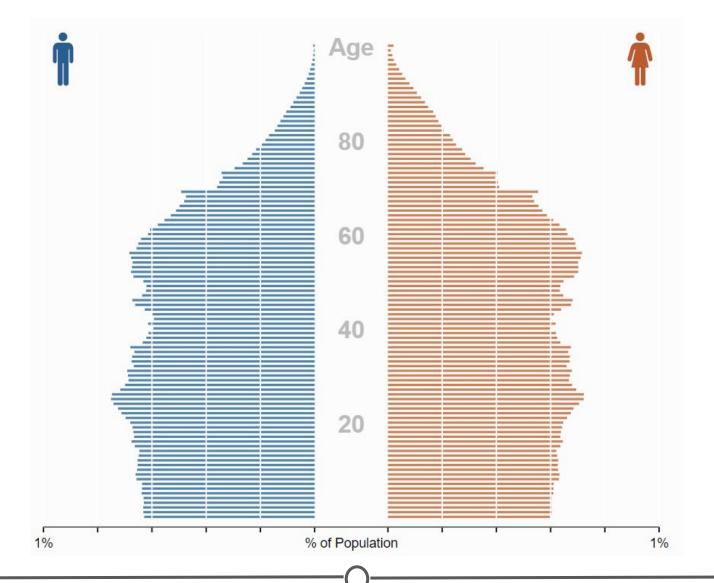
Quantitative variable: Measurements or information about quantities or numerical items

Name	Country of origin	Sex	Weight (kg)	Height (cm)
A. Bee	Canada	М	75	163
C. Dee	UAE	M	80	180
E. Eff	China	F	72	175
G. Haitch	South Africa	F	68	172
I. Jay	Poland	M	77	168
K. Elle	Japan	N/A	76	173
M. Enn	Chile	M	80	190

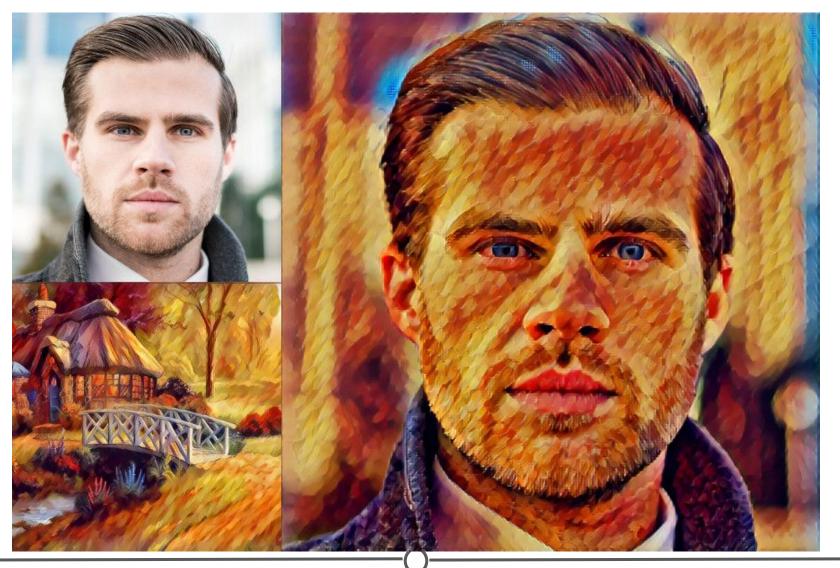
- Sequencing data
- Population census data
- Electronic medical records (EMR), other large databases
- Geographic information system (GIS) data (mapping)
- Image analysis and image extrapolation
- Language and translations
- Website traffic
- Personal/Ad data (eg: Facebook, Netflix predictions, etc)

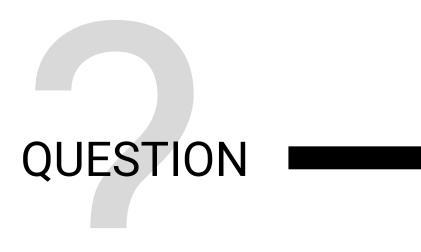
CCCCCGGGGGC<6FGAC8E<,8;;C,;<9,EEFFG<F8EEA#:,C6@FEGGGGDE#,96C8C#:6##:##:##:##: @M01605:159:000000000-B5VR2:1:2113:21912:7245 1:N:0:1 GCCTGGCGGTAGGGGCCAACACCATCTTCCTCACCAAGTTTNTCATGATGATGACNTTCCCCNCTNNTNNTN 6@cccggggefggegggggggggggggggggggggfef#:@cdfgffgcgga#:@<f@a#:c##:##,# @M01605:159:000000000-B5VR2:1:2113:17756:7245 1:N:0:1 GACGCTTGCTTAGTGACAGTGACCTACATGGTCACTGAAGANGTGATATAATTTANGATATANATNNTNNANNGGN B@-A@EFFC<FFEGGGGGGCEFCA9FFFFFFG9@FFE9@6,#9CC<,<E9,CF<E#:6C<DE#:C##,##:##:C# @M01605:159:000000000-B5VR2:1:2113:22317:7245 1:N:0:1 GGTGTGCGCTCCTTTTCCCCTGCGGGGCTCCTTTCCCTTCTNACAAATGCTTCACNCTGCTTNCCNNCNNCNNGGN CCCCCGAF7+; FFGGGG, <EEFECFG770, C<9EEF, C, C<#:, CFGF99CEA<9#6, 6, @F#:C##9##, ##:, # @M01605:159:000000000-B5VR2:1:2113:16780:7245 1:N:0:1 AGTCAGCAGGTGTTGGGTCATGTGATCGGGTCTGGCCCATANGTGGCGCTGTTGANCACTCCNGTNNCNNTNNAAN A@CC@<,CECD,CFG8@FD89<FCG<FGFEFGGG,66,BFC#,:C,C+BC+BFF9#6,CFFE#,:##:##6##,9# @M01605:159:000000000-B5VR2:1:2113:12894:7245 1:N:0:1 ACCATACACTGATCACCTTACTGATAATGCACTGGACACGTNCCTGATAATGCAANTGTCTCNTANNANNANNCAN CCCC8F8, C<FG9, CE8CEA8ECF9FCFFGGGF, CFGFFEC#: 6C@@9, CFCFF, #, , 9, 6C#, 9##, ##:##, , # @M01605:159:000000000-B5VR2:1:2113:21242:7246 1:N:0:1 GACCAGCCTGGTTGCCTGTTGGACATGTTCGTAGTGTGGGNGGAATACTTGGTCNTTAGCTNCTNNGNNTN





• Help	Patient Details			GP Details	2222				
• Logout				Name: Jones, Evans	Phone: 333-465-5		Address: 11 Terrence Ave., E	dmonton, AB T4	Y 8U9
		Smith, Caroline		Other Healthcare Providers					
				Name Diaz, Ellen Fournier, Jan Cohen, Richa	Disp. Cardiolog	08/2005	nter Next encour 07/2006	rter Right of A Y N N	ccess
		Phone: 365-565-9090 Address: 19 Provincial Rd. Edmonton AB T6M 1R7		Medications					
	Sex: Female DOB: 1940/01/01 Next of kin: John Smith			Date Medications 11/1989 Hydrochlorothia 03/1999 Glyburide 5 mg 01/2001 Metformin 500 03/2001 Atorvastatin 20 02/2002 Atenolol 50 mg		mg mg	One tab twice Two tabs twice One tab at su	One tab at breakfast One tab twice daily Two tabs twice daily One tab at supper One tab at breakfast	
atient Record	Alerts			02/2002	ECASA 325 mg		One tab at br		12/2005
Summary Lab Results Diagnostic Images Details Notes or Comments	Allergies – Sulfa Drugs • Pap smear due • Td due • A1C above target		02/2006 Ramipril 10mg 06/2005 Cloxacillin 500 mg 05/2004 Beclomethasone C			One tab at supper Discontinued eam Discontinued		02/2006	
			Encounter History						
			Date 02/2006	Facility GP	Speciality	Clinician	Reason Hypertension	Type	
			01/2006	Cardio Assoc GP	Cardiology	Diaz, E.	CAD Diabetes	Outpatient	
			10/2005 08/2005	General Hosp GP	Dietician		Diabetes teachin Diabetes	g Outpatient	
	Diagnosis	State	Status	08/2005	GP			Cellulitis	
	Hypertension	11/1989	Ongoing	08/2005	Home Visit	RN		Cellulitis	
	Diabetes	05/1996	Ongoing	08/2005	GP Polyclinic	Dermatology		Cellulitis Stasis dermatitis	Outpatient
	Coronary	420042		0//2003	Potychine	permatology	Conen, rc	atasis dermacios	Outpatient
	Artery Disease Fasting lipids Exercise stress test Coronary angiogram / Cellulitis Cholecystectomy Cesarian section	02/2002 Ongoing 12/2005 1/2005 02/2005 Resolved 05/1981 Resolved 01/1967 Resolved	Immunizations Diabetic Indices				tires		
			Type Influenza	Most Recent 11/2005	Number Receive		Value N	Most Recent 2/2005	
			Resolved	Pneumovax Twinrix	03/2005 08/2002	3	LDL BP		2/2005 2/2006
			Resolved	Td	04/1996		Urine Microalb Eye Exam Home Gluc		8/2005 5/2005
							(average)	7.4 0	1/2006





Summarizing: What is data?

The Data Scientist's Toolbox