

Data Analytics vs. Data Science

Data Analytics vs. Data Science

Business Intelligence Analyst

Data Analyst

Data Scientist

BUSINESS ANALYST

CHANGE AGENT



Role

Improves business process as intermediary between business and IT

Languages

SQL

Mindset

Resilient project juggler

Skills & Talents

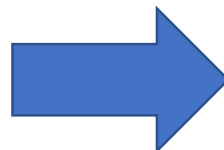
- Basic tools (e.g. MS Office)
- Data visualization tools (e.g. Tableau)
- Conscious listening and storytelling
- Business Intelligence understanding
- Data modeling

Business Metrics

1 **SELECT** * **FROM** zoo;

Result

animal	uniq_id	water_need
elephant	1001	500
elephant	1002	600
elephant	1003	550
tiger	1004	300
tiger	1005	320
tiger	1006	330
tiger	1007	290
tiger	1008	310
zebra	1009	200
zebra	1010	220
zebra	1011	240
zebra	1012	230
zebra	1013	220
zebra	1014	100
zebra	1015	80
lion	1016	420
lion	1017	600
lion	1018	500
lion	1019	390
kangaroo	1020	410
kangaroo	1021	430
kangaroo	1022	410



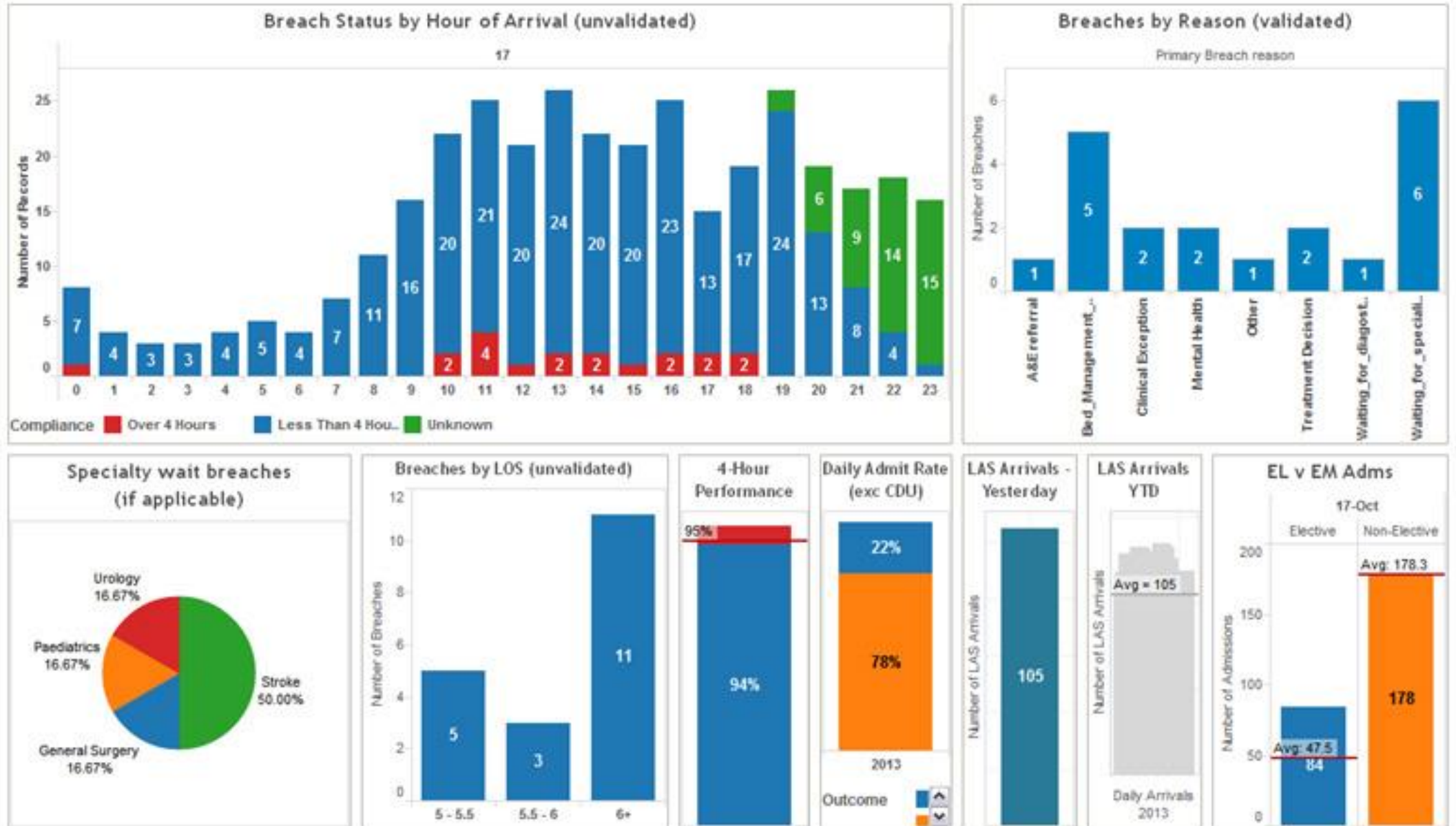
A1 fx animal

	A	B	C	D
1	animal	uniq_id	water_need	
2	elephant	1001	500	
3	elephant	1002	600	
4	elephant	1003	550	
5	tiger	1004	300	
6	tiger	1005	320	
7	tiger	1006	330	
8	tiger	1007	290	
9	tiger	1008	310	
10	zebra	1009	200	
11	zebra	1010	220	
12	zebra	1011	240	
13	zebra	1012	230	
14	zebra	1013	220	
15	zebra	1014	100	
16	zebra	1015	80	
17	lion	1016	420	
18	lion	1017	600	
19	lion	1018	500	
20	lion	1019	390	
21	kangaroo	1020	410	
22	kangaroo	1021	430	
23	kangaroo	1022	410	
24				
25				

Sheet1 + Ready

Summary	Settings	VSImax v4	VSImax v4 Detailed	VSImax v4 Detailed Weighted	VSImax v4 Scatter	UMEM	IO	CPU	ZLC	ZHC	NFP	NFO	NSLD	AppStart	LogonTimer	VSImax v4 Data	Raw Data	
session_count	log_time	computename	username	total_response	ActiveSessions	LoopNumber	CurrentSegment	SegmentsRun	FCTS	FCTL	NSLD	NFO	NFP					
2	2014.07.04 13:0...	W7-VRC1-001	VRC1_LoginVSI1	6166	2	1	1	0	269	5	1122	275	38					
7	2014.07.04 13:0...	W7-VRC1-026	VRC1_LoginVSI26	6340	7	1	2	0	269	5	1172	277	40					
7	2014.07.04 13:0...	W7-VRC1-101	VRC1_LoginVSI1...	6104	7	1	1	0	269	5	1072	268	40					
8	2014.07.04 13:0...	W7-VRC1-051	VRC1_LoginVSI51	6376	8	1	3	0	269	6	1172	282	41					
10	2014.07.04 13:0...	W7-VRC1-126	VRC1_LoginVSI1...	6352	10	1	2	0	269	5	1188	279	43					
10	2014.07.04 13:0...	W7-VRC1-052	VRC1_LoginVSI52	6232	10	1	1	0	269	6	1141	281	40					
10	2014.07.04 13:0...	W7-VRC1-001	VRC1_LoginVSI1	6450	10	1	1	0	269	6	1142	290	42					
10	2014.07.04 13:0...	W7-VRC1-076	VRC1_LoginVSI76	6555	10	1	4	0	270	5	1188	392	52					
12	2014.07.04 13:0...	W7-VRC1-002	VRC1_LoginVSI2	6256	12	1	3	0	269	6	1118	289	42					
14	2014.07.04 13:0...	W7-VRC1-077	VRC1_LoginVSI77	6544	14	1	2	0	269	6	1230	281	42					
14	2014.07.04 13:0...	W7-VRC1-003	VRC1_LoginVSI3	6198	14	1	1	0	269	6	1104	277	40					
14	2014.07.04 13:0...	W7-VRC1-027	VRC1_LoginVSI27	6651	14	1	4	0	269	5	1250	423	65					
15	2014.07.04 13:0...	W7-VRC1-101	VRC1_LoginVSI1...	6378	15	1	1	0	269	6	1127	299	43					
16	2014.07.04 13:0...	W7-VRC1-102	VRC1_LoginVSI1...	6552	16	1	3	0	269	5	1313	298	42					
17	2014.07.04 13:0...	W7-VRC1-026	VRC1_LoginVSI26	6884	17	1	2	0	270	6	1391	340	42					
18	2014.07.04 13:0...	W7-VRC1-028	VRC1_LoginVSI28	6385	18	1	2	0	269	5	1114	279	41					
18	2014.07.04 13:0...	W7-VRC1-103	VRC1_LoginVSI1...	6252	18	1	1	0	269	5	1109	279	39					
18	2014.07.04 13:0...	W7-VRC1-051	VRC1_LoginVSI51	6693	18	1	3	0	270	6	1328	310	52					
18	2014.07.04 13:0...	W7-VRC1-127	VRC1_LoginVSI1...	6594	18	1	4	0	269	6	1219	381	55					
19	2014.07.04 13:0...	W7-VRC1-001	VRC1_LoginVSI1	6616	19	1	1	0	269	6	1148	305	42					
19	2014.07.04 13:0...	W7-VRC1-076	VRC1_LoginVSI76	7104	19	1	4	0	270	6	1375	421	57					
19	2014.07.04 13:0...	W7-VRC1-052	VRC1_LoginVSI52	6564	19	1	1	0	269	6	1168	313	54					
20	2014.07.04 13:0...	W7-VRC1-053	VRC1_LoginVSI53	6644	20	1	3	0	269	5	1235	295	42					
21	2014.07.04 13:0...	W7-VRC1-126	VRC1_LoginVSI1...	6720	21	1	2	0	269	6	1282	293	43					
21	2014.07.04 13:0...	W7-VRC1-002	VRC1_LoginVSI2	6768	21	1	3	0	270	6	1359	330	42					
22	2014.07.04 13:0...	W7-VRC1-128	VRC1_LoginVSI1...	6473	22	1	2	0	269	5	1172	287	42					
22	2014.07.04 13:0...	W7-VRC1-054	VRC1_LoginVSI54	6233	22	1	1	0	269	5	1141	275	40					
22	2014.07.04 13:0...	W7-VRC1-003	VRC1_LoginVSI3	6548	22	1	1	0	269	7	1168	311	55					
22	2014.07.04 13:0...	W7-VRC1-078	VRC1_LoginVSI78	6827	22	1	4	0	269	6	1309	452	55					
23	2014.07.04 13:0...	W7-VRC1-101	VRC1_LoginVSI1...	6512	23	1	1	0	269	6	1146	309	54					
23	2014.07.04 13:0...	W7-VRC1-027	VRC1_LoginVSI27	6989	23	1	4	0	269	6	1344	400	52					
24	2014.07.04 13:0...	W7-VRC1-004	VRC1_LoginVSI4	6452	24	1	3	0	269	5	1155	284	57					
25	2014.07.04 13:0...	W7-VRC1-077	VRC1_LoginVSI77	6951	25	1	2	0	269	5	1250	290	44					
26	2014.07.04 13:0...	W7-VRC1-079	VRC1_LoginVSI79	6442	26	1	2	0	269	5	1188	298	43					
26	2014.07.04 13:0...	W7-VRC1-102	VRC1_LoginVSI1...	6718	26	1	3	0	269	6	1297	303	50					

Dashboard



Business (BI) Analyst



DATA ANALYST

DATA DETECTIVE

Role

Collects, processes and performs statistical data analyses

Languages

R, Python, HTML, Javascript, C/C++, SQL

Mindset

Intuitive data junkie with high "figure-it-out" quotient

Skills & Talents

- Spreadsheet tools (e.g. Excel)
- Database systems (SQL and NO SQL based)
- Communication & visualization
- Math, Stats, Machine Learning



Stephen Curry

vs Cavaliers



Pts	33
FG	11-26
3-pt FG	9-17
Ast	8
Reb	7

► 9 3-pt FG: *NBA Finals Record*



○ Made X Missed

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Ali #2398

CAREER

HEROES

Ali

60 Barbarian



Ali

301,522 Elite Kills

60



Arrow

5 Elite Kills

4



Tiesto

2 Elite Kills

4



3967604

LIFETIME KILLS



301529

ELITE KILLS

Time Played by Class



Barb



DH



Monk



WD



Wiz

PROGRESSION

Normal

Hardcore



ARTISANS



Blacksmith

Level 3 (Normal)

Level - (Hardcore)



Jeweler

Level 10 (Normal)

Level - (Hardcore)



Last updated on 09/08/12 06:26

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Data Analytics Stages

Category

Purpose

Descriptive Analytics:

What happened?

Exploratory Analytics:

What's important?

Predictive Analytics:

What is likely to happen?

Prescriptive Analytics:

What should I do?

Descriptive Analytics

Product Purchases

Age Groups	Monthly Transactions	Average Transaction Amt.
< 40	67	\$48.61
40 - 60	112	\$95.39
60 <	43	\$61.22
Total	222	\$68.40

Descriptive Analytics

Product Purchases

Age Groups	Monthly Transactions	Average Transaction Amt.
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Descriptive Analytics

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40 - 60	112	\$95.39
60 <	43	\$61.22
Total	222	\$68.40

Exploratory Analytics

Product Discounts

Gender	20%	30%	40%	50%	60%	Ave.
Female	14.99%	17.61	20.92	20.73	26.08	20.06
Male	9.76%	15.23%	16.90	20.16	26.74	17.75
Ave.	12.38	16.42	18.91	20.45	26.41	

Exploratory Analytics

Product Discounts

Gender	20%	30%	40%	50%	60%	Ave.
Female	14.99%	17.61	20.92	20.73	26.08	20.06
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Exploratory Analytics

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Male	9.76%	15.23%	16.90	20.16	26.74	17.75
Ave.	12.38	16.42	18.91	20.45	26.41	

Predictive Analytics



Predictive Analytics

Customer 360

Visited Website

Age

Called Sales

Gender

Responded
to an email

Employment



Customer Data

Demographics	
Name	Carl
Age	38
Gender	M
Employed	Yes
Income	75,000
Married	Y
Children	2

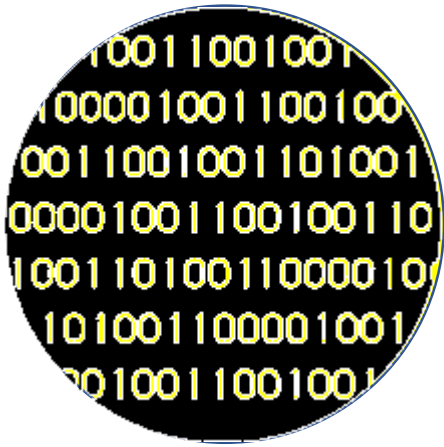
Customer Data

Behavior	
Visited Website	Y
Bought Products	N
Received Emails	Y
Responded to Emails	N
Tweeted About You	N
Called Sales	Y

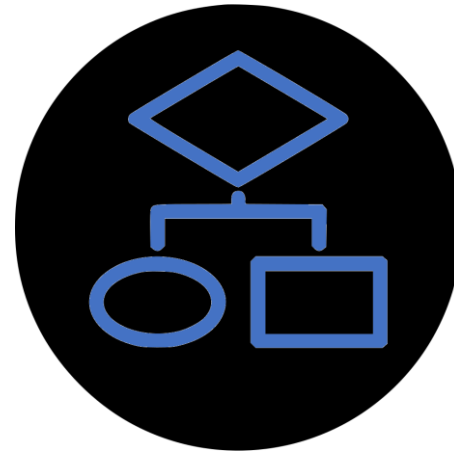
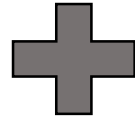
Real-Time Customer Data

Clicked Product	Viewed Summary	Clicked Similar Product	Compared Products	Checked Reviews	Buy
1	1	0	0	1	1
1	0	1	1	0	0
1	1	1	0	1	1
0	0	0	0	0	0
1	0	1	0	0	0
1	1	1	0	1	1
1	1	0	1	0	1

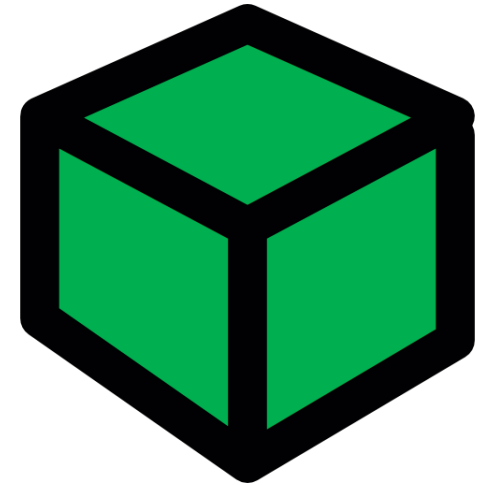
Machine Learning Model



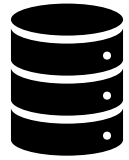
DATA



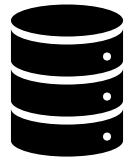
ALGORITHM



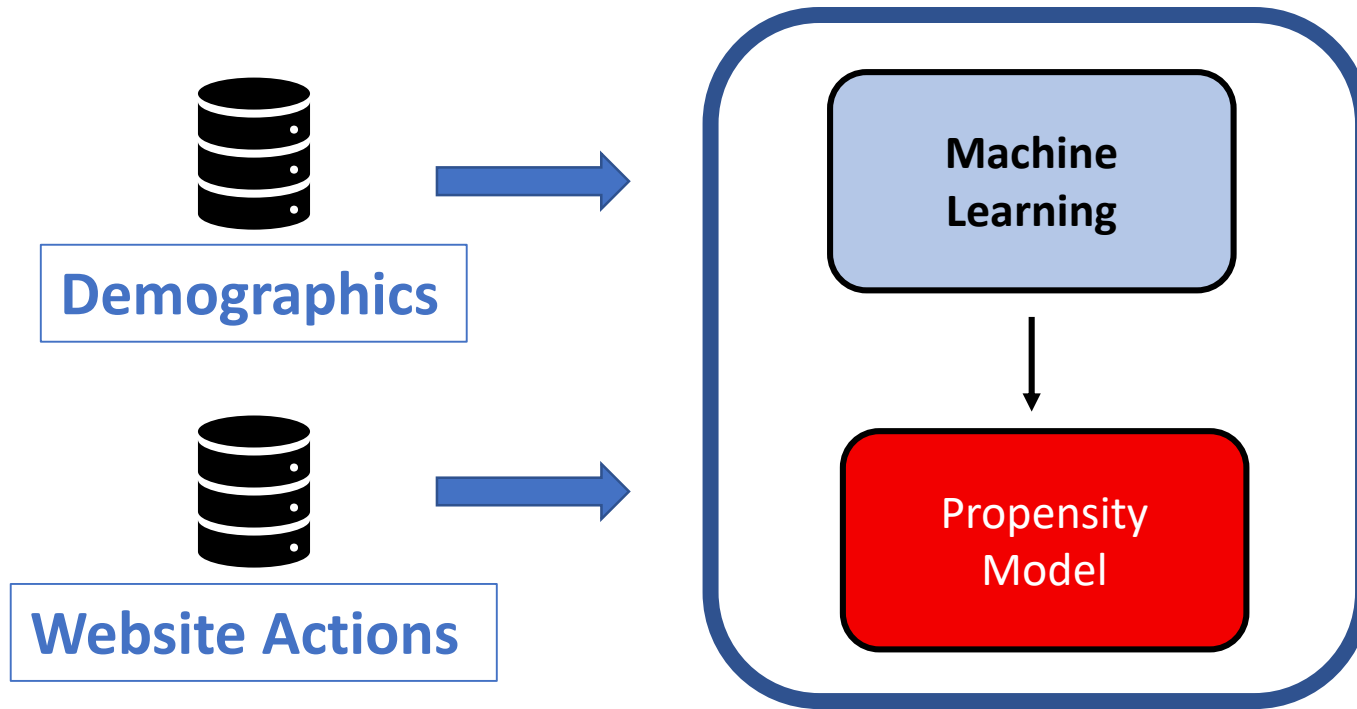
MODEL

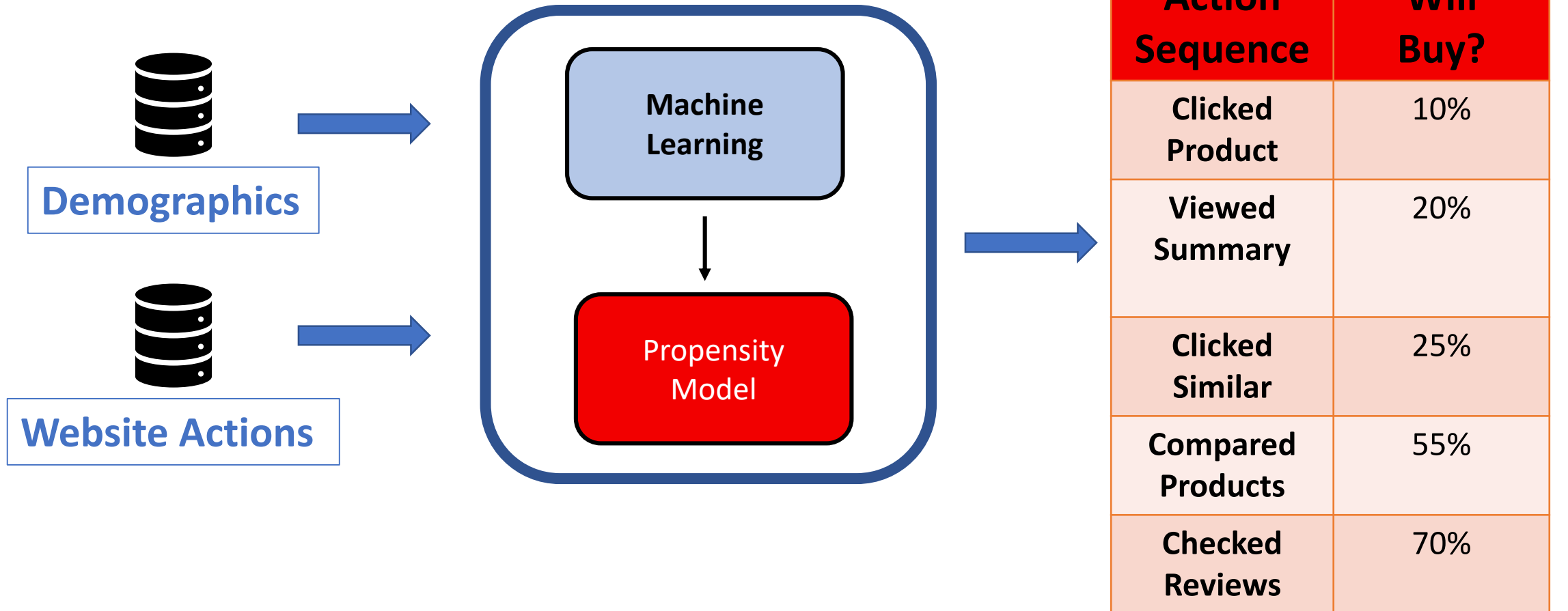


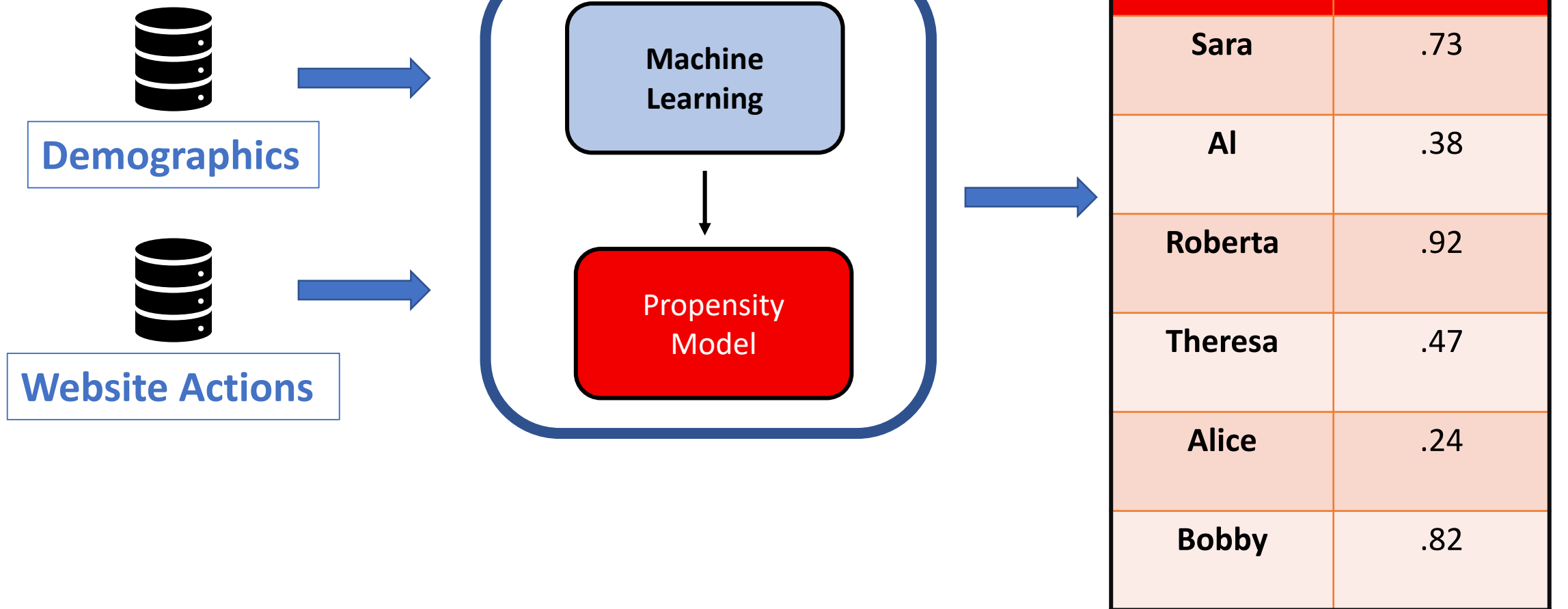
Demographics



Website Actions







New Customer

Clicked Product	Viewed Summary	Clicked Similar Product	Compared Products	Checked Reviews	Buy
0	0	0	0	0	?

New Customer

Clicked Product	Viewed Summary	Clicked Similar Product	Compared Products	Checked Reviews	Buy
0	0	0	0	0	.03

Probability

New Customer

Clicked Product	Viewed Summary	Clicked Similar Product	Compared Products	Checked Reviews	Buy
1	0	0	0	0	.09

Probability

New Customer

Clicked Product	Viewed Summary	Clicked Similar Product	Compared Products	Checked Reviews	Buy
1	0	1	0	0	.27

Probability

New Customer

Clicked Product	Viewed Summary	Clicked Similar Product	Compared Products	Checked Reviews	Buy
1	0	1	0	1	.59



Probability

Chat



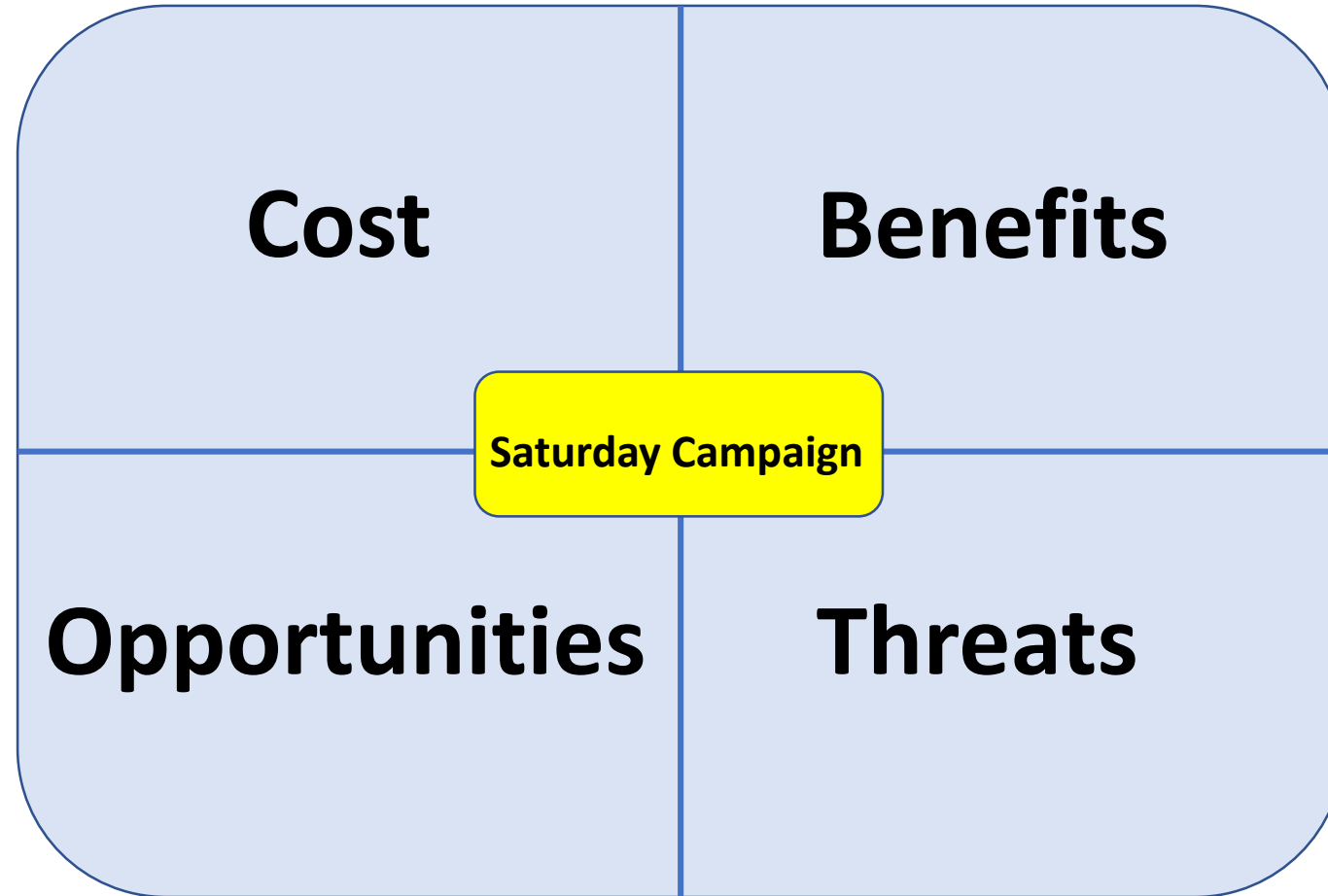
Prescriptive Analytics

Day of the Week	Offers	Conversion%
Sunday	736	17.8%
Monday	707	15.7%
Tuesday	767	19.3%
Wednesday	732	15.0%
Thursday	712	17.3%
Friday	741	17.3%
Saturday	605	33.4%
	5000	19.1%

Prescriptive Analytics

Day of the Week	Offers	Conversion%
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Thursday	712	17.3%
Friday	741	17.3%
Saturday	605	33.4%
	5000	19.1%

Decision Analysis



Data Analyst

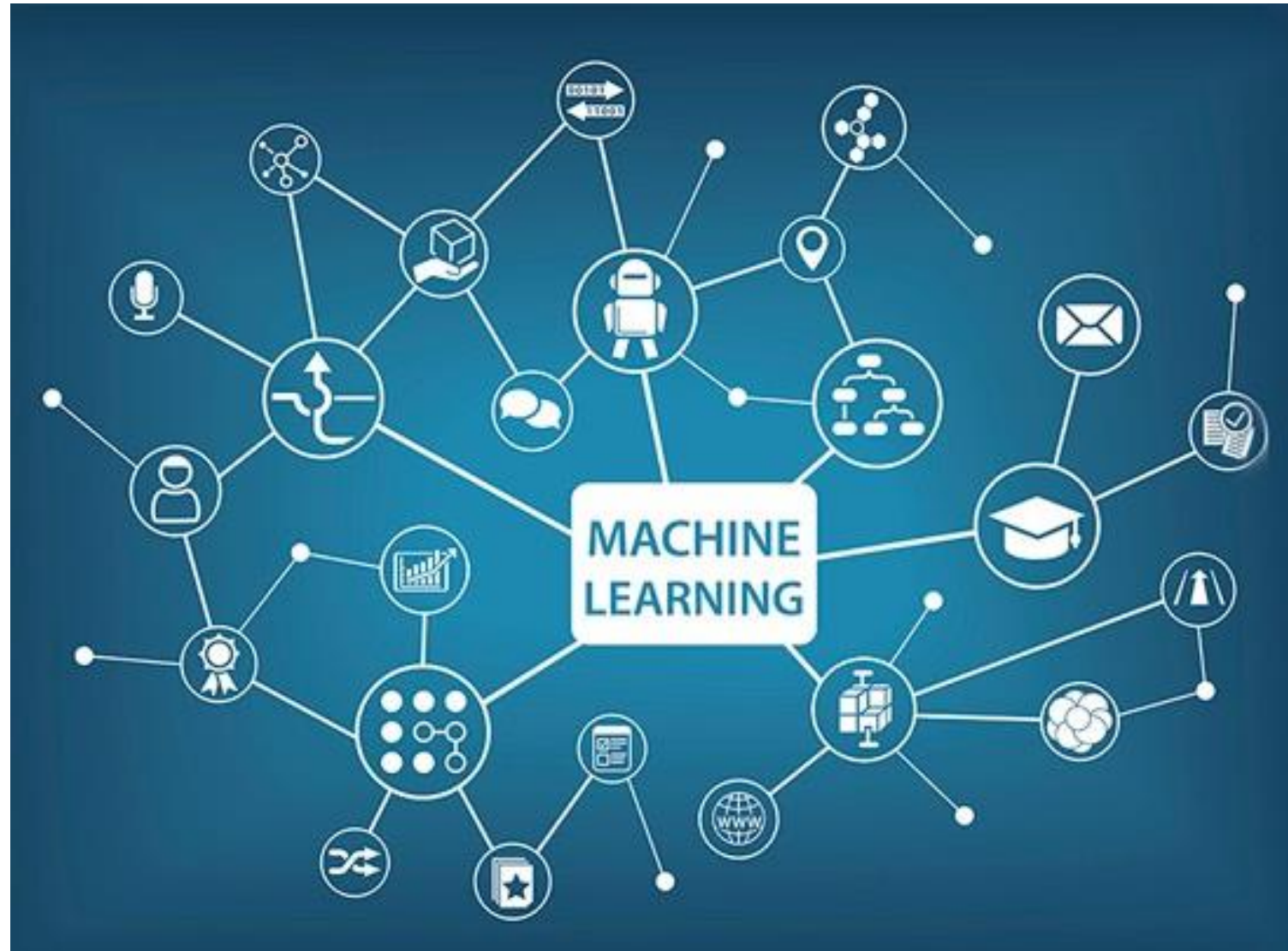


Domain
Knowledge

Who is a Data Scientist?



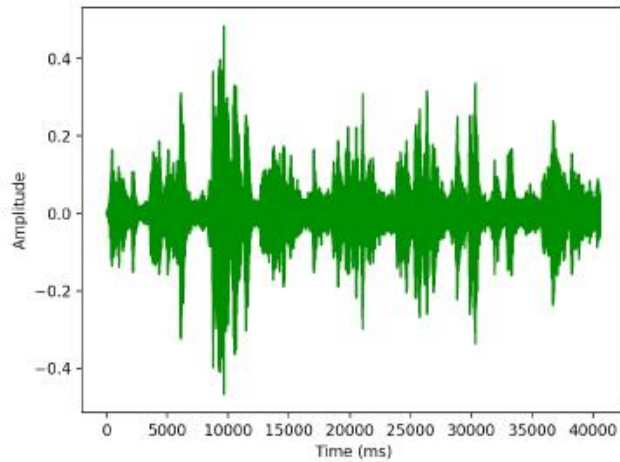
Data Scientist



Structured Data

Age	Weight	Gender	BMI	Diabetes
47	192	M	23.4	No
53	164	F	27.2	Yes
68	214	M	25.2	Yes
43	151	F	24.8	No

Unstructured Data



Audio



Image

Lorem ipsum dolor sit amet,
consectetur adipiscing elit. Maecenas
porttitor congue massa. Fusce posuere,
magna sed pulvinar ultricies, purus
lectus malesuada libero, sit amet
commodo magna eros quis urna.

Text



Comparison

Process	Data Engineering	Business Intelligence	Data Analytics	Data Science
Integrate Data Sources				
Build Data Pipelines				
Process and Transform Data				
Store Data				
Dashboards/Reports				
Exploratory Analytics				
Machine Learning				
Specialized Domain Knowledge				
Business Recommendations				

Comparison

Process	Data Engineering	Business Intelligence	Data Analytics	Data Science
Integrate Data Sources	✓			
Build Data Pipelines	✓			
Process and Transform Data	✓			
Store Data	✓			
Dashboards/Reports				
Exploratory Analytics				
Machine Learning				
Specialized Domain Knowledge				
Business Recommendations				

Comparison

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Integrate Data Sources	✓			
Build Data Pipelines	✓			
Process and Transform Data	✓			
Store Data	✓			
Dashboards/Reports		✓		
Exploratory Analytics		✓		
Machine Learning				
Specialized Domain Knowledge				
Business Recommendations		✓		

Comparison

Process	Data Engineering	Business Intelligence	Data Analytics	Data Science
Integrate Data Sources	✓			
Build Data Pipelines	✓			
Process and Transform Data	✓			
Store Data	✓			
Dashboards/Reports		✓	✓	
Exploratory Analytics		✓	✓	
Machine Learning			✓	
Specialized Domain Knowledge			✓	
Business Recommendations		✓	✓	

Comparison

Process	Data Engineering	Business Intelligence	Data Analytics	Data Science
Integrate Data Sources	✓			✓
Build Data Pipelines	✓			✓
Process and Transform Data	✓			✓
Store Data	✓			✓
Dashboards/Reports		✓	✓	✓
Exploratory Analytics		✓	✓	✓
Machine Learning			✓	✓
Specialized Domain Knowledge			✓	✓
Business Recommendations		✓	✓	✓