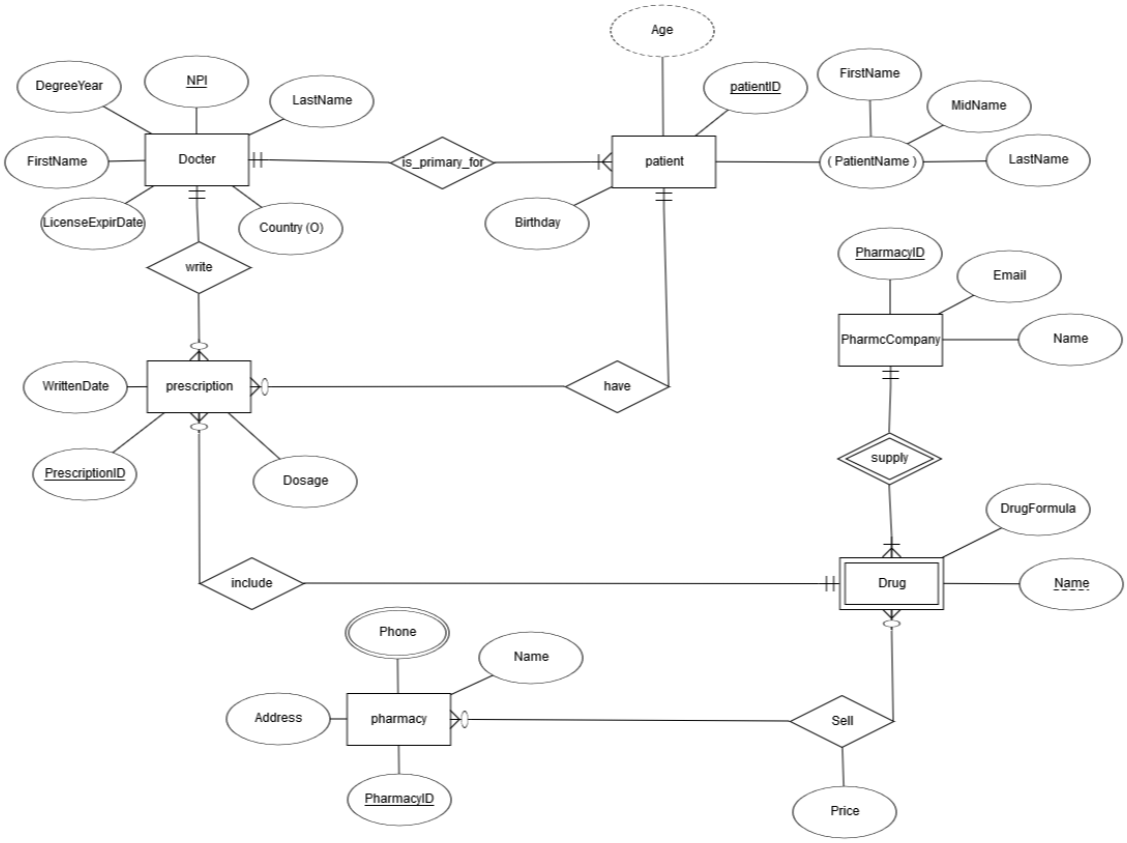
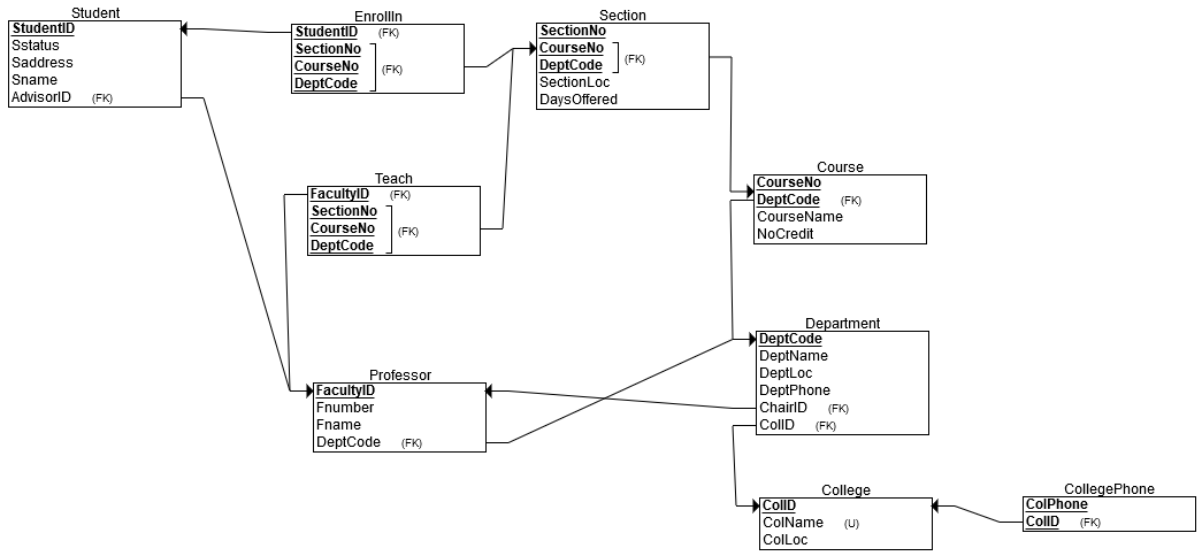
Database

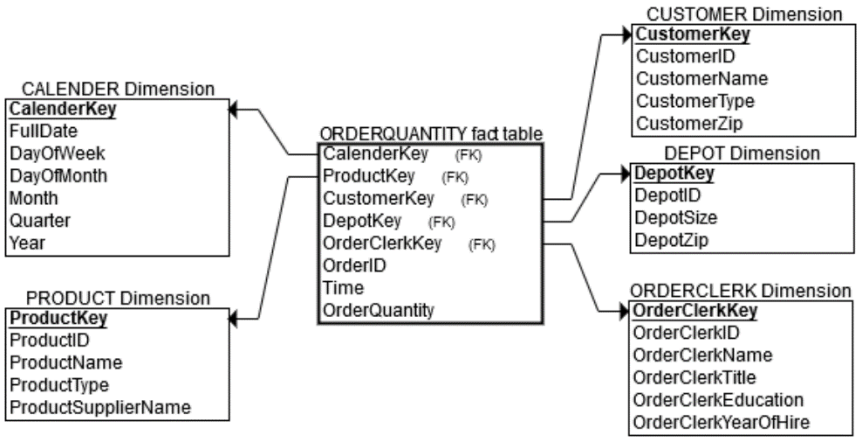
ERD



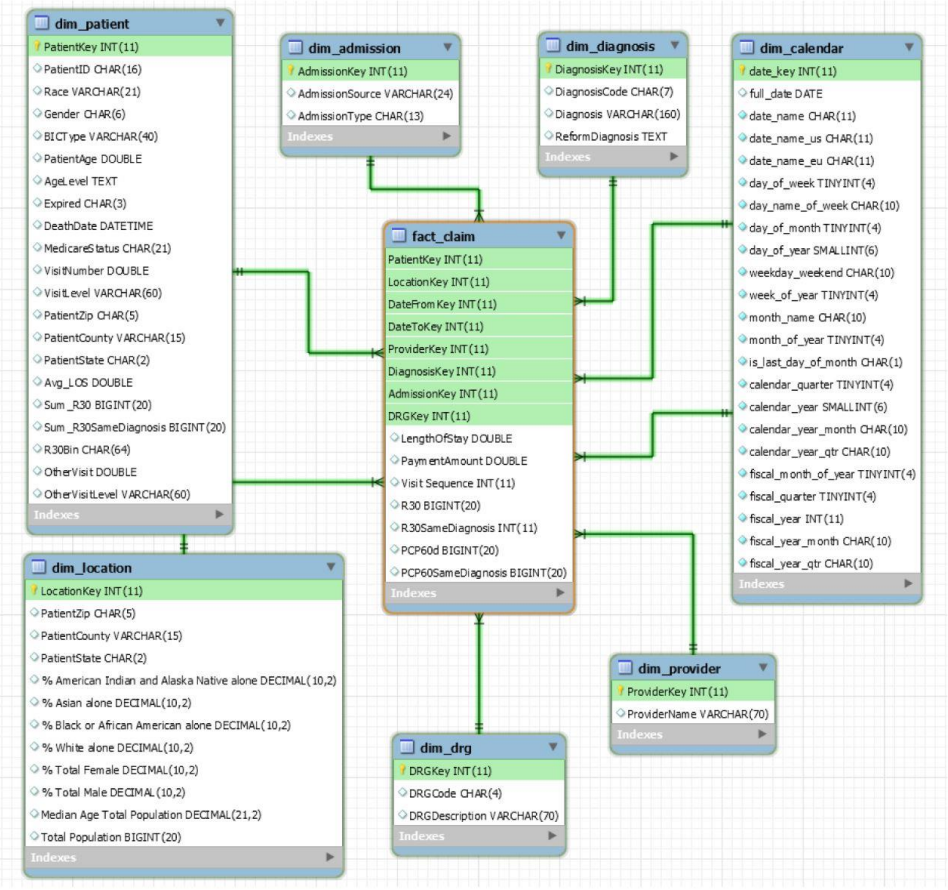
Relational Schema



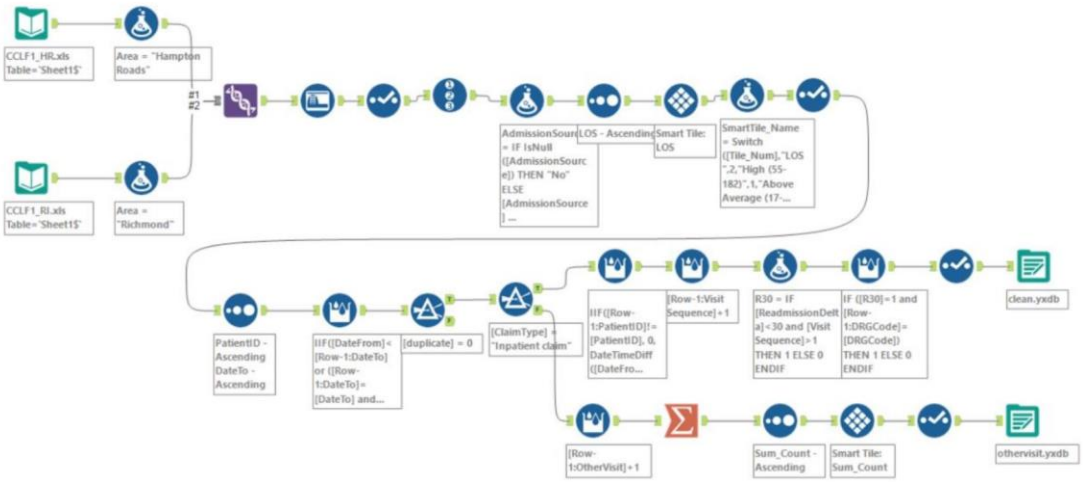
Star Schema 1



Star Schema 2

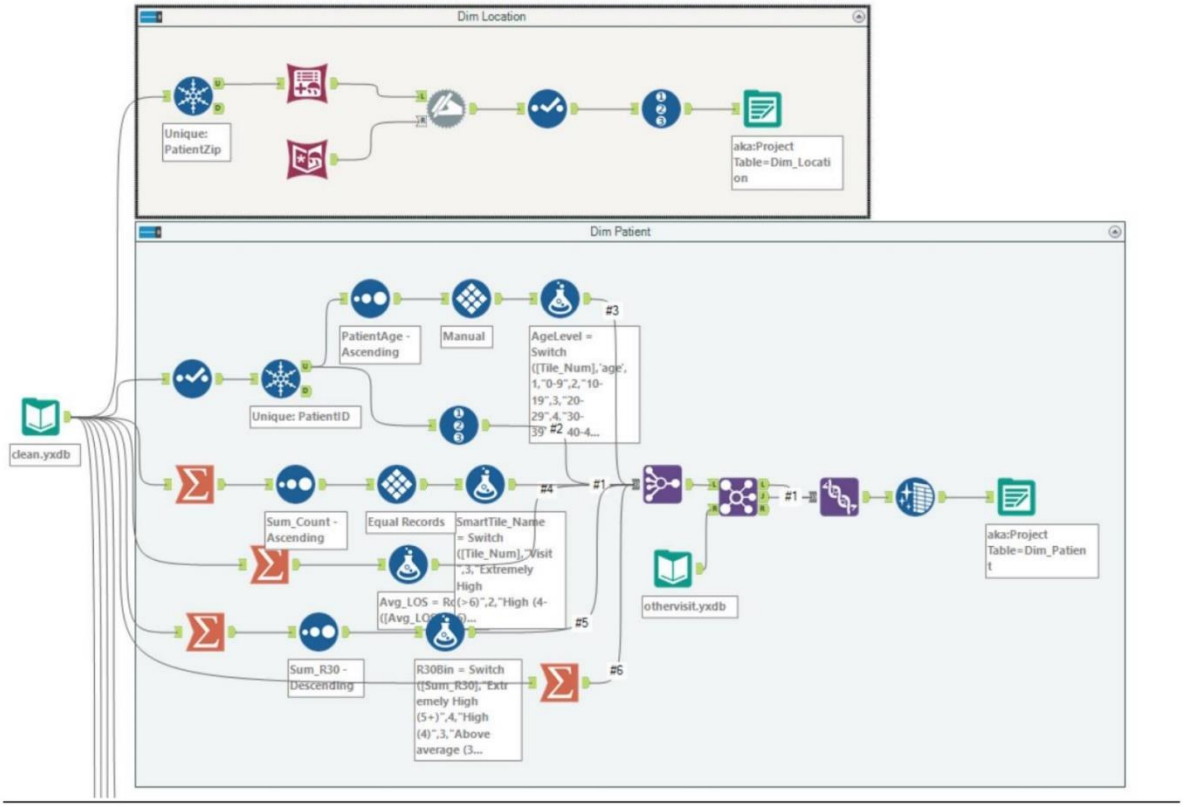


ETL-Data Cleaning

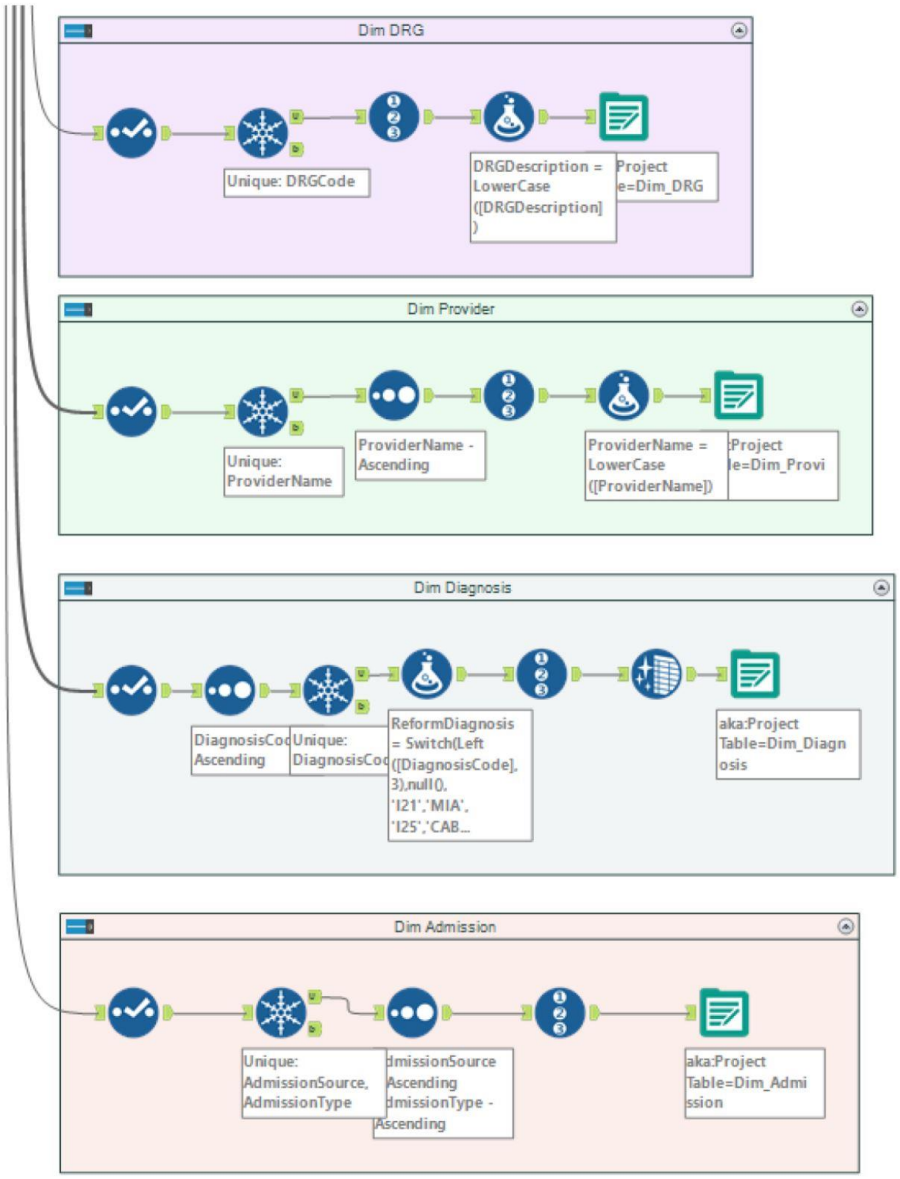


ETL-Building dimensions for data warehouse 1

Appendix C: ETL Dimensions

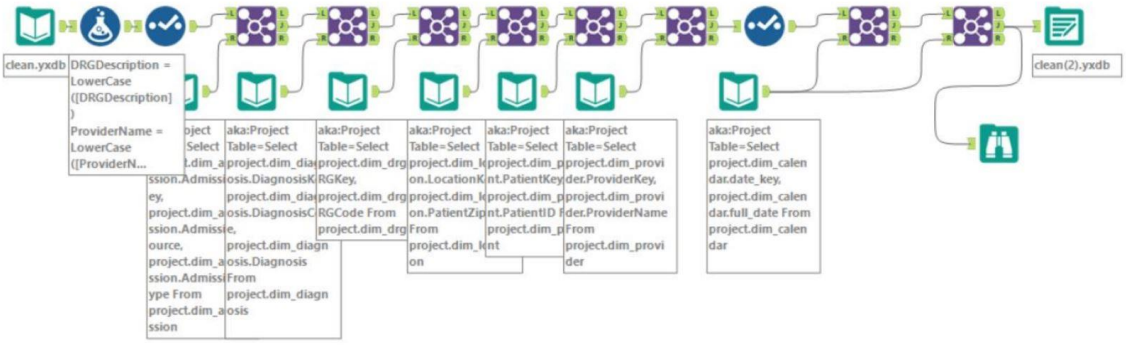


ETL-Building dimensions for data warehouse 2



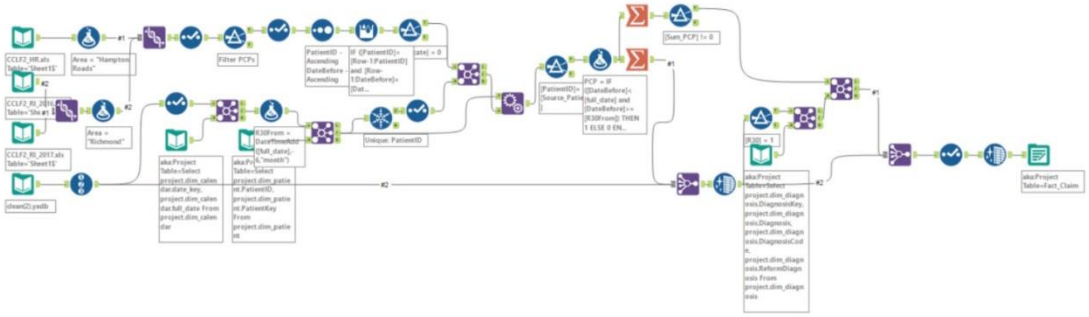
ETL-Building fact table

Appendix D: Building the Fact table in ETL



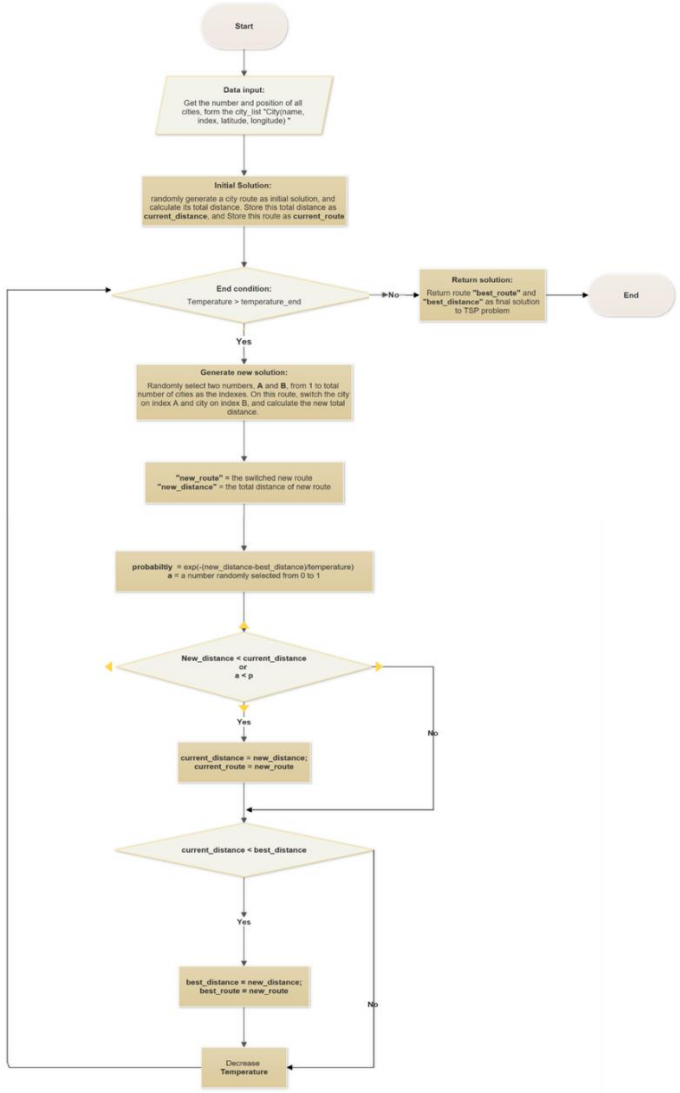
ETL-Incorporate data from other data sources.

Appendix E: Combining the Databases



Flowchart

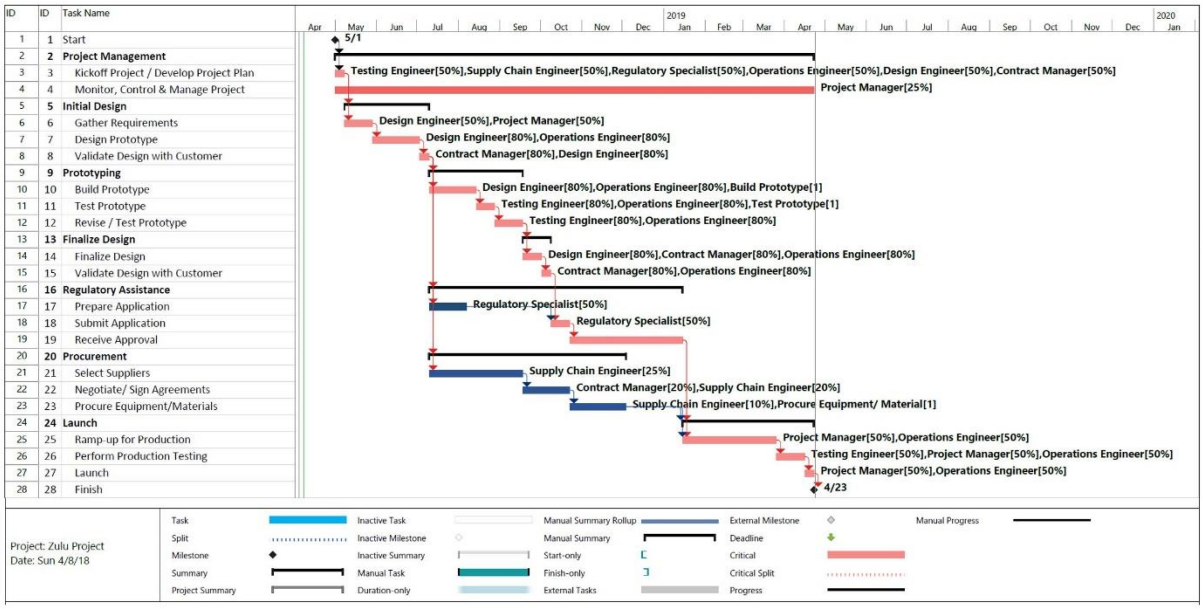
Genetic algorithm



Project Management

Gantt Chart

Gantt Chart

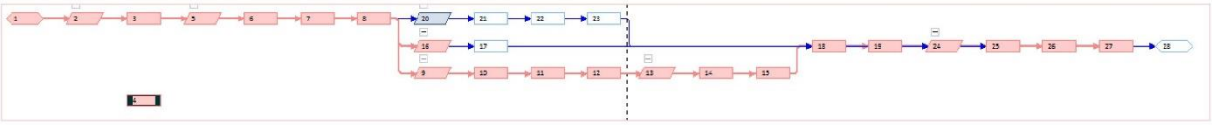


Resource Spreadsheet

ID	Task Name	Work	Duration	Details	May	Jun	Qtr 3, 2018 Jul	Aug	Sep	Qtr 4, 2018 Oct	Nov	Dec	Qtr 1, 2019 Jan	Feb	Mar	Qtr 2, 2019 Apr	M
0	**Zulu Project**	**3,174 hrs**	**255 days**	Work	324.4h	310.8h	421.6h	402.4h	404.4h	214h	149.6h	126.8h	190h	200h	226h	204h	
1	Start	0 hrs	0 days	Work													
2	**Project Management**	**630 hrs**	**255 days**	Work	166h	42h	44h	46h	40h	46h	44h	42h	46h	40h	42h	32h	
3	Kickoff Project / Develop Project Plan	120 hrs	5 days	Work	120h												
	Design Engineer	*20 hrs*		Work	20h												
	Testing Engineer	*20 hrs*		Work	20h												
	Regulatory Specialist	*20 hrs*		Work	20h												
	Supply Chain Engineer	*20 hrs*		Work	20h												
	Contract Manager	*20 hrs*		Work	20h												
	Operations Engineer	*20 hrs*		Work	20h												
4	Monitor, Control & Manage Project	510 hrs	255 days	Work	46h	42h	44h	46h	40h	46h	44h	42h	46h	40h	42h	32h	
	Project Manager	*510 hrs*		Work	46h	42h	44h	46h	40h	46h	44h	42h	46h	40h	42h	32h	
5	**Initial Design**	**504 hrs**	**45 days**	Work	158.4h	268.8h	76.8h										
6	Gather Requirements	120 hrs	15 days	Work	120h												
	Project Manager	*60 hrs*		Work	60h												
	Design Engineer	*60 hrs*		Work	60h												
7	Design Prototype	320 hrs	25 days	Work	38.4h	268.8h	12.8h										
	Design Engineer	*160 hrs*		Work	19.2h	134.4h	6.4h										
	Operations Engineer	*160 hrs*		Work	19.2h	134.4h	6.4h										
8	Validate Design with Customer	64 hrs	5 days	Work			64h										
	Design Engineer	*32 hrs*		Work			32h										
	Contract Manager	*32 hrs*		Work			32h										
9	**Prototyping**	**640 hrs**	**50 days**	Work			204.8h	294.4h	140.8h								
10	Build Prototype	320 hrs	25 days	Work			204.8h	115.2h									
	Design Engineer	*160 hrs*		Work			102.4h	57.6h									
	Operations Engineer	*160 hrs*		Work			102.4h	57.6h									
	Build Prototype	*1*		Work			0.64	0.36									
11	Test Prototype	128 hrs	10 days	Work				128h									
	Testing Engineer	*64 hrs*		Work				64h									
	Operations Engineer	*64 hrs*		Work				64h									
	Test Prototype	*1*		Work				1									
12	Revise / Test Prototype	192 hrs	15 days	Work				51.2h	140.8h								
	Testing Engineer	*96 hrs*		Work				25.6h	70.4h								

Network Diagram

Network Diagram



Footnotes

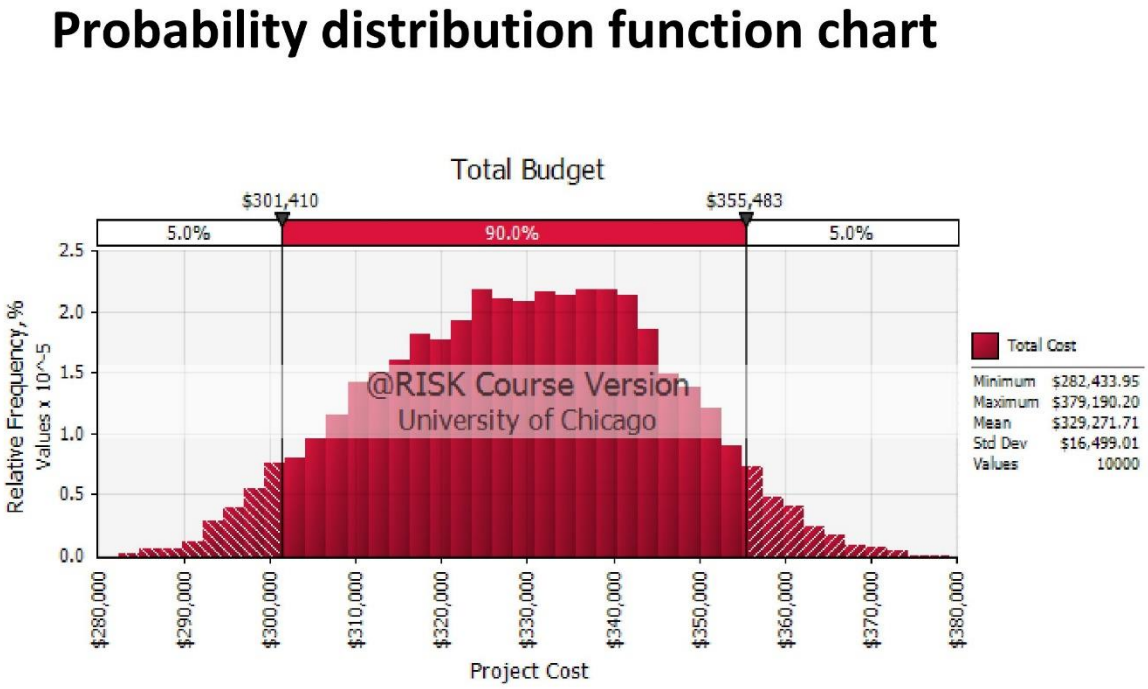
1 Start
2 Project Management
3 Kickoff Project/Develop Project Plan
4 Monitor, Control & Manage Project
5 Initial Design
6 Gather Requirements
7 Design Prototype
8 Validate Design with Customer
9 Prototyping
10 Build Prototype
11 Test Prototype
12 Revise/Test Prototype
13 Final Design
14 Finalize Design
15 Validate Design with Customer
16 Regulatory Assistance
17 Prepare Application
18 Submit Application
19 Receive Approval
20 Procurement
21 Select Suppliers
22 Negotiate/Sign Agreements
23 Procure Equipment/Materials
24 Launch
25 Ramp-up for Production
26 Perform Production Testing
27 Launch
28 Finish

Cost Estimation

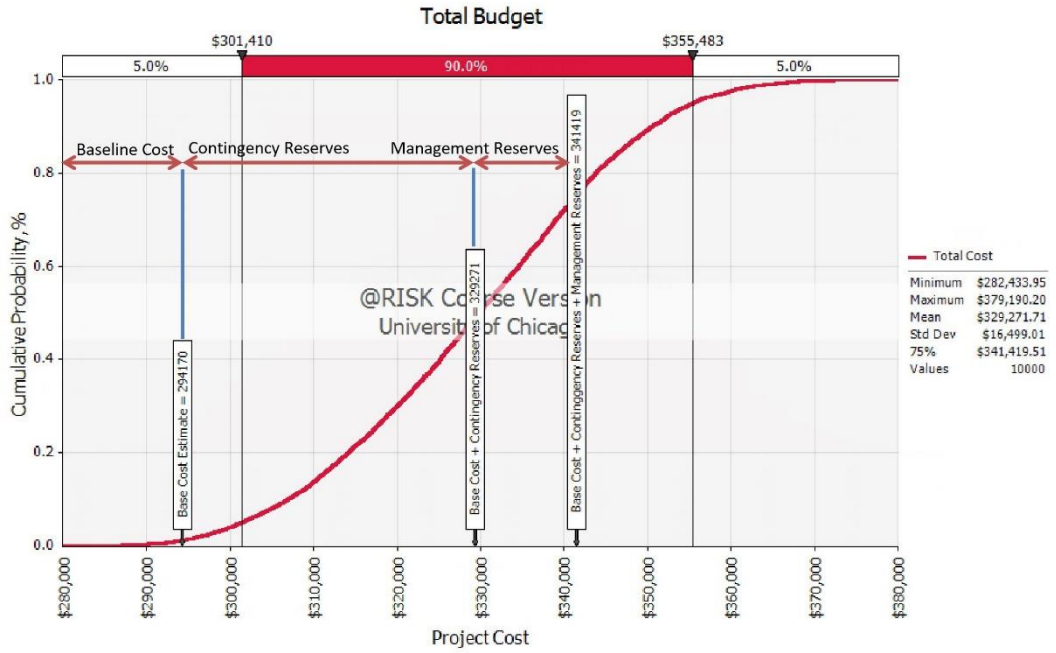
Bottom-up Cost Estimation

ID	WBS	Task Name	Cost
0	**0**	**Zulu Project**	**$294,050.00**
1	1	Start	$0.00
2	**2**	**Project Management**	**$47,250.00**
3	2.1	Kickoff Project / Develop Project Plan	$9,000.00
4	2.2	Monitor, Control & Manage Project	$38,250.00
5	**3**	**Initial Design**	**$37,800.00**
6	3.1	Gather Requirements	$9,000.00
7	3.2	Design Prototype	$24,000.00
8	3.3	Validate Design with Customer	$4,800.00
9	**4**	**Prototyping**	**$69,000.00**
10	4.1	Build Prototype	$44,000.00
11	4.2	Test Prototype	$10,600.00
12	4.3	Revise / Test Prototype	$14,400.00
13	**5**	**Finalize Design**	**$19,200.00**
14	5.1	Finalize Design	$14,400.00
15	5.2	Validate Design with Customer	$4,800.00
16	**6**	**Regulatory Assistance**	**$9,000.00**
17	6.1	Prepare Application	$6,000.00
18	6.2	Submit Application	$3,000.00
19	6.3	Receive Approval	$0.00
20	**7**	**Procurement**	**$65,300.00**
21	7.1	Select Suppliers	$7,500.00
22	7.2	Negotiate/ Sign Agreements	$6,000.00
23	7.3	Procure Equipment/Materials	$51,800.00
24	**8**	**Launch**	**$46,500.00**
25	8.1	Ramp-up for Production	$30,000.00
26	8.2	Perform Production Testing	$13,500.00
27	8.3	Launch	$3,000.00
28	8.4	Finish	$0.00

Simulation by @Risk

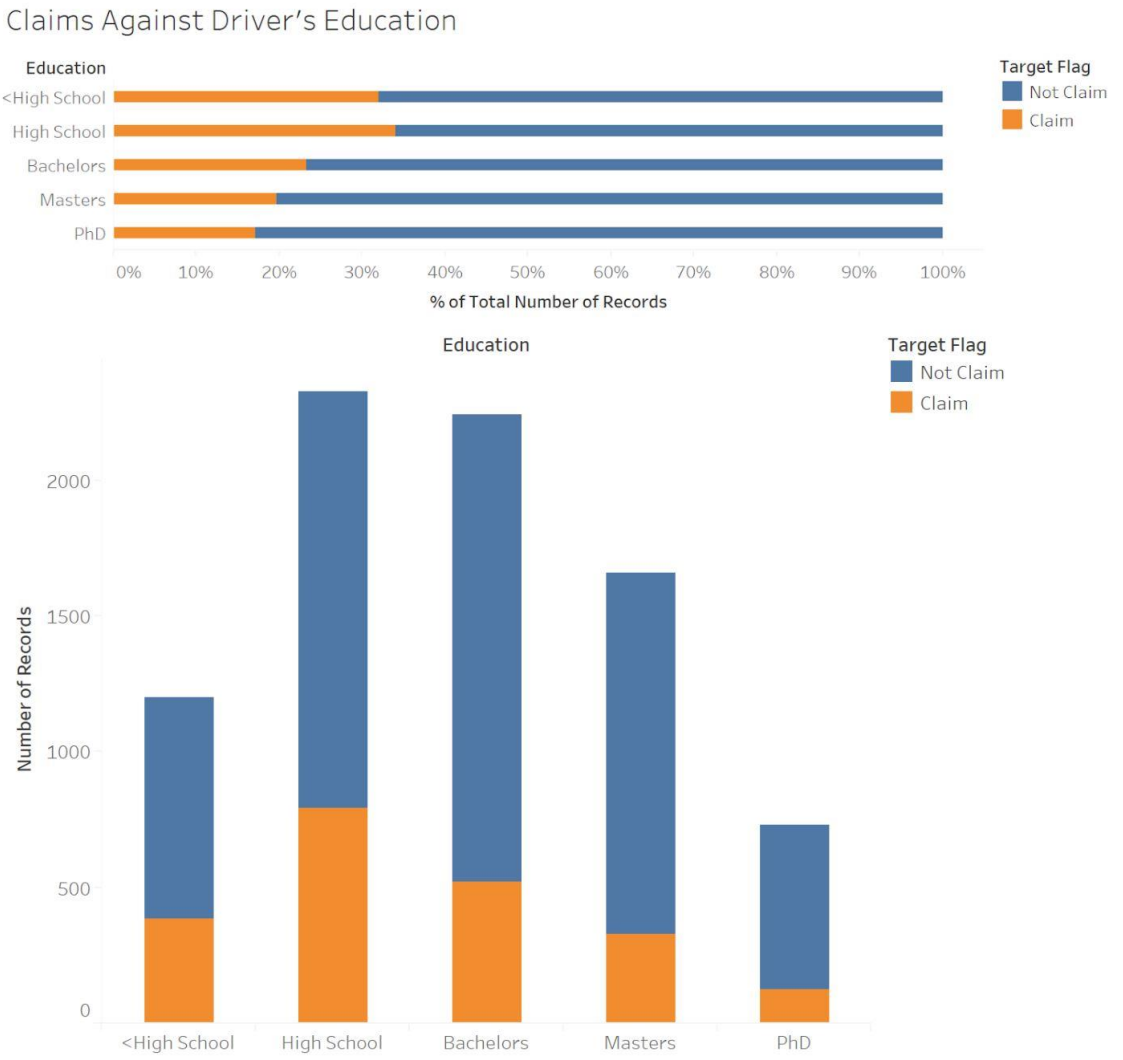


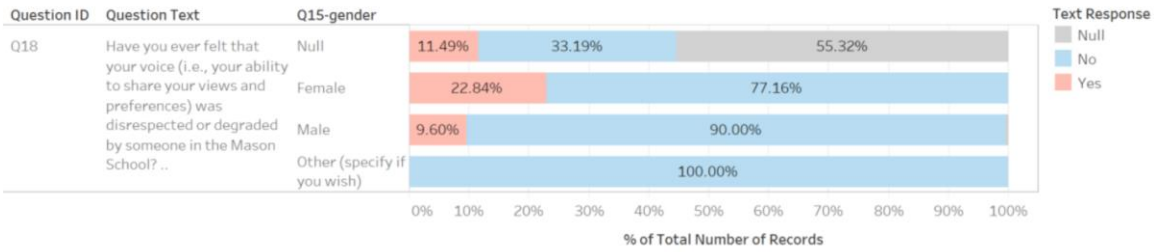
Budget Cost by @Risk

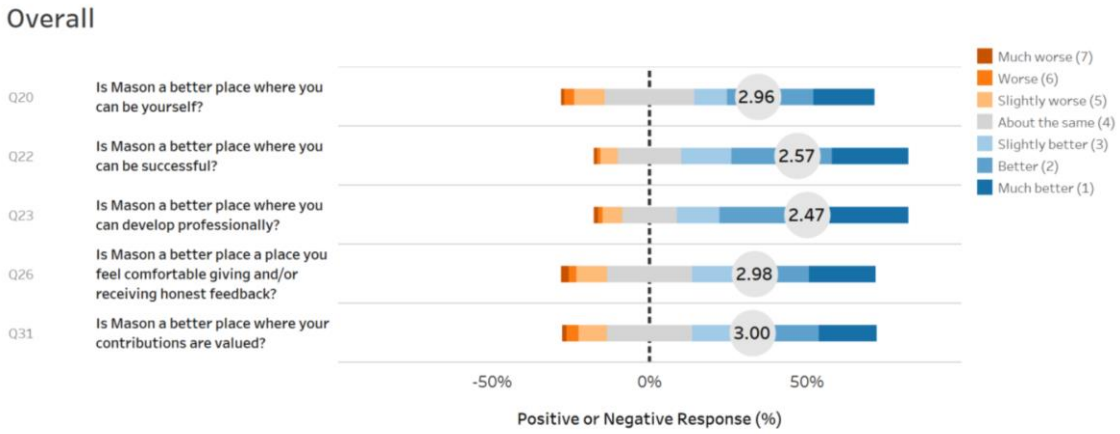


Tableau

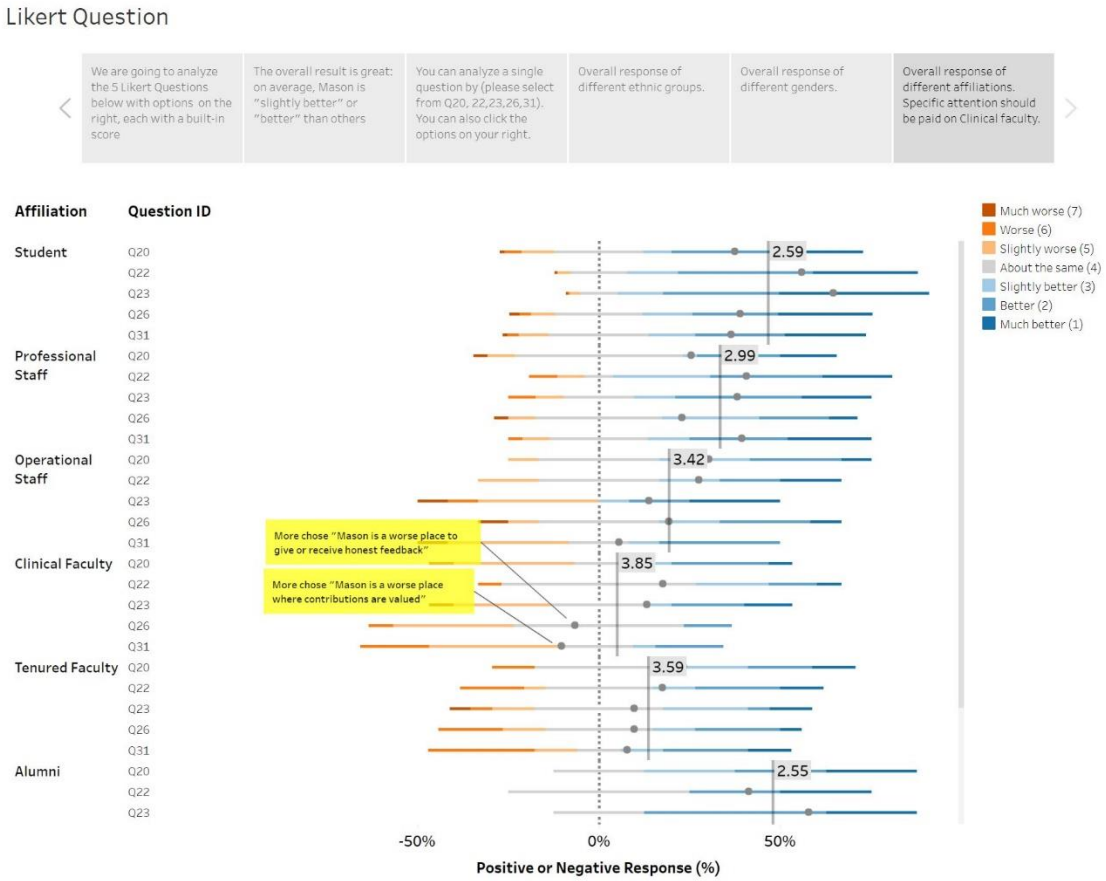
Graph



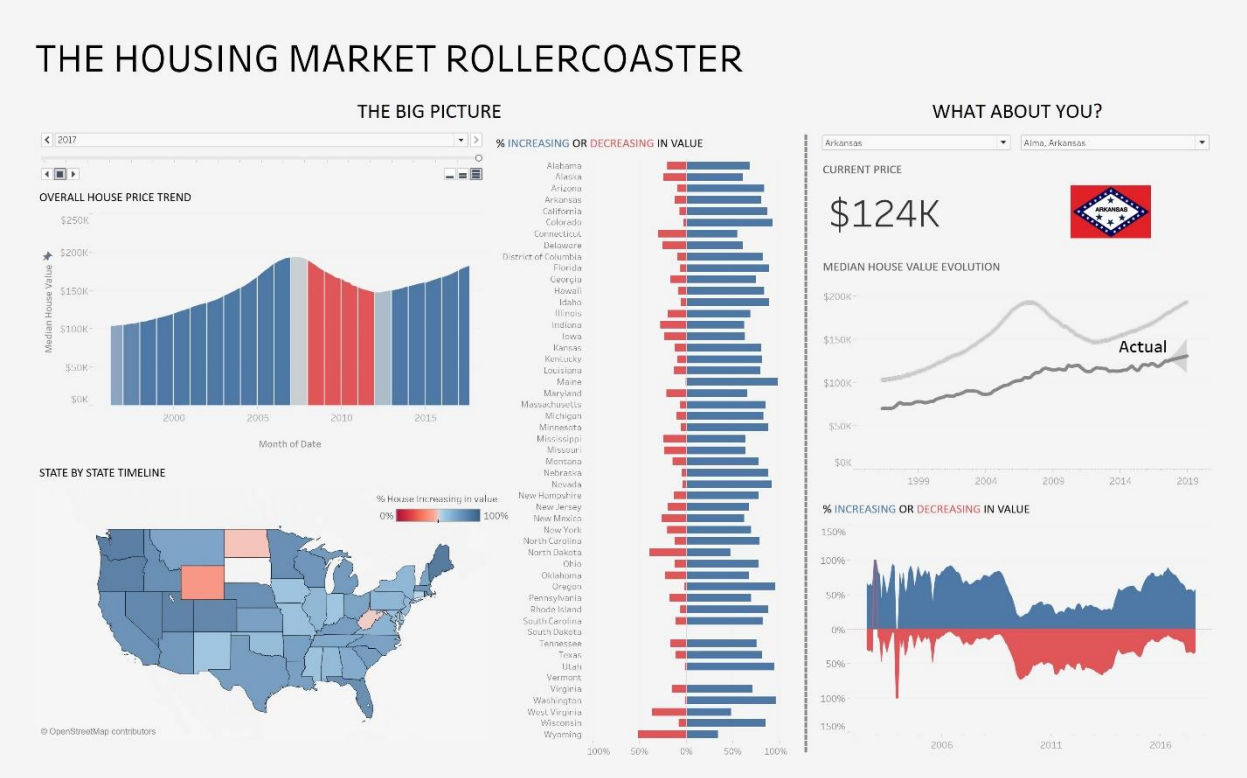



Overall
Q20
Is Mason a better place where you can be yourself?
Q22
Is Mason a better place where you can be successful?
Q23
Is Mason a better place where you can develop professionally?
Q26
Is Mason a better place a place you feel comfortable giving and/or receiving honest feedback?
Q31
Is Mason a better place where your contributions are valued?
2.96
2.57
2.47
2.98
3.00
-50%
0%
50%
Positive or Negative Response (%)
Much worse (7)
Worse (6)
Slightly worse (5)
About the same (4)
Slightly better (3)
Better (2)
Much better (1)

Story


Likert Question
We are going to analyze the 5 Likert Questions below with options on the right, each with a built-in score
The overall result is great: on average, Mason is "slightly better" or "better" than others
You can analyze a single question by (please select from Q20, 22,23,26,31). You can also click the options on your right.
Overall response of different ethnic groups.
Overall response of different genders.
Overall response of different affiliations. Specific attention should be paid on Clinical faculty.
Affiliation
Question ID
Student
Professional Staff
Operational Staff
Clinical Faculty
Tenured Faculty
Alumni
Q20
Q22
Q23
Q26
Q31
2.59
2.99
3.42
3.85
3.59
2.55
More chose "Mason is a worse place to give or receive honest feedback"
More chose "Mason is a worse place where contributions are valued"
-50%
0%
50%
Positive or Negative Response (%)
Much worse (7)
Worse (6)
Slightly worse (5)
About the same (4)
Slightly better (3)
Better (2)
Much better (1)

Dashboard 1



Dashboard 2

summary

report 1: Data by Lender Institution Type

Lender Inst Type Description	Number of Records	Avg. Current Balance	Max. Current Bal..	Min. Current Balance
Bank Owned Mortgage Co..	187	$242,899.80	$720,000.00	$43,225.00
Community Banks	499	$211,839.96	$729,750.00	$28,500.00
Credit Unions	374	$175,149.60	$578,250.00	$22,500.00
Mortgage Banker - (Large)	279	$260,374.38	$729,750.00	$59,000.00
Mortgage Banker - Bank O..	661	$236,262.69	$625,500.00	$25,018.00

report 2: Data by LTV

ltv level	Number of Records	Avg. Current Balance	Max. Current Bal..	Min. Current Balance
<=85%	344	$223,985.91	$729,750.00	$43,300.00
85%-90%	823	$235,966.18	$729,750.00	$22,500.00
90%-95%	796	$209,504.34	$561,700.00	$28,500.00
>95%	37	$200,910.19	$371,510.00	$65,475.00

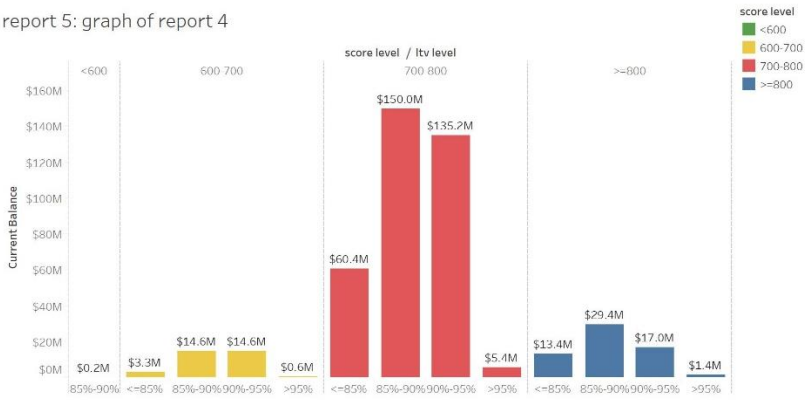
report 3: Data by Loan Age

age level	Number of ..	Avg. Curre..	Max. Curre..	Min. Curre..
unknown	16	$256,425.31	$404,700.00	$88,065.00
0-9	242	$233,615.67	$562,500.00	$45,000.00
10-19	724	$229,611.95	$720,000.00	$25,018.00
20-29	564	$216,680.79	$729,750.00	$22,500.00
30-39	268	$204,076.17	$546,376.00	$41,705.00
>=40	186	$224,049.58	$729,750.00	$35,000.00

report 4: Data by LTV and FICO

	ltv level			
score lev..	<=85%	85%-90%	90%-95%	>95%
<600		$247,050.00		
600-700	$3,260,490.00	$14,606,019.00	$14,598,016.00	$629,990.00
700-800	$60,413,630.00	$149,979,009.00	$135,188,314.00	$5,359,114.00
>=800	$13,377,034.00	$29,368,087.00	$16,979,121.00	$1,444,573.00

report 5: graph of report 4



Other types of visualizations

PPT & Excel

Distribution Center Selection

DCs \ # of DCs	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	Annual Cost Reduction (If Adding this DC)
Indianapolis																
Denver																$ 867,351
Dallas																$ 283,767
Greenville																$ 227,113
Pittsburgh																$ 82,247
Charleston																$ 26,489
Chicago																$ 22,834
Memphis																$ 19,549
Atlanta																$ 13,493
Charlotte																$ 11,718
Nashville																$ 6,920
Knoxville																$ 1,304
Chattanooga																$ -
Cincinnati																$ -
Louisville																$ -

Case Overview

Current: 2 Plants, 2 Distribution Centers

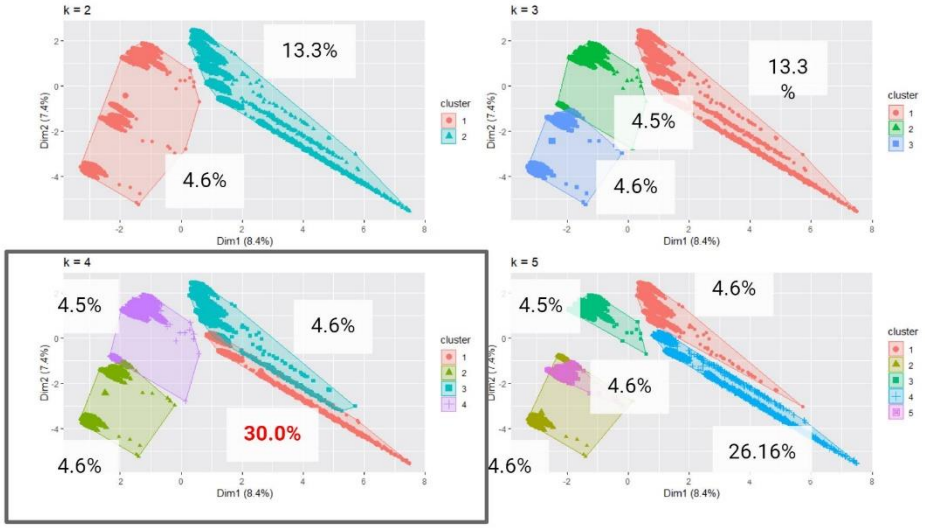
15 Distribution Center Candidates

R

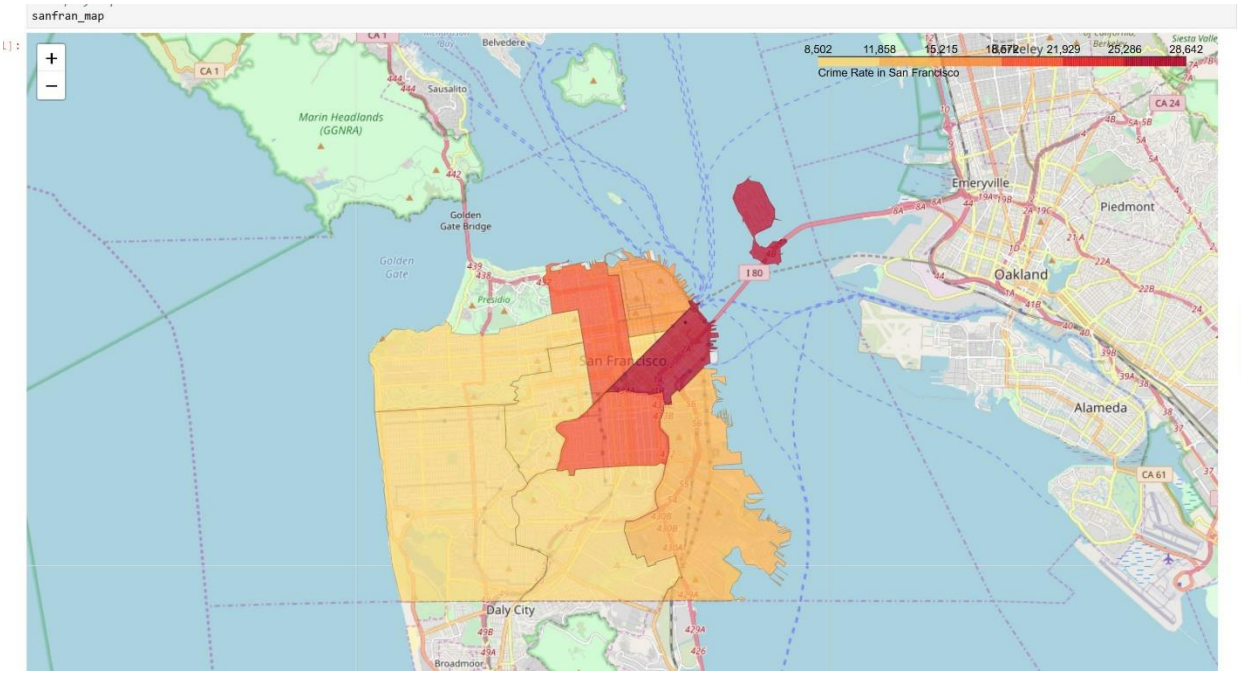
Clustering

Method
k means (2,3,4,5)

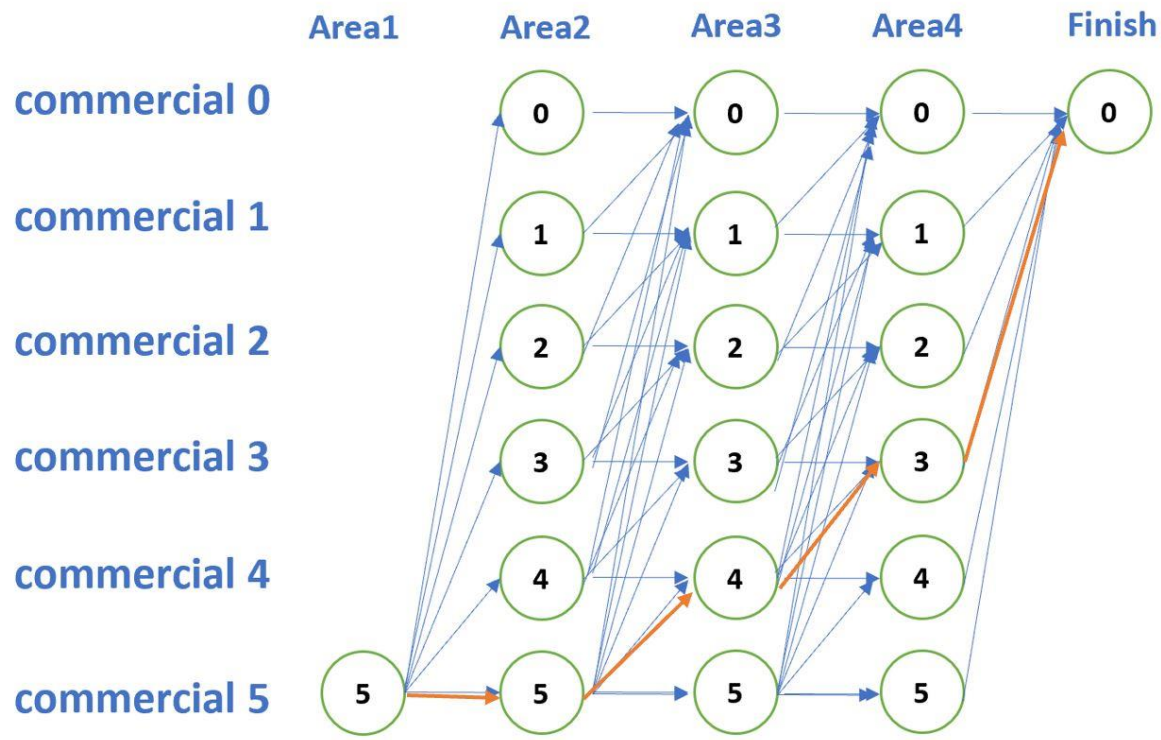
Fraud rate:
Average: 9.36%
(k=4) Cluster1:30%



Python



Word


Area1
Area2
Area3
Area4
Finish
commercial 0
commercial 1
commercial 2
commercial 3
commercial 4
commercial 5
0
1
2
3
4
5
0
1
2
3
4
5
0
1
2
3
4
5
0
5