The Report Questions (with Visualizations)

1A

Full Name	Minute Usage	Data Usage	Text Usage	Total Bill
Ben Grimm	533	52339	21332	131.5
Bruce Banner	125	21563	3252	121.5
Bucky Barnes	112	12356	12452	74.71
Carol Danvers	359	1912	15332	87
Charles Xavier	155	1221	12335	149
Clint Barton	78	25352	20159	101
Eddie Brock	250	25003	63352	141.5
Frank Castle	702	10235	22542	224.12
Jane Foster	320	10256	8449	97.62
Jessica Jones	715	11256	9663	139
Johnny Storm	988	31022	22368	194.26
Matt Murdock	288	12568	15236	159.41
Natasha Romanova	855	10000	10121	104
Nathan Summers	125	52669	1752	204
Peter Parker	101	21052	7596	112
Reed Richards	352	36588	4253	139.41
Steve Rogers	212	10950	1533	164
Susan Richards	365	12635	4256	139.41
Tony Stark	257	7259	12369	219
Wade Wilson	311	25332	98254	179

Full Name	Minute Usage	Total Bill
Bucky Barnes	112	74.71
Carol Danvers	359	87
Jane Foster	320	97.62
Clint Barton	78	101
Natasha Romanova	855	104
Peter Parker	101	112
Bruce Banner	125	121.5
Ben Grimm	533	131.5
Jessica Jones	715	139
Susan Richards	365	139.41
Reed Richards	352	139.41
Eddie Brock	250	141.5
Charles Xavier	155	149
Matt Murdock	288	159.41
Steve Rogers	212	164
Wade Wilson	311	179
Johnny Storm	988	194.26
Nathan Summers	125	204
Tony Stark	257	219
Frank Castle	702	224.12

Minute Usage Between Customers

For this table, I put the "Total Bill" column in ascending order in order to see what make the bill higher compare between customers. I realized that the Minutes Usage is not a big impact for making the bill expensive. For example, compare the minutes usage between Frank Castle and Natasha Romanova, the minute usage of Natasha is higher than Frank but the total bill of Natasha is less expensive than Frank.

However, it is the truth that minute usage is one of the impact that make the bill higher, for example if we compare the minute usage of Frank with Wade, Steve, or Bruce, it is clearly that the higher minute usage, the higher bill.

Full Name	Data Usage	Text Usage
Bucky Barnes	12356	12452
Carol Danvers	1912	15332
Jane Foster	10256	8449
Clint Barton	25352	20159
Natasha Romanova	10000	10121
Peter Parker	21052	7596
Bruce Banner	21563	3252
Ben Grimm	52339	21332
Jessica Jones	11256	9663
Susan Richards	12635	4256
Reed Richards	36588	4253
Eddie Brock	25003	63352
Charles Xavier	1221	12335
Matt Murdock	12568	15236
Steve Rogers	10950	1533
Wade Wilson	25332	98254
Johnny Storm	31022	22368
Nathan Summers	52669	1752
Tony Stark	7259	12369
Frank Castle	10235	22542

**Data and Text Usage Between Customers**

For this table, I also put the "Total Bill" column in ascending order to see if the Data and Text Usage show the impact on making the bill expensive or not. For example, if we compare Frank Castle and Bucky Barnes, we can see that the Data and Text usage from them are not having a huge gap, but the Minute Usage of Frank is clearly higher than Bucky so this lead to the total bill of Frank is the most expensive while the bill of Bucky is the most affordable. In this case, minute usage is the most important impact for the bill.

1B

City	Average Minute	Average Data	Average Texts	Total Bill
Tacoma	359	1912	15332	87
Bellevue	322	32347	16892	103.105
Spokane	396	18304	14911	120
Olympia	455	21056	20495	131.08
Seattle	298	10742	10491	149.348
Everett	218	23447	50753	150.25
Redmond	272	9913	13802	189.205
Kent	988	31022	22368	194.26
Issaquah	125	52669	1752	204

City	Average Data	Average Texts
Tacoma	1912	15332
Bellevue	32347	16892
Spokane	18304	14911
Olympia	21056	20495
Seattle	10742	10491
Everett	23447	50753
Redmond	9913	13802
Kent	31022	22368
Issaquah	52669	1752

Average Data and Texts Between Cities
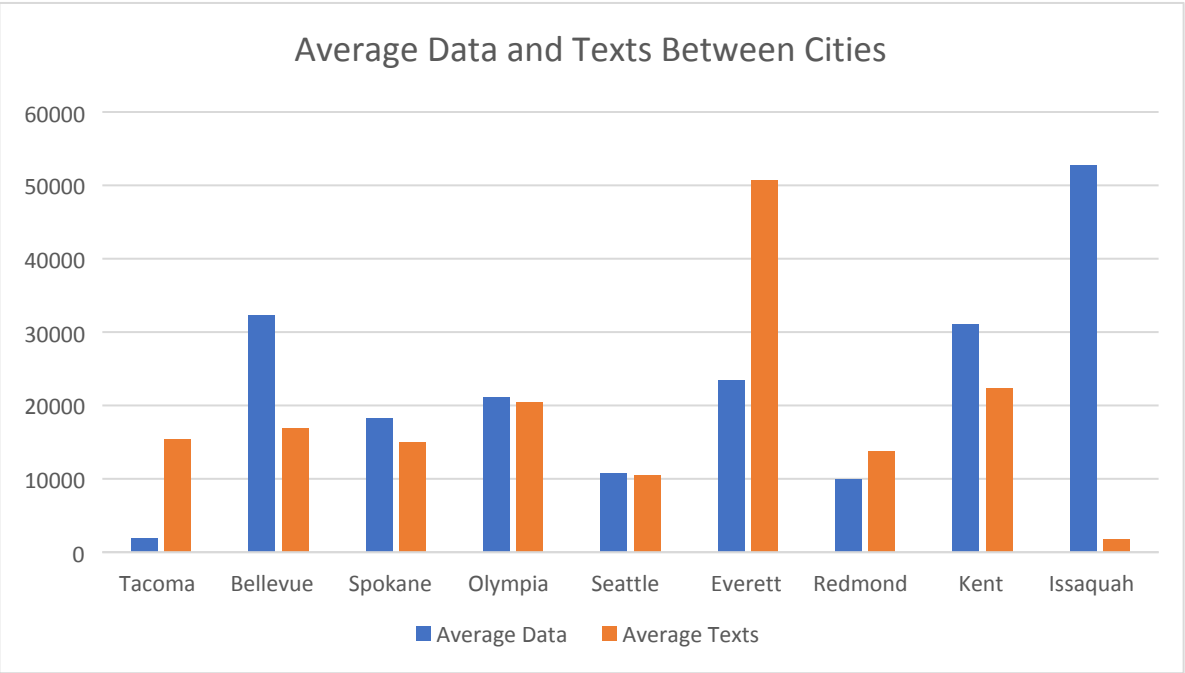
For this table, I choose to group City, Average Data and Average Texts to compare with the Total in ascending order.
It is clear that the big impact for making the bill expensive in this table is Average Data, compare Tacoma versus Issaquah.
We can tell that the Average Data bring to company lots of money from this table

| City	Average Minute	Total Bill
Tacoma	359	87
Bellevue	322	103.105
Spokane	396	120
Olympia	455	131.08
Seattle	298	149.348
Everett	218	150.25
Redmond	272	189.205
Kent	988	194.26
Issaquah	125	204

Average Texts and Total Bill
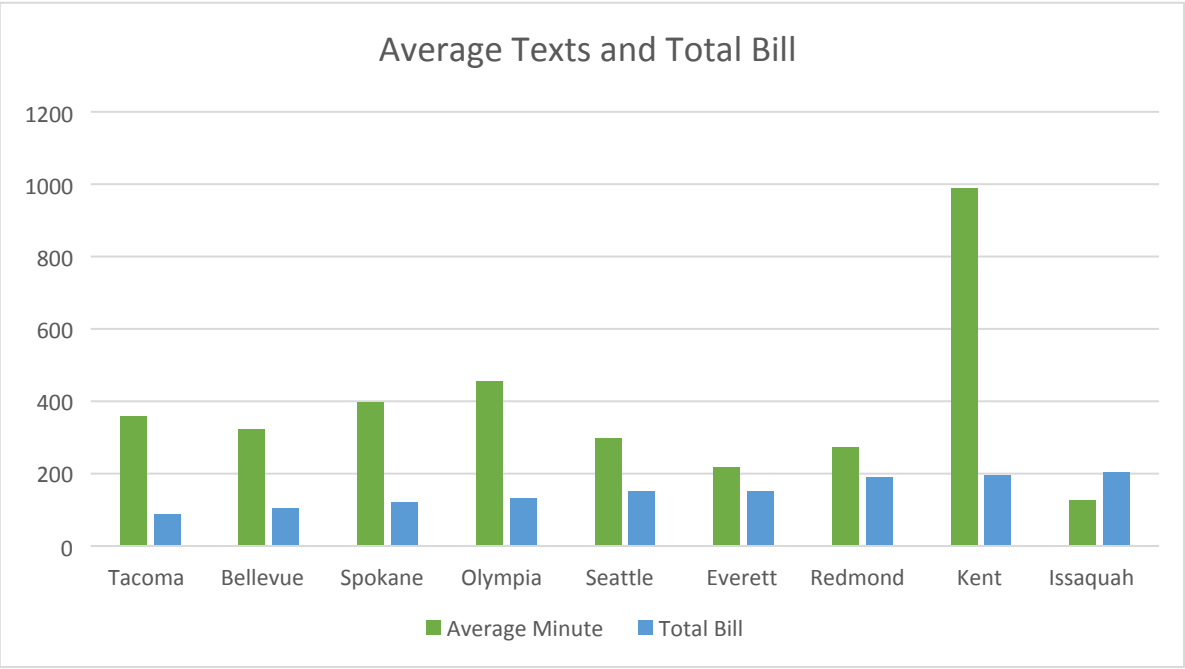
For this table, it is clear that the minutes usage is not a big impact for making the bill more expensive, for example the total from Issaquah is higher than Tacoma but the average minute usage from Tacoma is greater than Issaquah.

In conclusion, the biggest impact that make the bill standout is the Data usage from each city.

1C

City	Sum Minute	Sum Data	Sum Texts	Total Bill
Tacoma	359	1912	15332	87
Kent	988	31022	22368	194.26
Issaquah	125	52669	1752	204
Bellevue	645	64695	33784	206.21
Spokane	793	36608	29822	240
Everett	436	46895	101506	300.5
Redmond	545	19827	27605	378.41
Olympia	1822	84226	81982	524.32
Seattle	1490	53714	52455	746.74

City	Sum Data	Sum Texts
Tacoma	1912	15332
Kent	31022	22368
Issaquah	52669	1752
Bellevue	64695	33784
Spokane	36608	29822
Everett	46895	101506
Redmond	19827	27605
Olympia	84226	81982
Seattle	53714	52455

Summation of Data and Text of each City
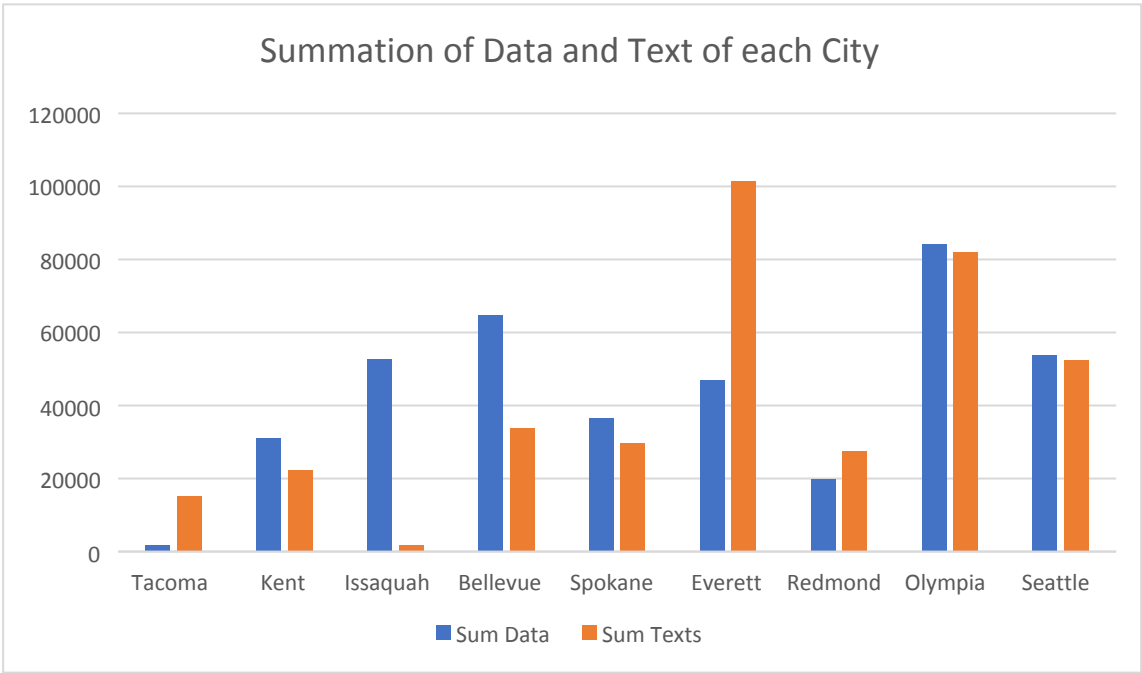
It is clearly that the total bill from Seattle is the highest for these table. However, there is the unclear situation between Seattle and Olypia when I analyze these visualization. It is clearly that the sum of Data, Texts and Minutes from Olypia are higher than Seattle, but the Total Bill of Seattle is higher than Olympia. Perhaps, this is might be caused by mobile plan or number of customers that use the non-unlimited plan.

City	Sum Minute	Total Bill
Tacoma	359	87
Kent	988	194.26
Issaquah	125	204
Bellevue	645	206.21
Spokane	793	240
Everett	436	300.5
Redmond	545	378.41
Olympia	1822	524.32
Seattle	1490	746.74

Summation of Minute and Total Bill of each city
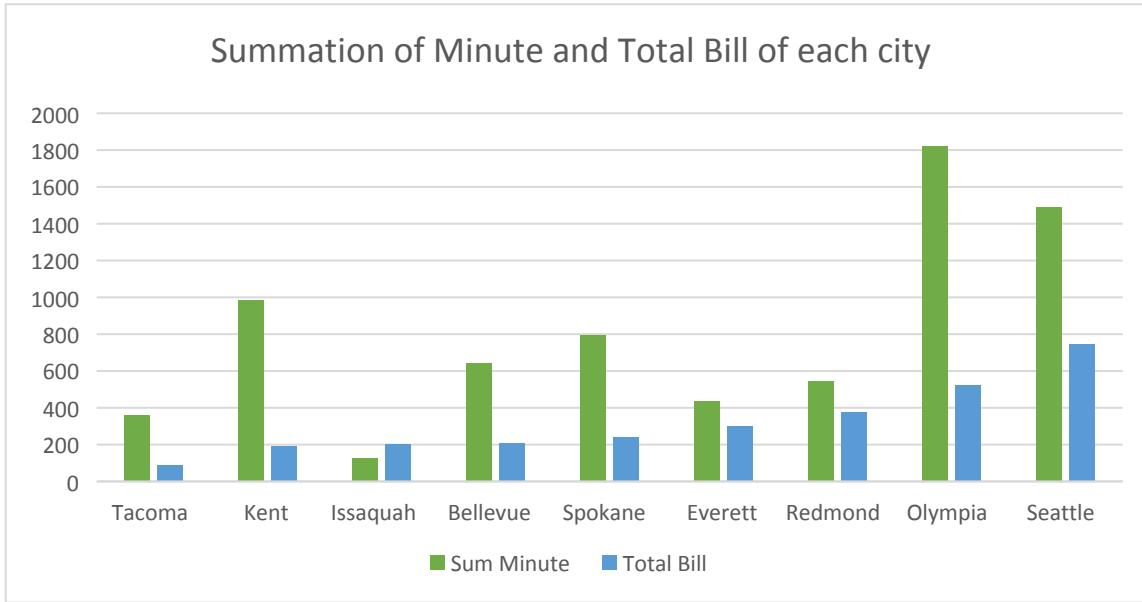
1D

PlanName	Average Minute	Average Data	Average Texts	Total Bill
Data2	359	1912	15332	87
Data10	483	11178	11286	89.355
Data25	210	15654	8022	104.81
Data50	246	31064	27023	123.875
UnlBasic	386	16799	6988	148.246
UnlSuper	571	16121	17351	171.63
UnlPrime	348	23873	33729	206.53

PlanName	Average Data	Average Texts
Data2	1912	15332
Data10	11178	11286
Data25	15654	8022
Data50	31064	27023
UnlBasic	16799	6988
UnlSuper	16121	17351
UnlPrime	23873	33729

Average Data and Texts of each Plan
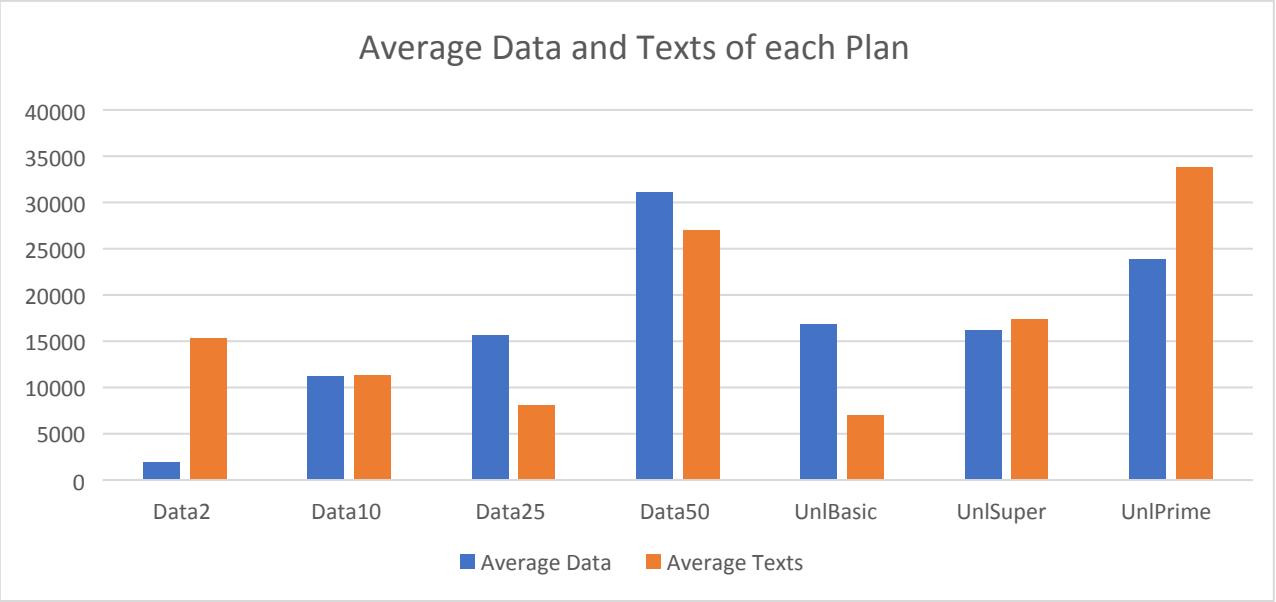
It is clear that the UnlPrime bring the most revenue for the company with the highest Total bill. Also, the average texts could be a great impact to the bill in overall. In fact, the average minutes in plan "Data2" is in the top in general but the bill for this plan is the most affordable. So, in general, the average minute is not an important impact for making the bill more expensive

PlanName	Average Minute	Total Bill
Data2	359	87
Data10	483	89.355
Data25	210	104.81
Data50	246	123.875
UnlBasic	386	148.246
UnlSuper	571	171.63
UnlPrime	348	206.53

Average Minute and Total Bill of each Plan
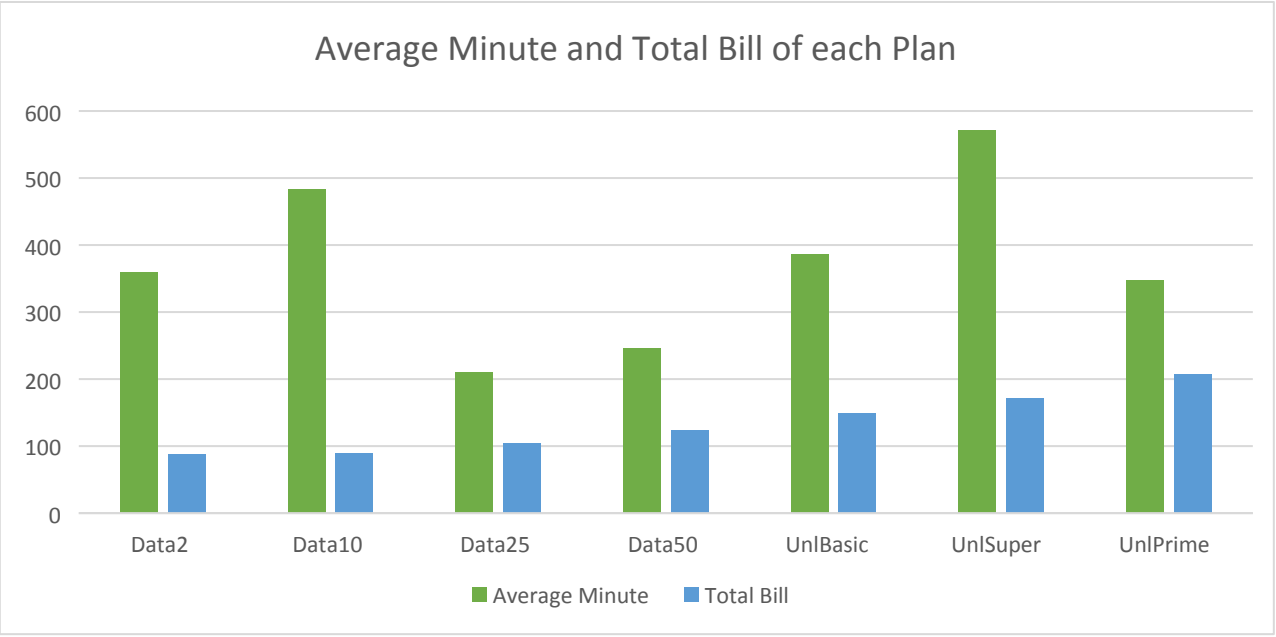
1E

PlanName	Sum Minute	Sum Data	Sum Texts	Total Bill
Data2	359	1912	15332	87
Data10	967	22356	22573	178.71
Data25	421	31308	16045	209.62
UnlSuper	1143	32243	34703	343.26
Data50	986	124257	108095	495.5
UnlBasic	1932	83997	34941	741.23
UnlPrime	1395	95495	134917	826.12

PlanName	Sum Data	Sum Texts
Data2	1912	15332
Data10	22356	22573
Data25	31308	16045
UnlSuper	32243	34703
Data50	124257	108095
UnlBasic	83997	34941
UnlPrime	95495	134917
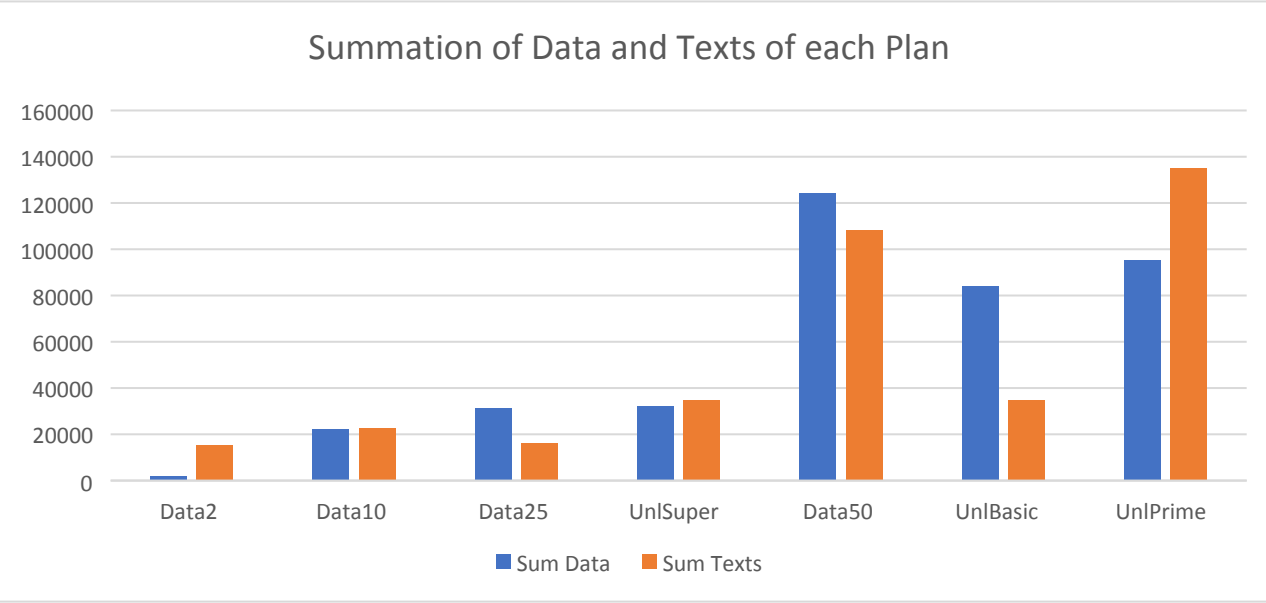
It is clear that the big revenue of company are come from UnlPrime Mobile Plan, which have the highest total bill compare to others. In general, the most significant impact that make the plan have higher bill is from Texts Usage. In addition, the minutes usage is the second important impact that make the bill higher in general.

PlanName	Sum Minute	Total Bill
Data2	359	87
Data10	967	178.71
Data25	421	209.62
UnlSuper	1143	343.26
Data50	986	495.5
UnlBasic	1932	741.23
UnlPrime	1395	826.12
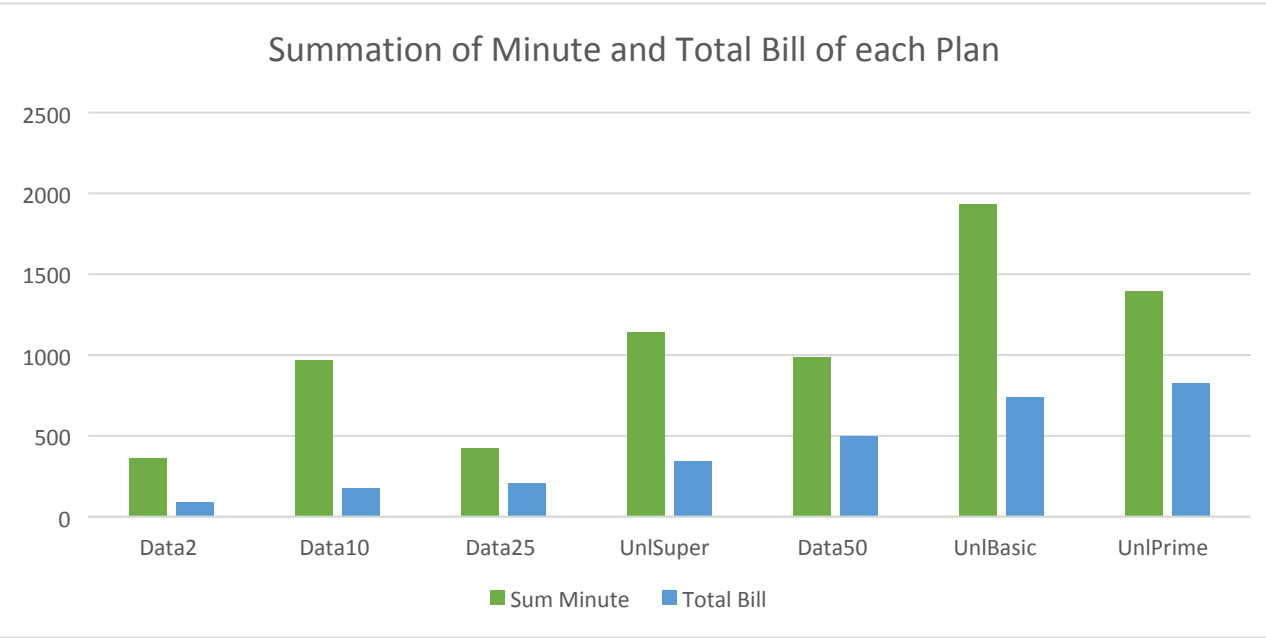
1A

City	Number Of Customers
Seattle	5
Olympia	4

Answer: There are 2 cities that have most customers in, they are Seattle and Olympia

Analyze: This table returns the City and number of customers in each city.
Based on the number on the table, we can know exactly what city has the most customer in.

1B

City	Number Of Customers
Issaquah	1
Kent	1
Tacoma	1
Spokane	2
Redmond	2
Bellevue	2
Everett	2
Olympia	4
Seattle	5

Answer: Citites that we need to increase our marketing are Issaquah, Kent, and Tacoma

Analyze: Based on the hint of the company, we should improve the strategy of marketing to the cities that we have least number of customer in.

From the Data of the table, we can know exactly what cities we need to focus, they are Issaquah, Kent and Tacoma which located in South area. These are the developing cities and in the future, there will be more people move to this area to live due to the increasing of Seattle housing. From that point, we need to plan out what should we focus for example what kind of Data they need, or is the Data connection in these area stable or not. If we can prepare for this, it will be a huge advantage for the company.

1C

Plan Name	Number Of Customers
Data2	1

Answer: The plan that we need to market the most is "Data2"

Analyze: Based on the data from table, we can realize that the "Data2" is the plan that we need to focus on. There are several reasons why this is the least being used by customers, for example: because of the unstable of data connection, or it could be the plan that have least data and easy to run out before the next month. If we can understand the core problem of this, we can update the second version for this plan and promote it to loyal customers.

2A

Type	Number Of Phone Type
Apple	6
Android	14

Answer: The type of phone that we have customers use the most is Android, which is more than double

Analyze: Based on the data from the table, we can know that which type of phone being used the most
From this point we can have deeper understand why this happended, because US is where
Apple invented and have lots of promotion for buying this type of phone. Or, it could be our data
is not suitable for Apple phone for some reason. If we can figure out these problem, the amount of customer
from Apple type can be a huge number that we can have and expand for our company

2B

First Name	Last Name
Reed	Richards
Steve	Rogers
Clint	Barton
Jane	Foster
Bucky	Barnes
Nathan	Summers

Answer: There are 6 customers that use the Apple Type - the least phone type that being used for our plan.

They are: Reed Richards
Steve Rogers
Clint Barton
Jane Foster
Bucky Barnes
Nathan Summers

Analyze: Based on the data from the table, we can know that what is the name of our customer that use Iphone.
From this point, we can assume that their family could use Iphone as well, because there could use the same
phone as Iphone for several reasons, for example Air Drop, Apple Icloud Family share, etc. From this point, we
can promote them with Family plan for the Mobile Plan they are currently used, but with the special offer for
opening new lines. The promotion can be give a free Iphone or Ipad, or else. Noone denied the free stuffs and this
could be a plan for expanding the number of customers who using Iphone.

2C

Full Name	Year Released
Bucky Barnes	2017
Jane Foster	2017
Jessica Jones	2017
Matt Murdock	2017
Nathan Summers	2017
Wade Wilson	2017
Bruce Banner	2016
Natasha Romanova	2015
Ben Grimm	2014

Answer: Here is the list of customers who have the phone that being released from 2017 and older.

Analyze: Perhaps this is because we want to know what is the oldest phone that our customer being used for our mobile
plan. From this point, we can promote them to have chance to have a new phone by upgrading the data plan, or
have additional line for the plan. This can help customers have chance to buy a phone and we can have them to
change to the higher plan, which help us increase the profit. It is a win-win for both sides.

3A

City	Data Usage
Olympia	84226
Bellevue	64695
Seattle	53714

Analyze: For this table, I return the top 3 cities that have the most data usage from the company data. Perhaps this is because we want to know the most usage data from what cities and we can use this to apply to the next part of this problem

3B

City	Data Usage	PlanName
Bellevue	52339	Data50
Seattle	31308	Data25
Spokane	25352	Data50
Olympia	25003	Data50
Everett	21563	Data50
Bellevue	12356	Data10
Olympia	10000	Data10
Tacoma	1912	Data2

Answer for question 3: Within the top 3 cities that use the most data, Bellevue is the one that have the most data usage, and none of our customers from Bellevue are using the Unlimited Plans, which is Data50 plan.

Analyze: Perhaps this is because we want to know the most data usage from which city, what plan is that combined with the non-unlimited plan From this point, we can have a deeper question, like what are the reasons that our customers choose this plan, is this plan have a right price (because it is expensive for non-unlimited plan with that amount of data being used). After we analyze these problems, we can either keep it the same as it be, or increase the price for this plan (if the previous price is too low for non-unlimited plan) to keep the company increase the profit and avoid the loss.

4A

FirstName	LastName	Total
Frank	Castle	224.12

Answer: The customer that have the most expensive bill last month is: Frank Castle

Analyze: Perhaps this is because we want to know more about our customer, identify if the bill is charge more than what customer need to pay. After that, we can see how long have this customers stayed with us, if this is a loyal customers, we can offer them a promotion for upgrading the plan without any additional fee or bill will be the same. We can use this strategy to build customer relationship, which is really important for company in the future.

4B

PlanName	Total Bill
UnlPrime	826.12

Answer: The mobile plan that delivered the highest bill last month is UnlPrime with total: $826.12

Analyze: Perhap this is because we want to know what is the most expensive plan that we ever give to customer. From this, we can dig deeper this problem, like how many customers are currently using it, if it high than we do not need to do anything at this moment. But if this number of customers are low, then we know the problem could be the price is too high compared to what plan offer to customer. Then, we can either reduce the price or give customers promotion. This can attract new customers, and this help company increase the profit.

5A

Area Code	Minute Usage
360	1822

Answer: The area code that uses the most minutes is 360 with 1822 minutes

Analyze Perhaps this is because we want to know what is the area that use the calling system the most. From this point, we can analyze deeper, like figure out if this area a calling system, or place for offices, etc. After that, we can see if they are using the unlimited plan or not. If not, then we can offer them and promote them with unlimited plan. This can help company increase sale, but also attract new customer if these area have a good experience that we offered, it is the voice-sharing marketing.

5B

City	Minute Usage
Olympia	1822
Seattle	1490
Kent	988
Spokane	793
Issaquah	125

Answer: The data from table shows us the minutes that being used in Olympia (1822) is impressed higher than Issaquah (125)

Analyze: Perhaps this is because we need to know why there are the huge different between these cities, whether this is because of different of the price, or data connection for the plan that being used in these cities. From this, we can either update the price of the lower minute city, or promote them with better plan. Reason for this is because we can increase the sale for the company and understand customer more.