Skills Test Analysis

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Data Analysis

Importing Datasets and Preprocesing

```
# import datasets

dt1 <- readxl::read_xlsx("../AnalyticsSkillsTest-FictionalData.xlsx", sheet = "Sellers") dt2 <-
readxl::read_xlsx("../AnalyticsSkillsTest-FictionalData.xlsx", sheet = "Cooker_Sale dt3 <-
readxl::read_xlsx("../AnalyticsSkillsTest-FictionalData.xlsx", sheet = "Fuel_Sales"


### rename id
dt2a <- dt2 %>% dplyr::rename(id = seller_id)

### Join Sellers and Cookers dt
df1 <- dplyr::left_join(dt2a,dt1) ## by id
```

Sales Productivity

Question 1

SQL Code

NOTE Use SQL Server Import and Export Wizard to Import the excel data on SQL or any other appropriate way before running codes below.

CookersSold by Type

use KokoData; select type, COUNT(distinct Cooker_Sales.*customer_id*)*asCookersSoldfromCooker_Sales*
left join Sellers$ on Cooker_Sales.*seller_id* = *Sellers*.id group by type order by CookersSold desc;

Fuel Sold by Customer Type and Territory

select customer_type, sale_territory, SUM(litres_sold) as TotalLitersSold from Cooker_Sales$ left join Sellers$ on Cooker_Sales.*seller_id* = *Sellers*.id left join Fuel_Sales$ on Cooker_Sales.*customer_id* = *Fuel_Sales*.customer_id group by customer_type, sale_territory order by TotalLitersSold desc;

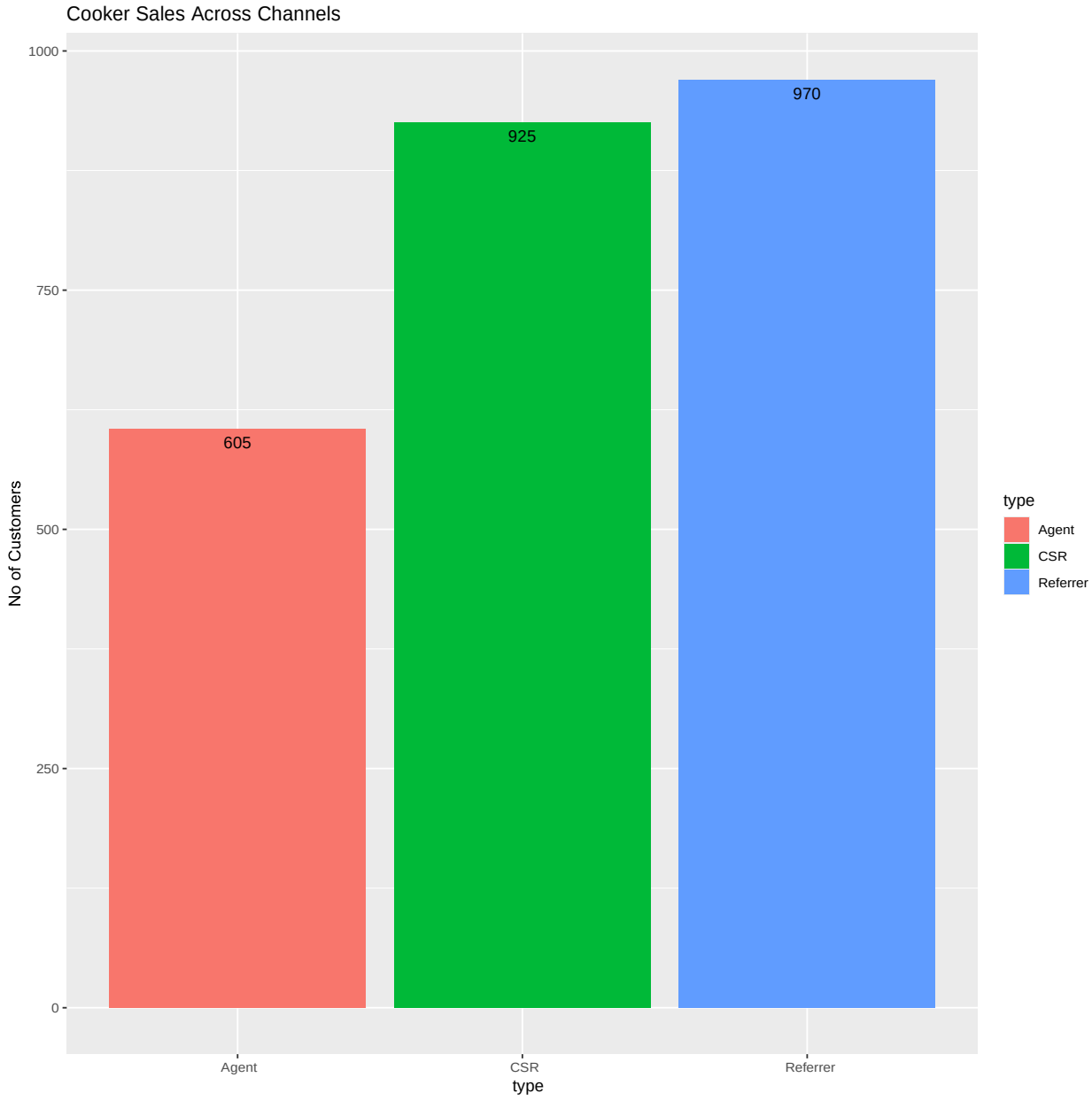
Fuel Sold by Seller Type

select type, SUM(litres_sold) as TotalLitersSold from Cooker_Sales$ left join Sellers$ on Cooker_Sales.*seller_id* = *Sellers*.id left join Fuel_Sales$ on Cooker_Sales.*customer_id* = *Fuel_Sales*.customer_id group by type order by TotalLitersSold desc;

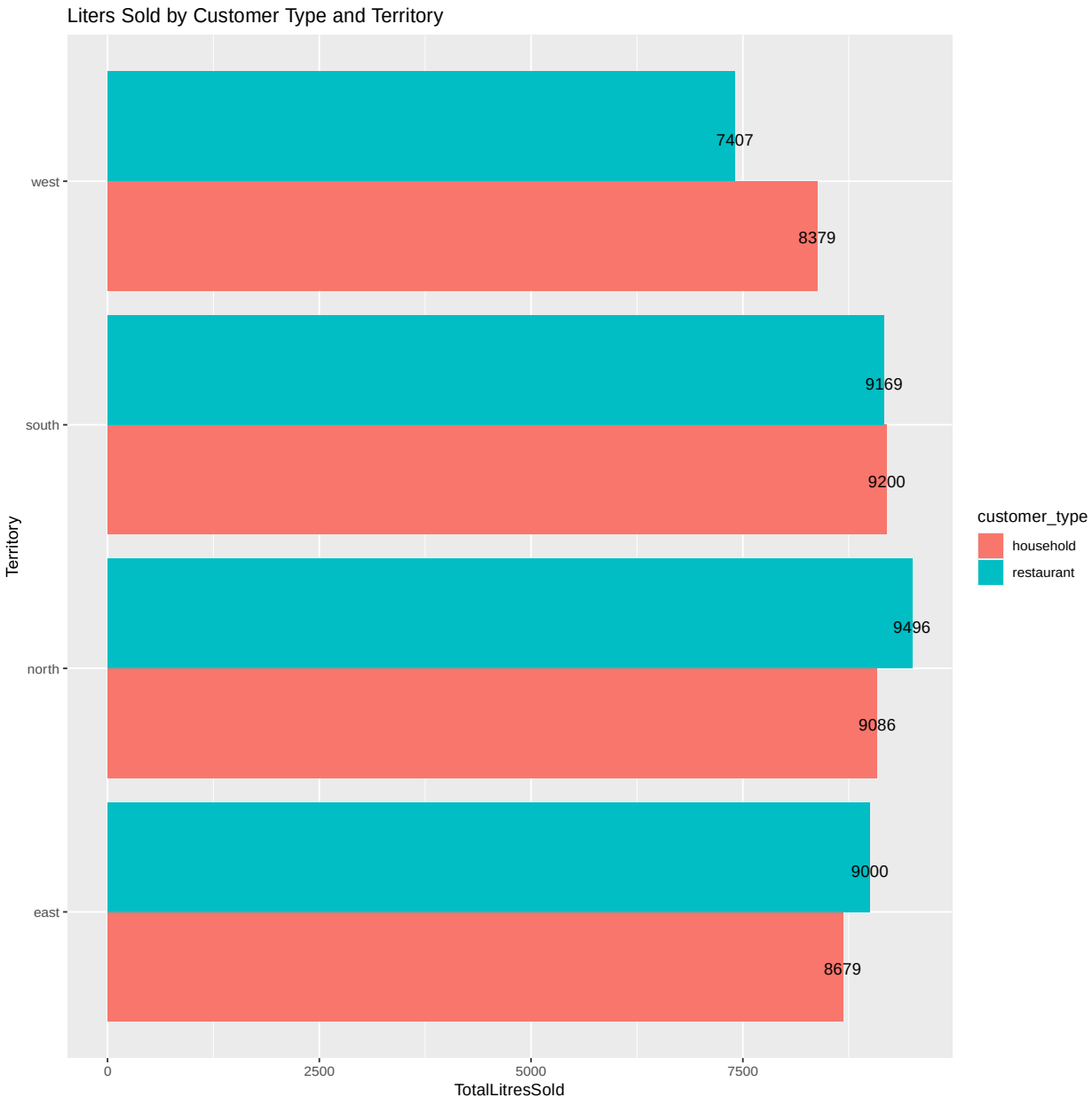
CookersSold by Type and Total Liters (Correct)

select type, round(SUM(litres_sold),3) as TotalLitersSold, COUNT(distinct Cooker_Sales.*customer_id*)*asCookersSoldfrom*
left join Sellers$ on Cooker_Sales.*seller_id* = *Sellers*.id left join Fuel_Sales$ on Fuel_Sales.*customer_id* = *Cooker_Sales*.customer_id group by type order by CookersSold desc;

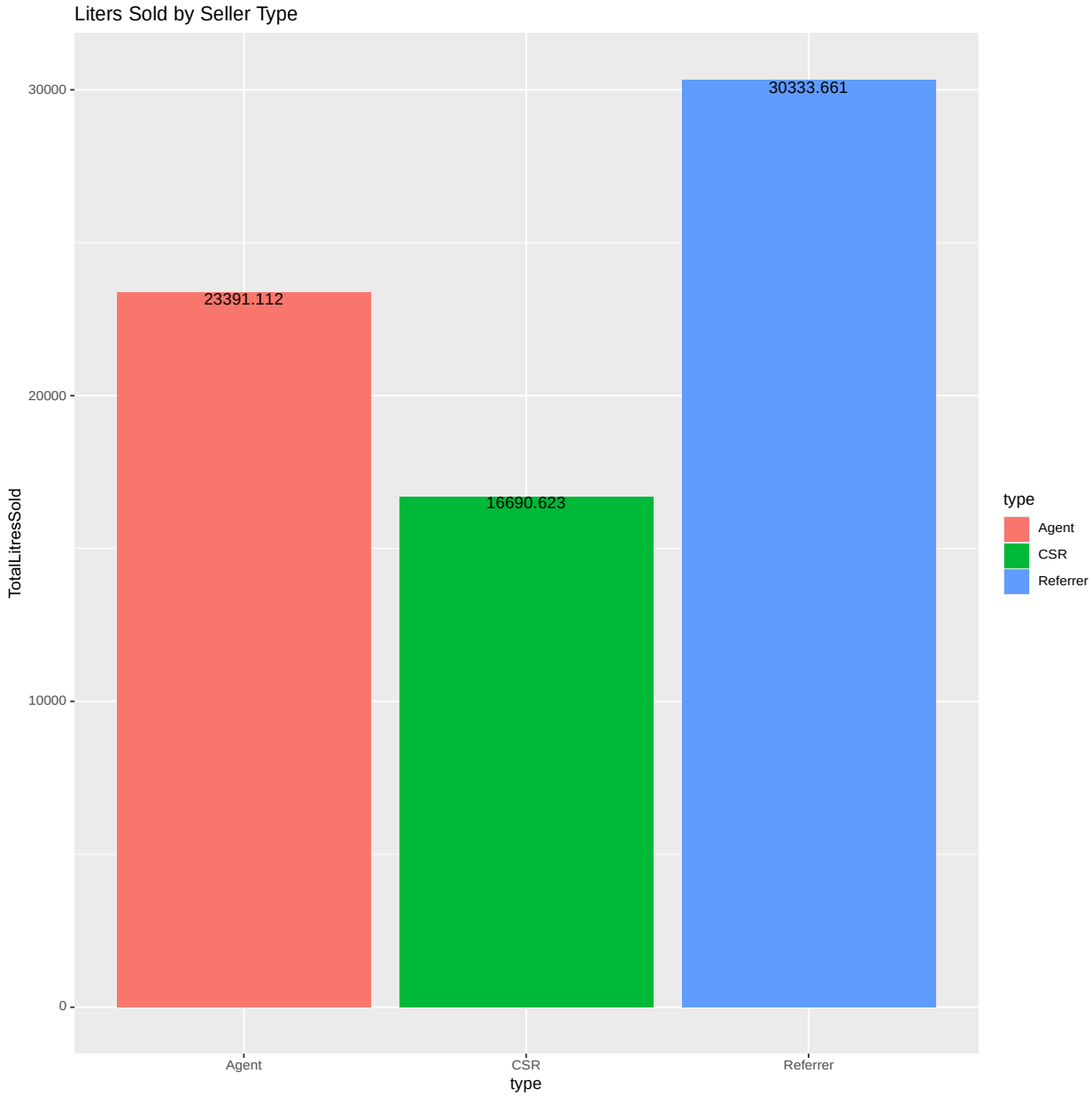
Plot1


Cooker Sales Across Channels
1000
750
500
250
0
No of Customers
605
925
970
Agent
CSR
Referrer
type
type
Agent
CSR
Referrer

Plot2


Liters Sold by Customer Type and Territory
west
south
north
east
Territory
7407
8379
9169
9200
9496
9086
9000
8679
0
2500
5000
7500
TotalLitresSold
customer_type
household
restaurant

Plot3



litres_by_seller.type	litres_by_seller.TotalLitresSold
Agent	23391.11
CSR	16690.62
Referrer	30333.66

Question 2

Referrer is most productive

Question 3

Yes. Given that Refferers are making more cooker sales and simultaneously more fuel sales.

Question 4

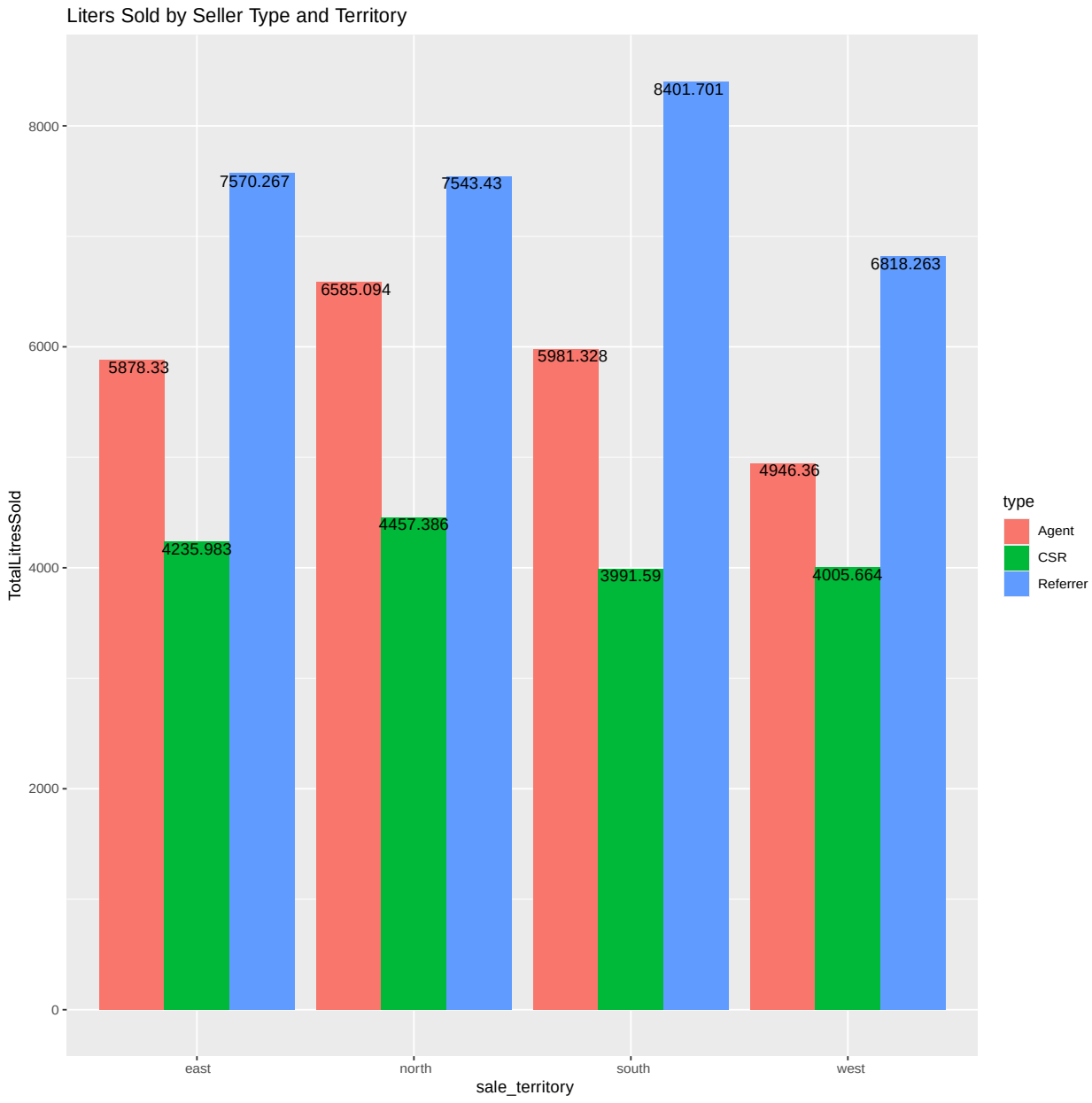
1) Agents making more fuel sales with less cooker sales compared to CSR hence more opportunity for productivity by increasing Agents
2) Focus on restaurants in North as well as households and restaurants in south initially as they appear more promising

SQL Code

sales by seller type and Territory

select type, sale_territory, round(SUM(litres_sold),3) as TotalLitersSold from Cooker_Sales$ left join Sellers$ on Cooker_Sales.*seller_id* = *Sellers*.id left join Fuel_Sales$ on Cooker_Sales.*customer_id* = *Fuel_Sales*.customer_id group by type, sale_territory order by TotalLitersSold desc;

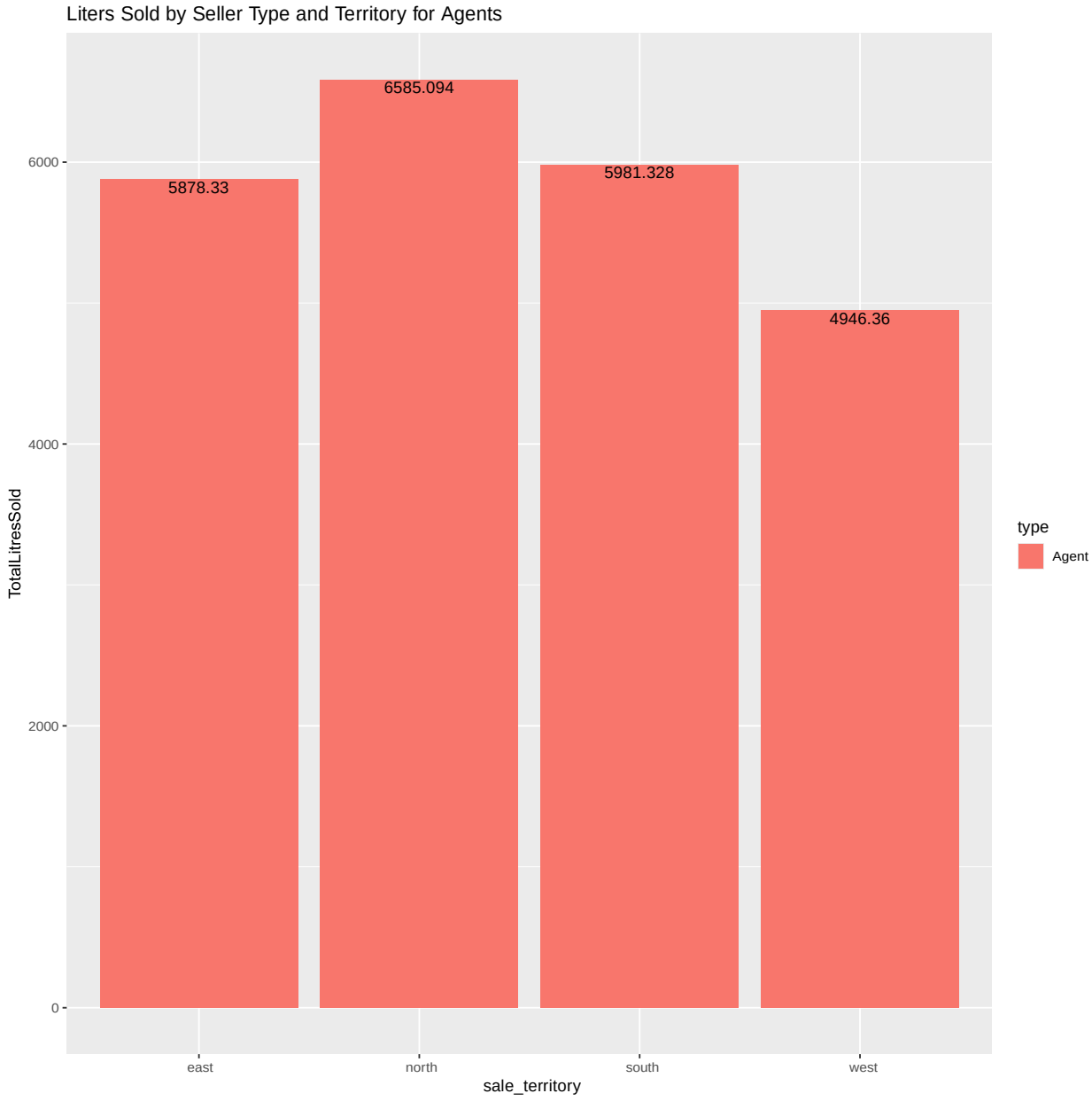
Plot4



Sales by customer type and Territory for Agents

select type, sale_territory,COUNT(distinct Cooker_Sales.*customer*$_i$*d*)*asCookersSold, round*(*SUM*(*litres*$_s$*old*), 3)*asTotal*
left join Cooker_Sales$ on Fuel_Sales.*customer*$_i$*d* = *Cooker*$_S$*ales*.customer_id left join Sellers$ on Cooker_Sales.*seller*$_i$*d* = *Sellers*.id where type = 'Agent' group by type, sale_territory order by TotalLitersSold desc, CookersSold asc;

Plot5



Question 5

Price of cooker and fuel to assess price sensitivity

Assumptions Made:

1) linear relationship btwn fuel consumption relative to number of cookers
2) same cost of cooker/fuel across locations
3) same price points across customer types
4) fair commission across seller types

Fuel consumption

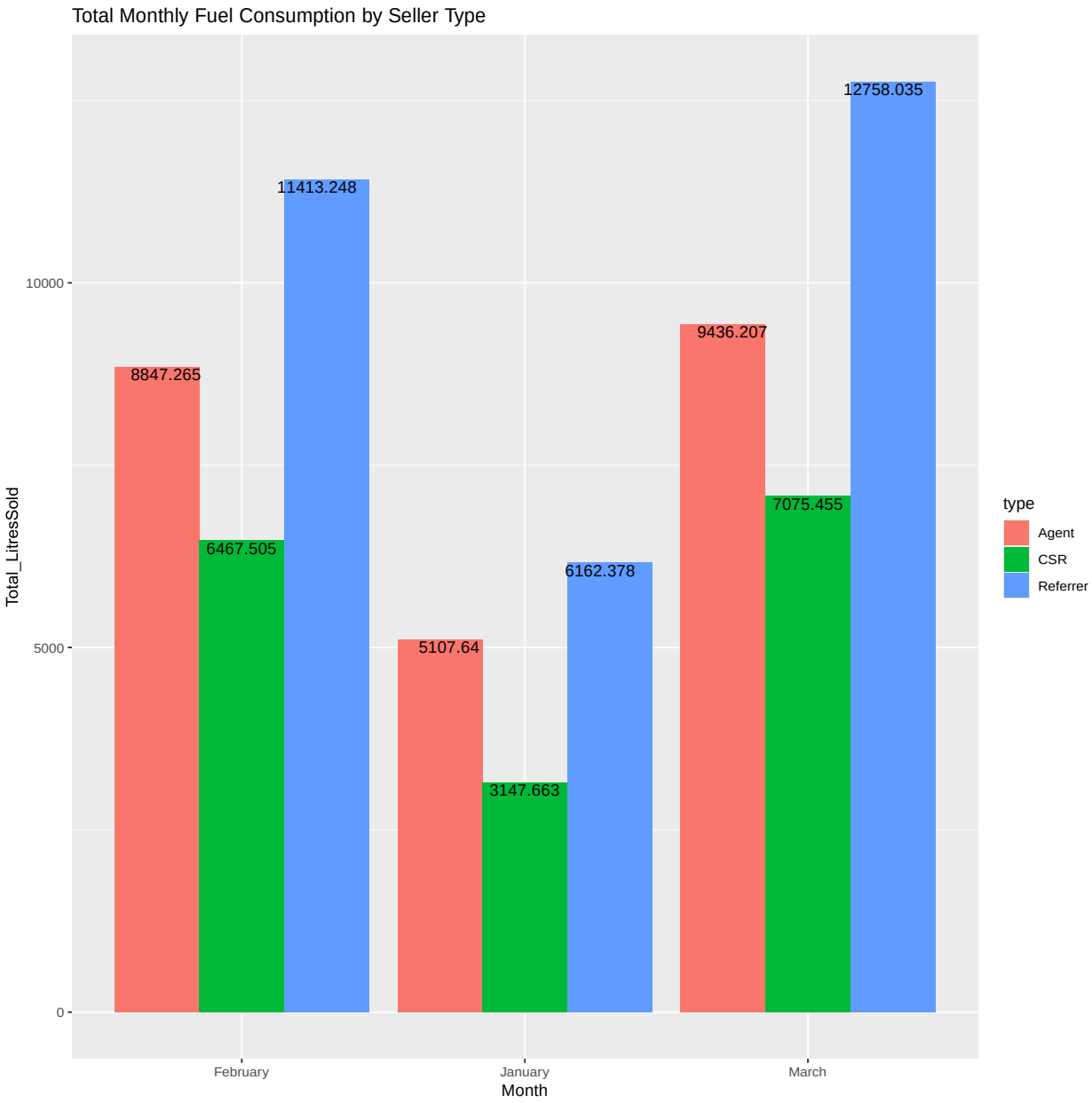
Question 6

Total Monthly Fuel Consumption by Seller Type

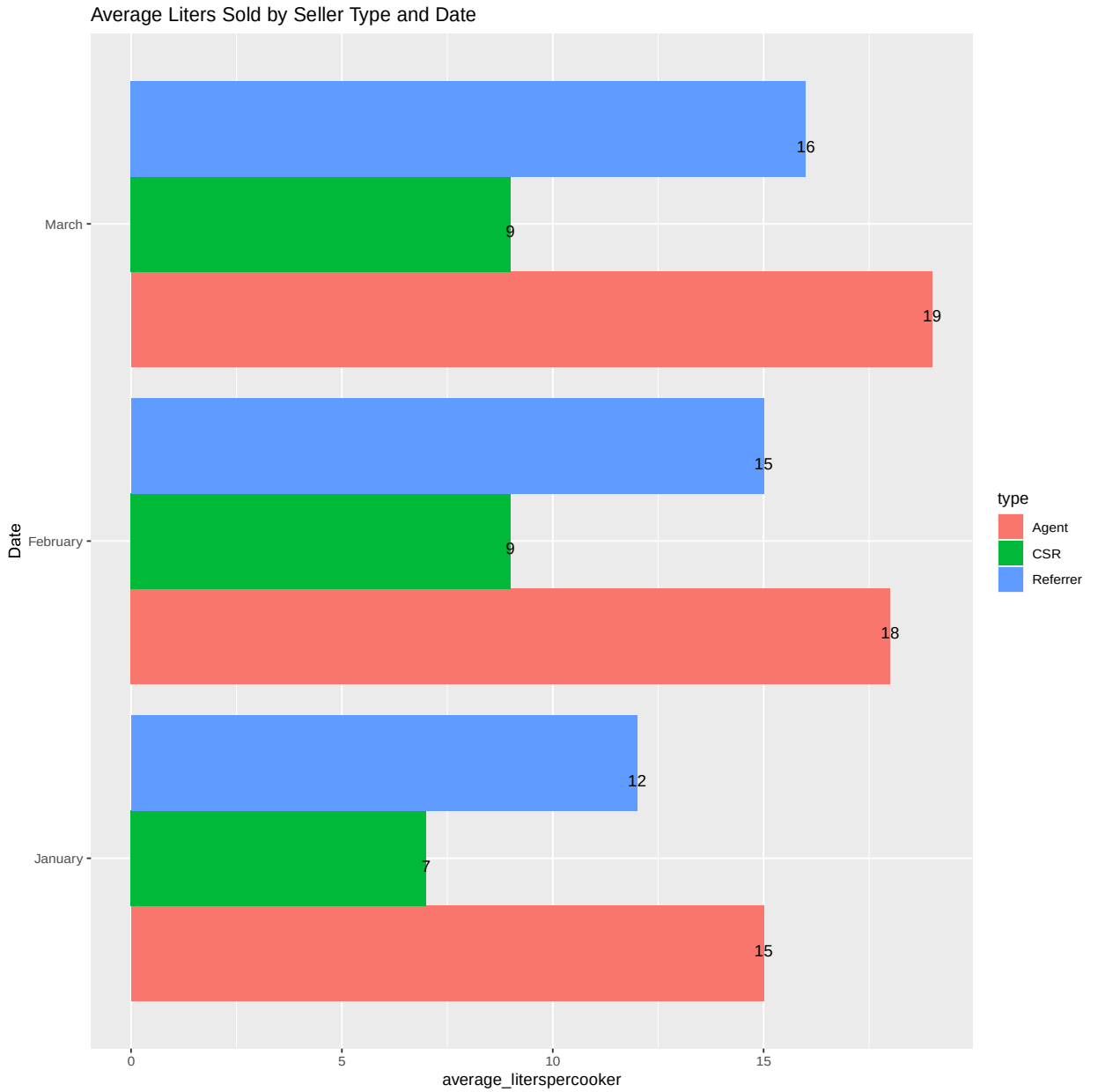
select type, MONTH (tx_date) as mwezi, round(SUM(litres_sold),3) as TotalLitersSold from Cooker_Sales$ left join Sellers$ on Cooker_Sales.*seller_id* = *Sellers*.id left join Fuel_Sales$ on Cooker_Sales.*customer_id* = *Fuel_Sales*.customer_id group by type,MONTH (tx_date) order by TotalLitersSold desc;

type	tx_date	Total_LitresSold
Agent	February	8847.265
Agent	January	5107.640
Agent	March	9436.207
CSR	February	6467.505
CSR	January	3147.663
CSR	March	7075.455
Referrer	February	11413.248
Referrer	January	6162.378
Referrer	March	12758.035

Plot6

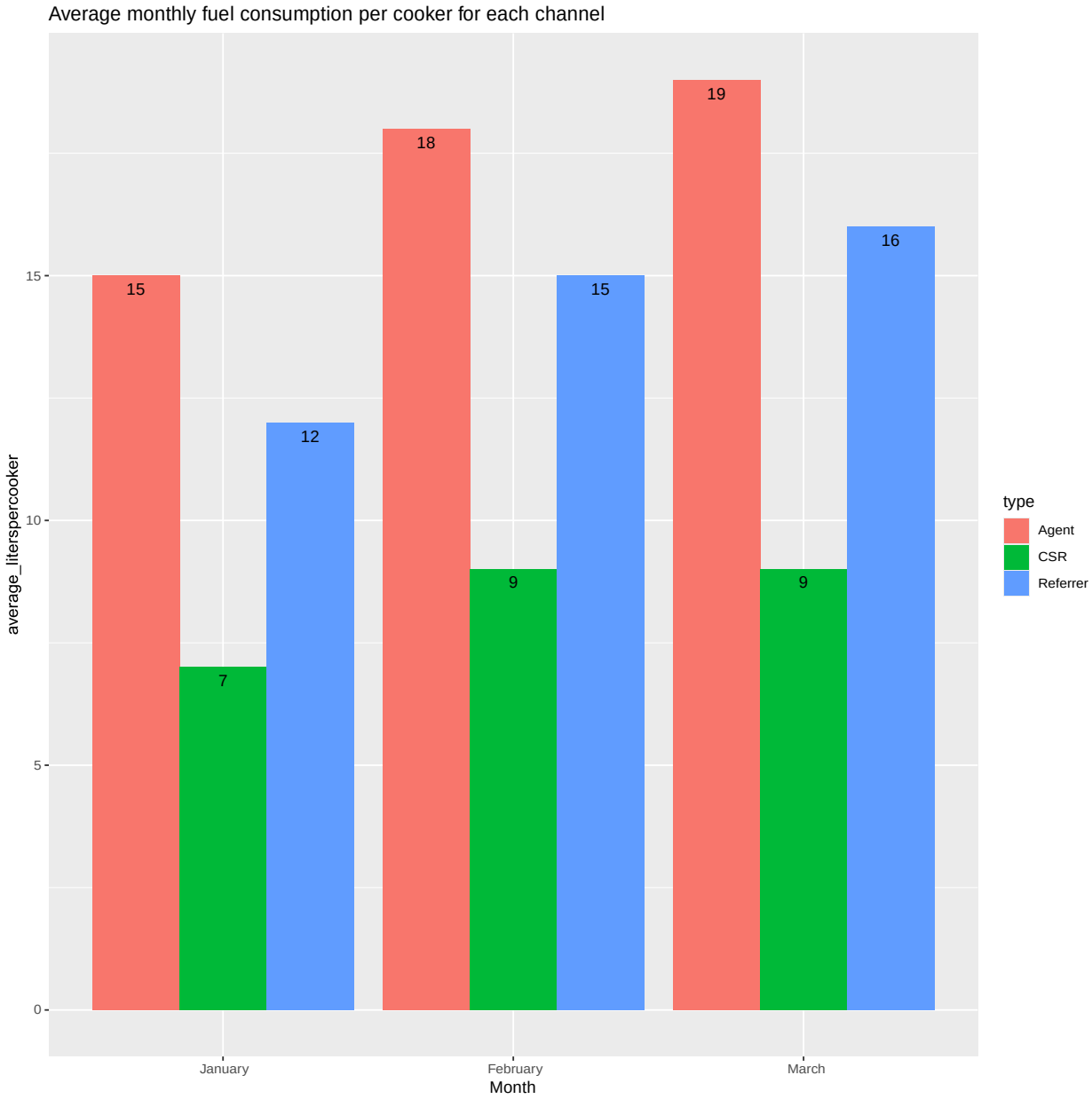


AvgFuel Sold per cooker by Seller Type and Month select type,MONTH (tx_date) as mwezi, round(sum(litres_sold)/count(distinct Cooker_Sales.*customer*$_i$*d*), 0)*asaverage*$_l$*iterspercookerfrom**Cooker*$_S$*ales* left join Sellers$ on Cooker_Sales.*seller*$_i$*d* = *Sellers*.id left join Fuel_Sales$ on Cooker_Sales.*customer*$_i$*d* = *Fuel*$_S$*ales*.customer_id group by type,MONTH (tx_date) order by average_literspercooker desc;



fuelconsumed_bymonth.type	fuelconsumed_bymonth.tx_date	fuelconsumed_bymonth.Total_LitresSold
Agent	February	18
Agent	January	15
Agent	March	19
CSR	February	9
CSR	January	7
CSR	March	9
Referrer	February	15
Referrer	January	12
Referrer	March	16

Plot7



Question 7

Agents produce most satisfied customers going by their month fuel consumption rates

Question 8

1) Availability/closeness to customer hence more contact/personal/relatable with Agent
2) More trust/reliability with Agent/refferee
3) Diversity of retail outlets at agent with respect t0 other items of sale (that support fuel consumption)

Question 9

1) Focus on Agents and Refferals as channels
2) Subsidise prices i.e. discounts, scoring for bonus points/awards
3) Offer fuel for credit (on recommendation basis)
4) Support retail otluets marketing e.g through billboards
5) Product improvement & diferentiation

Question 10

1) What's the rate of commission across channels?
2) Is the commission similar across territories? (maybe some territories deserve different incentive approach)
3) Avg (Size) and Composition of HH/restaurants across territories
4) Population size/ density of target regions

Assumptions Made:

Similar fuel consumption across time (i.e. no cases of high demand/low supply) for the restaurants and households