



Customer Movement Analysis

BADS7105 : CUSTOMER RELATIONSHIP MANAGEMENT

Customer Movement

Data: Supermarket

J	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V
1	SHOP_WEEK	SHOP_DATE	SHOP_WEEKDAY	SHOP_HOUR	QUANTITY	SPEND	PROD_CODE	PROD_CO	PROD_CO	PROD_CO	PROD_CO	CUST_CODE	CUST_PRI	CUST_LIF	BASKET_ID	BASKET_S	BASKET_P	BASKET_T	BASKET_D	STORE_CY	STORE_FC	STORE_REGION
2	200732	20071005	6	17	3	6.75	PRD0900001	CL00072	DEP00021	G000007	D000002	CUST0000583261	UM	YF	9.94108E+14	L	MM	Top Up	Grocery	STORE000	LS	E02
3	200733	20071010	4	20	3	6.75	PRD0900001	CL00072	DEP00021	G000007	D000002	CUST0000537317	MM	OF	9.94108E+14	L	MM	Full Shop	Fresh	STORE000	LS	E02
4	200741	20071209	1	11	1	2.25	PRD0900001	CL00072	DEP00021	G000007	D000002	CUST0000472158	MM	YF	9.94109E+14	L	MM	Full Shop	Grocery	STORE000	LS	E02
5	200731	20070929	7	17	1	2.25	PRD0900001	CL00072	DEP00021	G000007	D000002	CUST00000099658	LA	OF	9.94108E+14	L	LA	Full Shop	Mixed	STORE000	LS	E02
6	200737	20071110	7	14	3	6.75	PRD0900001	CL00072	DEP00021	G000007	D000002				9.94108E+14	L	MM	Full Shop	Fresh	STORE000	LS	E02
7	200746	20080108	3	15	1	2.25	PRD0900001	CL00072	DEP00021	G000007	D000002	CUST0000556927	MM		9.94109E+14	L	MM	Top Up	Fresh	STORE000	LS	E02
8	200731	20070929	7	18	1	2.25	PRD0900001	CL00072	DEP00021	G000007	D000002	CUST00000099658	LA	OF	9.94108E+14	L	MM	Full Shop	Fresh	STORE000	LS	E02
9	200732	20071004	5	21	3	6.75	PRD0900001	CL00072	DEP00021	G000007	D000002	CUST00000128681	UM	YF	9.94108E+14	M	UM	Small Shop	Fresh	STORE000	LS	E02
10	200738	20071116	6	18	3	6.75	PRD0900001	CL00072	DEP00021	G000007	D000002	CUST00000961918	MM	OT	9.94108E+14	L	UM	Top Up	Fresh	STORE000	LS	E02
11	200738	20071115	5	15	3	6.75	PRD0900001	CL00072	DEP00021	G000007	D000002	CUST00000961918	MM	OT	9.94108E+14	L	MM	Full Shop	Fresh	STORE000	LS	E02
12	200813	20080525	1	18	3	6.75	PRD0900001	CL00072	DEP00021	G000007	D000002				9.94111E+14	L	MM	Top Up	Fresh	STORE000	LS	E02
13	200732	20071003	4	21	3	6.75	PRD0900001	CL00072	DEP00021	G000007	D000002	CUST00000704959	UM	OT	9.94108E+14	L	UM	Full Shop	Fresh	STORE000	LS	E02
14	200747	20080118	6	8	1	2.25	PRD0900001	CL00072	DEP00021	G000007	D000002	CUST00000809769	LA	OT	9.94109E+14	M	LA	Top Up	Fresh	STORE000	LS	E02
15	200732	20071007	1	21	3	6.75	PRD0900001	CL00072	DEP00021	G000007	D000002	CUST00000135397	MM	OF	9.94108E+14	L	MM	Top Up	Mixed	STORE000	LS	E02
16	200747	20080117	5	15	1	2.25	PRD0900001	CL00072	DEP00021	G000007	D000002				9.94109E+14	L	LA	Top Up	Fresh	STORE000	LS	E02
17	200747	20080117	5	14	1	2.25	PRD0900001	CL00072	DEP00021	G000007	D000002	CUST00000361812	UM	OF	9.94109E+14	L	UM	Full Shop	Fresh	STORE000	LS	E02
18	200731	20070928	6	21	3	6.75	PRD0900001	CL00072	DEP00021	G000007	D000002				9.94108E+14	L	LA	Top Up	Fresh	STORE000	LS	E02
19	200730	20070920	5	15	3	6.75	PRD0900001	CL00072	DEP00021	G000007	D000002	CUST00000372422	UM	YF	9.94108E+14	L	UM	Top Up	Fresh	STORE000	LS	E02
20	200747	20080119	7	20	1	2.25	PRD0900001	CL00072	DEP00021	G000007	D000002				9.94109E+14	L	LA	Full Shop	Mixed	STORE000	LS	E02
21	200733	20071011	5	21	1	2.25	PRD0900001	CL00072	DEP00021	G000007	D000002	CUST00000871730	UM		9.94108E+14	M	MM	Small Shop	Fresh	STORE000	LS	E02
22	200746	20080110	5	10	1	2.25	PRD0900001	CL00072	DEP00021	G000007	D000002	CUST00000605493	MM	PE	9.94109E+14	L	UM	Full Shop	Fresh	STORE000	LS	E02
23	200747	20080116	4	13	1	2.25	PRD0900001	CL00072	DEP00021	G000007	D000002	CUST00000898638	LA	OT	9.94109E+14	L	LA	Top Up	Mixed	STORE000	LS	E02
24	200746	20080107	2	12	1	2.25	PRD0900001	CL00072	DEP00021	G000007	D000002	CUST00000986734	LA		9.94109E+14	L	MM	Full Shop	Fresh	STORE000	LS	E02
25	200808	20080420	1	17	1	2.25	PRD0900001	CL00072	DEP00021	G000007	D000002				9.94111E+14	L	MM	Top Up	Fresh	STORE000	LS	E02
26	200747	20080120	1	16	1	2.25	PRD0900001	CL00072	DEP00021	G000007	D000002	CUST00000133531	MM	OT	9.94109E+14	M	LA	Small Shop	Fresh	STORE000	LS	E02
27	200747	20080114	2	19	1	2.25	PRD0900001	CL00072	DEP00021	G000007	D000002	CUST00000863429	MM	YA	9.94109E+14	L	MM	Top Up	Fresh	STORE000	LS	E02
28	200732	20071002	3	13	1	2.25	PRD0900001	CL00072	DEP00021	G000007	D000002	CUST00000661427	MM	OT	9.94108E+14	M	LA	Top Up	Fresh	STORE000	LS	E02
29	200732	20071001	2	12	3	6.75	PRD0900001	CL00072	DEP00021	G000007	D000002	CUST00000576800	MM	OA	9.94108E+14	L	MM	Top Up	Fresh	STORE000	LS	E02
30	200732	20071001	2	15	3	6.75	PRD0900001	CL00072	DEP00021	G000007	D000002	CUST00000161411	MM	PE	9.94108E+14	L	MM	Full Shop	Fresh	STORE000	LS	E02
31	200732	20071006	7	13	1	2.25	PRD0900001	CL00072	DEP00021	G000007	D000002	CUST00000402352	UM	YA	9.94108E+14	M	MM	Top Up	Grocery	STORE000	LS	E02
32	200731	20070925	3	19	3	6.75	PRD0900001	CL00072	DEP00021	G000007	D000002	CUST00000985195	LA	OA	9.94108E+14	L	LA	Full Shop	Fresh	STORE000	LS	E02
33	200732	20071002	3	13	3	6.75	PRD0900001	CL00072	DEP00021	G000007	D000002	CUST00000540040	MM	YA	9.94108E+14	L	MM	Top Up	Mixed	STORE000	LS	E02
34	200747	20080119	7	16	1	2.25	PRD0900001	CL00072	DEP00021	G000007	D000002	CUST00000467543	LA	YA	9.94109E+14	L	LA	Full Shop	Fresh	STORE000	LS	E02
35	200746	20080111	6	17	1	2.25	PRD0900001	CL00072	DEP00021	G000007	D000002				9.94109E+14	L	LA	Full Shop	Fresh	STORE000	LS	E02



Supermarket Data.csv

Data Dictionary: Please see detail in appendix section

Customer Movement Analysis

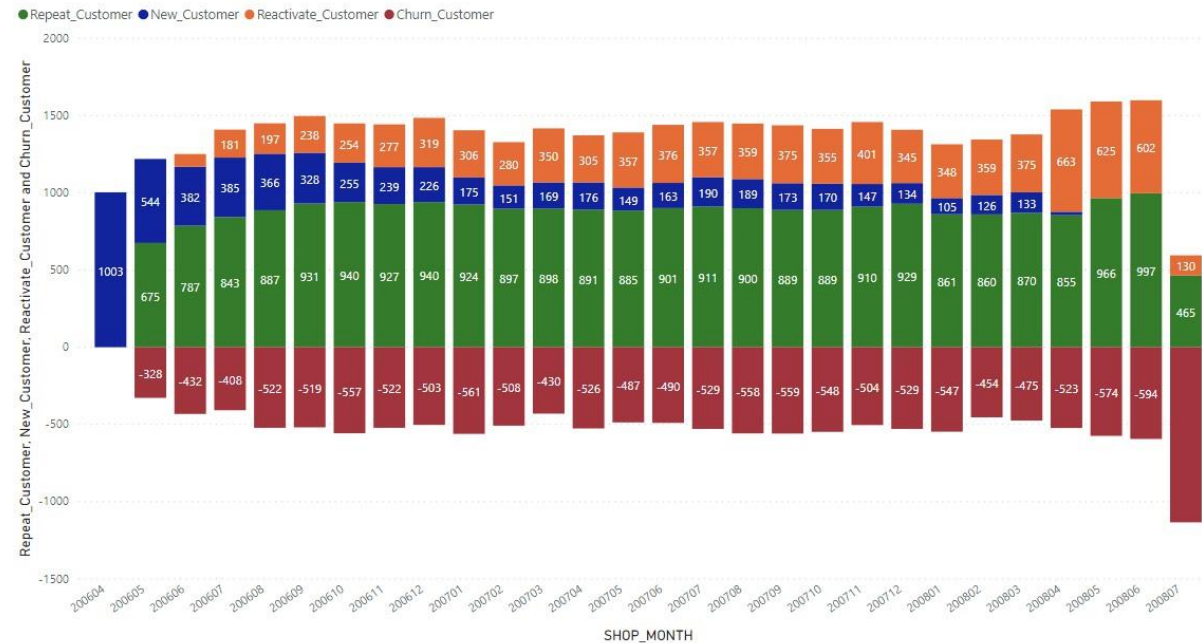
Customer Type	before	Previous	Current
New Customer	X	X	✓
Repeat Customer		✓	✓
Reactive Customer	✓	X	✓
Churn Customer		✓	X

Customer Movement

Expected result

แถว	SHOP_MONTH	New_Customer	Repeat_Customer	Reactivate_Customer	Churn_Customer
1	200604	1003	0	0	<i>null</i>
2	200605	544	675	0	-328
3	200606	382	787	82	-432
4	200607	385	843	181	-408
5	200608	366	887	197	-522
6	200609	328	931	238	-519

Customer Movement Analysis



Customer Movement

Step 1: Get Customer code and Convert shop date to shop month (yyyymm)

```
SELECT
CUST_CODE,
CAST(SAFE.SUBSTR(cast(SHOP_DATE as STRING),1,6) as NUMERIC) as SHOP_MONTH,
FROM
`plated-observer-308203.supermarket_workshop.supermarket_031`
WHERE CUST_CODE IS NOT NULL
GROUP BY CUST_CODE,SHOP_MONTH
```

Example result

CUST_CODE	SHOP_MONTH
CUST0000923296	200704
CUST0000147574	200704
CUST0000992085	200704
CUST0000997122	200704
CUST0000863429	200704
CUST0000925425	200704
CUST0000132570	200704
CUST0000420363	200704
CUST0000809769	200704
CUST0000275967	200704
CUST0000556927	200704
CUST0000644461	200704
CUST0000848359	200704
CUST0000053927	200704
CUST0000634688	200704
CUST0000036136	200704
CUST0000195321	200704

Customer Movement

Step 2:

```
SELECT
CUST_CODE,
SHOP_MONTH,
CAST(SAFE.SUBSTR(cast(SHOP_MONTH as STRING),1,4) as NUMERIC) as C_YEAR,
CAST(SAFE.SUBSTR(cast(SHOP_MONTH as STRING),5,2) as NUMERIC) as C_MONTH,
LAG(SHOP_MONTH, 1) OVER (PARTITION BY CUST_CODE ORDER BY SHOP_MONTH) AS PREVIOUS_MONTH,
LEAD(SHOP_MONTH, 1) OVER (PARTITION BY CUST_CODE ORDER BY SHOP_MONTH) AS NEXT_MONTH,
CAST(SAFE.SUBSTR(cast(LAG(SHOP_MONTH, 1) OVER (PARTITION BY CUST_CODE ORDER BY SHOP_MONTH) as STRING),1,4) as NUMERIC) as P_YEAR,
CAST(SAFE.SUBSTR(cast(LAG(SHOP_MONTH, 1) OVER (PARTITION BY CUST_CODE ORDER BY SHOP_MONTH) as STRING),5,2) as NUMERIC) as P_MONTH,
FROM
(SELECT
CUST_CODE,
CAST(SAFE.SUBSTR(cast(SHOP_DATE as STRING),1,6) as NUMERIC) as SHOP_MONTH,
FROM
`plated-observer-308203.supermarket_workshop.supermarket_031`
WHERE CUST_CODE IS NOT NULL
GROUP BY CUST_CODE,SHOP_MONTH
ORDER BY CUST_CODE,SHOP_MONTH)
```

Example result

CUST_CODE	SHOP_MONTH	C_YEAR	C_MONTH	PREVIOUS	NEXT	MONTH	P_YEAR	P_MONTH
CUST0000543933	200705	2007	5	200704	200706	2007	4	
CUST0000548270	200711	2007	11	200704	200712	2007	4	
CUST0000561266	200705	2007	5	200704		2007	4	
CUST0000628284	200705	2007	5	200704	200706	2007	4	
CUST0000692724	200705	2007	5	200704	200709	2007	4	
CUST0000711835	200705	2007	5	200704	200706	2007	4	
CUST0000844640	200705	2007	5	200704	200706	2007	4	
CUST0000962973	200804	2008	4	200704		2007	4	
CUST0000000369	200610	2006	10	200609	200611	2006	9	
CUST0000037610	200701	2007	1	200609	200702	2006	9	
CUST00000089183	200708	2007	8	200609		2006	9	
CUST0000115145	200610	2006	10	200609	200611	2006	9	
CUST0000173993	200610	2006	10	200609	200611	2006	9	
CUST0000206560	200610	2006	10	200609	200611	2006	9	
CUST0000268787	200611	2006	11	200609	200701	2006	9	
CUST0000340397	200611	2006	11	200609	200612	2006	9	
CUST0000373951	200710	2007	10	200609		2006	9	
CUST0000439130	200612	2006	12	200609	200701	2006	9	
CUST0000453659	200610	2006	10	200609	200611	2006	9	
CUST0000647793	200610	2006	10	200609	200611	2006	9	
CUST0000957776	200611	2006	11	200609	200612	2006	9	

Customer Movement

Step 3:

```
SELECT
CUST_CODE,
SHOP_MONTH,
CASE
WHEN PREVIOUS_MONTH IS NULL THEN "New_Customer"
WHEN (C_YEAR-P_YEAR)*12+(C_MONTH-P_MONTH) = 1 THEN "Repeat_Customer"
WHEN (C_YEAR-P_YEAR)*12+(C_MONTH-P_MONTH) > 1 THEN "Reactivate_Customer"
END as CUS_TYPE
FROM
```

```
(SELECT
CUST_CODE,
SHOP_MONTH,
CAST(SAFE.SUBSTR(cast(SHOP_MONTH as STRING),1,4) as NUMERIC) as C_YEAR,
CAST(SAFE.SUBSTR(cast(SHOP_MONTH as STRING),5,2) as NUMERIC) as C_MONTH,
LAG(SHOP_MONTH, 1) OVER (PARTITION BY CUST_CODE ORDER BY SHOP_MONTH) AS PREVIOUS_MONTH,
LEAD(SHOP_MONTH, 1) OVER (PARTITION BY CUST_CODE ORDER BY SHOP_MONTH) AS NEXT_MONTH,
CAST(SAFE.SUBSTR(cast(LAG(SHOP_MONTH, 1) OVER (PARTITION BY CUST_CODE ORDER BY SHOP_MONTH) as STRING),1,4) as NUMERIC) as P_YEAR,
CAST(SAFE.SUBSTR(cast(LAG(SHOP_MONTH, 1) OVER (PARTITION BY CUST_CODE ORDER BY SHOP_MONTH) as STRING),5,2) as NUMERIC) as P_MONTH,
FROM
(SELECT
CUST_CODE,
CAST(SAFE.SUBSTR(cast(SHOP_DATE as STRING),1,6) as NUMERIC) as SHOP_MONTH,
FROM
`plated-observer-308203.supermarket_workshop.supermarket_031`
WHERE CUST_CODE IS NOT NULL
GROUP BY CUST_CODE,SHOP_MONTH
ORDER BY CUST_CODE,SHOP_MONTH))
```

Example result

CUST_CODE	SHOP_MONTH	CUS_TYPE
CUST0000040844	200604	New_Customer
CUST0000040844	200605	Repeat_Customer
CUST0000040844	200607	Reactivate_Customer
CUST0000040844	200608	Repeat_Customer
CUST0000040844	200609	Repeat_Customer
CUST0000040844	200610	Repeat_Customer
CUST0000040844	200804	Reactivate_Customer
CUST0000040844	200806	Reactivate_Customer
CUST0000044880	200605	New_Customer
CUST0000044880	200609	Reactivate_Customer
CUST0000044880	200610	Repeat_Customer
CUST0000044880	200611	Repeat_Customer
CUST0000044880	200612	Repeat_Customer
CUST0000044880	200701	Repeat_Customer
CUST0000044880	200702	Repeat_Customer
CUST0000044880	200703	Repeat_Customer
CUST0000044880	200704	Repeat_Customer
CUST0000044880	200705	Repeat_Customer
CUST0000044880	200706	Repeat_Customer
CUST0000044880	200707	Repeat_Customer
CUST0000044880	200708	Repeat_Customer
CUST0000044880	200710	Reactivate_Customer

Customer Movement

Step 4:

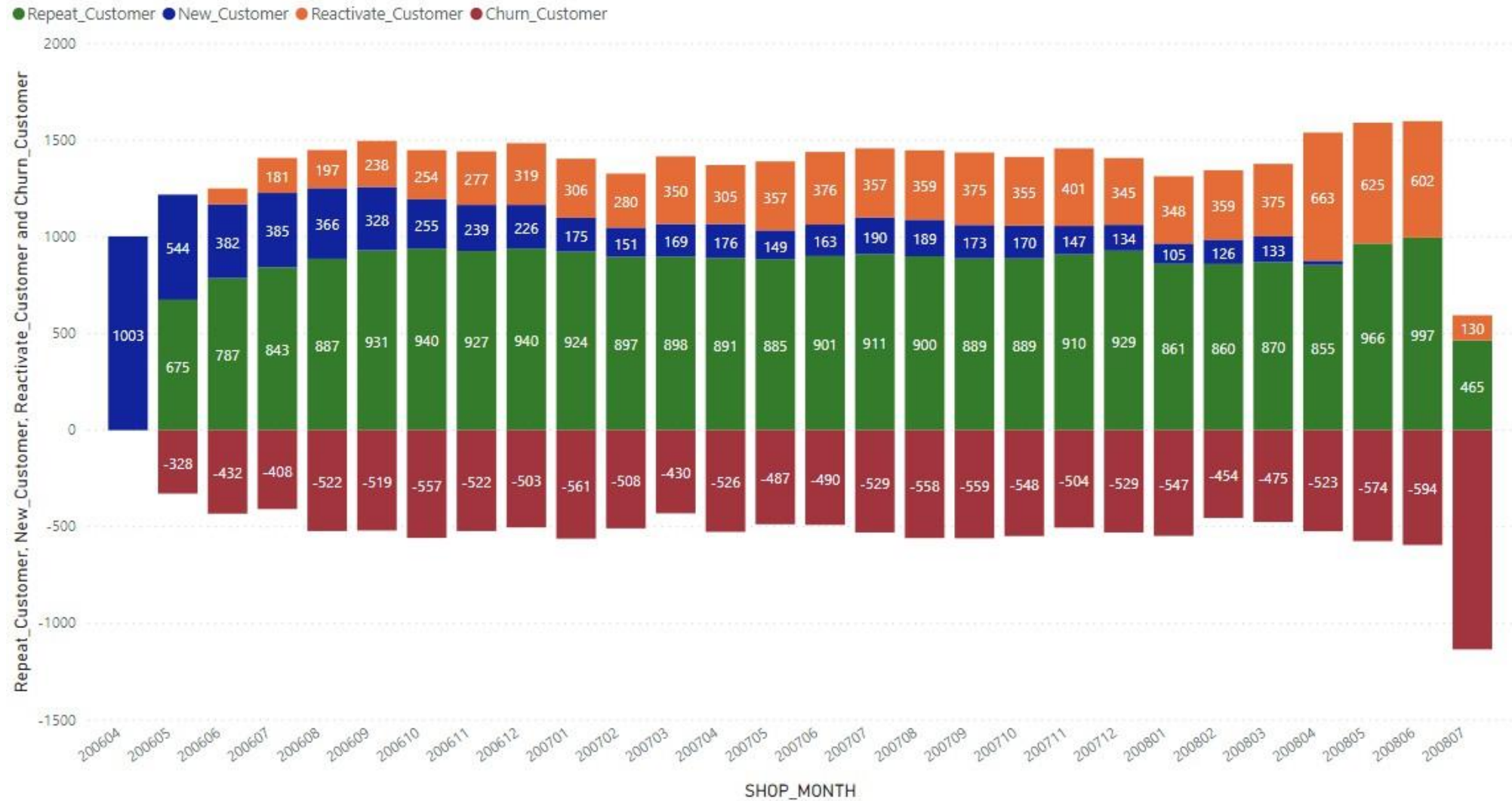
```
SELECT
SHOP_MONTH,
COUNT(CASE WHEN CUS_TYPE = "New_Customer" THEN 1 END) as New_Customer,
COUNT(CASE WHEN CUS_TYPE = "Repeat_Customer" THEN 1 END) as Repeat_Customer,
COUNT(CASE WHEN CUS_TYPE = "Reactivate_Customer" THEN 1 END) as Reactivate_Customer,
-(LAG(COUNT(SHOP_MONTH),1)OVER (ORDER BY SHOP_MONTH) - COUNT(CASE WHEN CUS_TYPE = "Repeat_Customer" THEN 1 END)) as Churn_Customer
FROM
(SELECT
CUST_CODE,
SHOP_MONTH,
CASE
WHEN PREVIOUS_MONTH IS NULL THEN "New_Customer"
WHEN (C_YEAR-P_YEAR)*12+(C_MONTH-P_MONTH) = 1 THEN "Repeat_Customer"
WHEN (C_YEAR-P_YEAR)*12+(C_MONTH-P_MONTH) > 1 THEN "Reactivate_Customer"
END as CUS_TYPE
FROM
(SELECT
CUST_CODE,
SHOP_MONTH,
CAST(SAFE.SUBSTR(cast(SHOP_MONTH as STRING),1,4) as NUMERIC) as C_YEAR,
CAST(SAFE.SUBSTR(cast(SHOP_MONTH as STRING),5,2) as NUMERIC) as C_MONTH,
LAG(SHOP_MONTH, 1) OVER (PARTITION BY CUST_CODE ORDER BY SHOP_MONTH) AS PREVIOUS_MONTH,
LEAD(SHOP_MONTH, 1) OVER (PARTITION BY CUST_CODE ORDER BY SHOP_MONTH) AS NEXT_MONTH,
CAST(SAFE.SUBSTR(cast(LAG(SHOP_MONTH, 1) OVER (PARTITION BY CUST_CODE ORDER BY SHOP_MONTH) as STRING),1,4) as NUMERIC) as P_YEAR,
CAST(SAFE.SUBSTR(cast(LAG(SHOP_MONTH, 1) OVER (PARTITION BY CUST_CODE ORDER BY SHOP_MONTH) as STRING),5,2) as NUMERIC) as P_MONTH,
FROM
(SELECT
CUST_CODE,
CAST(SAFE.SUBSTR(cast(SHOP_DATE as STRING),1,6) as NUMERIC) as SHOP_MONTH,
FROM
`plated-observer-308203.supermarket_workshop.supermarket_031`
WHERE CUST_CODE IS NOT NULL
GROUP BY CUST_CODE,SHOP_MONTH
ORDER BY CUST_CODE,SHOP_MONTH)))
GROUP BY SHOP_MONTH
ORDER BY SHOP_MONTH
```

Example result

SHOP_MONTH	New_Customer	Repeat_Customer	Reactivate_Customer	Churn_Customer
200604	1003	0	0	
200605	544	675	0	-328
200606	382	787	82	-432
200607	385	843	181	-408
200608	366	887	197	-522
200609	328	931	238	-519
200610	255	940	254	-557
200611	239	927	277	-522
200612	226	940	319	-503
200701	175	924	306	-561
200702	151	897	280	-508
200703	169	898	350	-430
200704	176	891	305	-526
200705	149	885	357	-487
200706	163	901	376	-490
200707	190	911	357	-529
200708	189	900	359	-558
200709	173	889	375	-559
200710	170	889	355	-548
200711	147	910	401	-504
200712	134	929	345	-529
200801	105	861	348	-547

Customer Movement - Dashboard

Customer Movement Analysis





Thank you

Sirima Darachai 6210422031

Appendix

Data set details

Column Name	Description	Type	Sample Values
shop_week	Identifies the week of the basket	Char	Format is YYYYWW where the first 4 characters identify the fiscal year and the other two characters identify the specific week within the year (e.g. 200735). Being the fiscal year, the first week doesn't start in January. (See time.csv file for start/end dates of each week)
shop_date	Date when shopping has been made. Date is specified in the yyyyymmdd format	Char	20060413, 20060412
shop_weekday	Identifies the day of the week	Num	1=Sunday, 2=Monday, ..., 7=Saturday
shop_hour	Hour slot of the shopping	Num	0=00:00 ...23=23:00 -00:59, 1=01:00 - 23:59 -01:59,

Data Dictionary

Data set details

Column Name	Description	Type	Sample Values
Quantity	Number of items of the same product bought in this basket	Num	Integer number
spend	Spend associated to the items bought	Num	Number with two decimal digits
prod_code	Product Code	Char	PRD0900001, PRD0900003
prod_code_10	Product Hierarchy Level 10 Code	Char	CL00072, CL00144 (class)
prod_code_20	Product Hierarchy Level 20 Code	Char	DEP00021, DEP00051 (department)
prod_code_30	Product Hierarchy Level 30 Code	Char	G00007, G00015 (group)
prod_code_40	Product Hierarchy Level 40 Code	Char	D00002, D00003 (division)

Data Dictionary

Data set details

Column Name	Description	Type	Sample Values
cust_code	Customer Code	Char	CUST0000001624, CUST0000001912
cust_price_sensitivity	Customer's Price Sensitivity	Char	LA=Less Affluent, MM=Mid Market, UM=Up Market, XX=unclas
cust_lifestage	Customer's Lifestage	Char	YA=Young Adults, OA=Older Adults, YF=Young Families, OF=Older Families, PE=Pensioners, OT=Other, XX=unclassified
basket_id	Basket ID. All items in a basket share the same basket_id value.	Num	994100100000020, 994100100000344
basket_size	Basket size	Char	L=Large, M=Medium, S=Small
basket_price_sensitivity	Basket price sensitivity	Char	LA=Less Affluent, MM=Mid Market, UM=Up Market, XX=unclassified

Data Dictionary

Data set details

Column Name	Description	Type	Sample Values
basket_type	Basket type	Char	Small Shop, Top Up, Full Shop, XX
basket_dominant_mission	Shopping dominant mission	Char	Fresh, Grocery, Mixed, Non Food, XX
store_code	Store Code	Char	STORE00001, STORE00002
store_format	Format of the Store	Char	LS, MS, SS, XLS ()
store_region	Region the store belongs to	Char	E02, W01, E01, N03

Data Dictionary