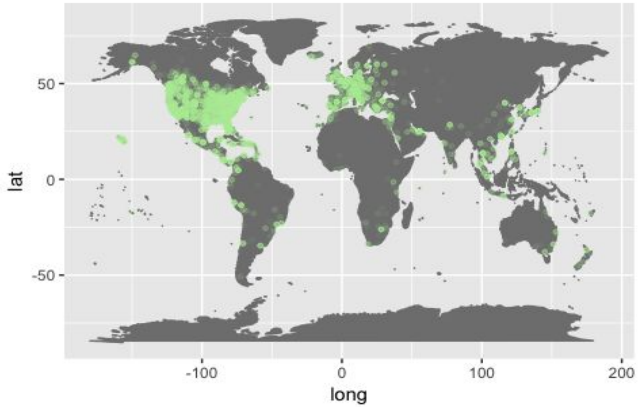
Datafest 2017

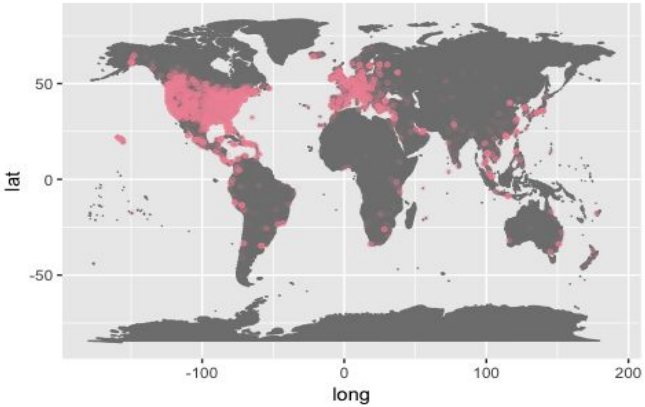
Team P(KL)^2

Seasonal International Hotel Bookings

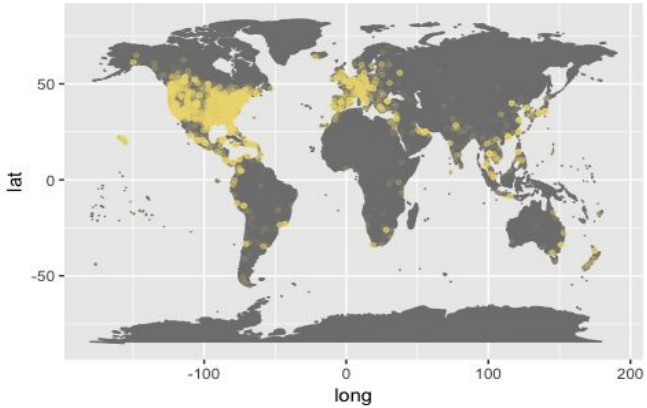
Spring 2015 International Hotel Bookings n = 23917



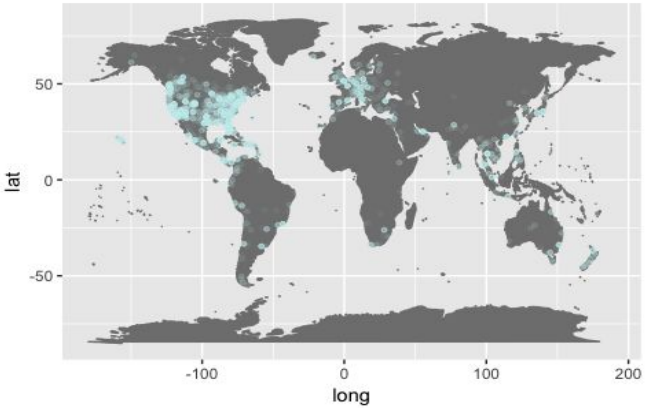
Summer 2015 International Hotel Bookings n = 31903



Fall 2015 International Hotel Bookings n = 23606



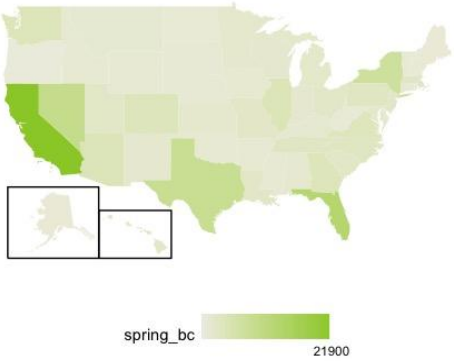
Winter 2015 International Hotel Bookings n = 8087



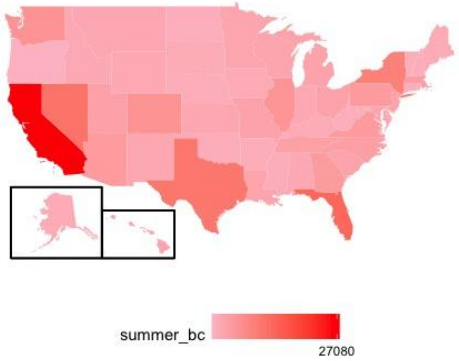
P(KL)^2

Seasonal Domestic Hotel Bookings

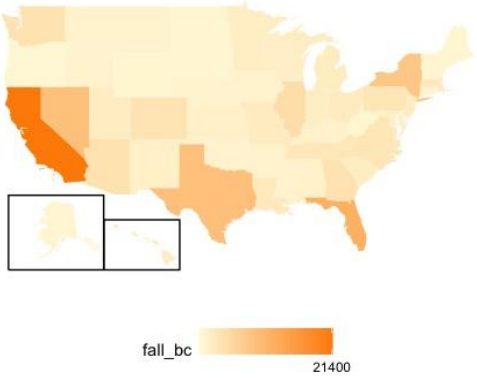
Spring 2015 Domestic Hotel Bookings



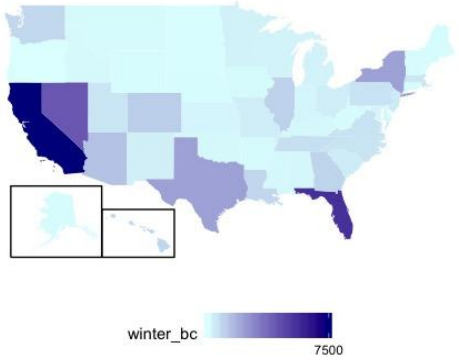
Summer 2015 Domestic Hotel Bookings



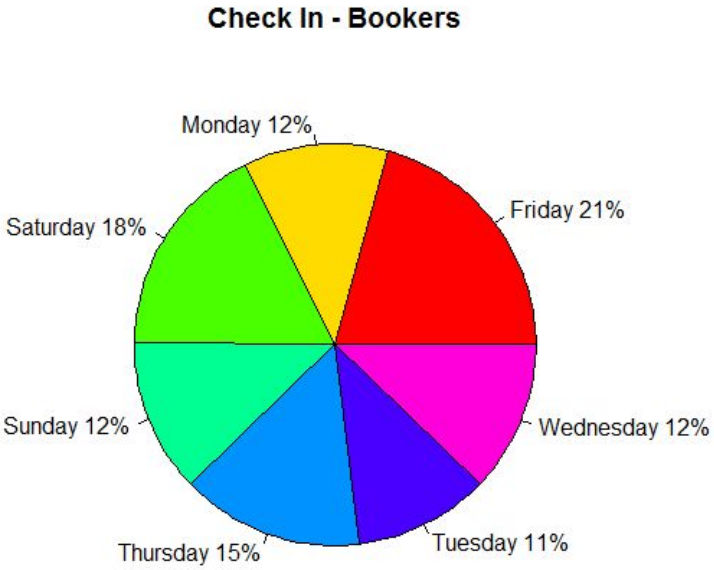
Fall 2015 Domestic Hotel Bookings

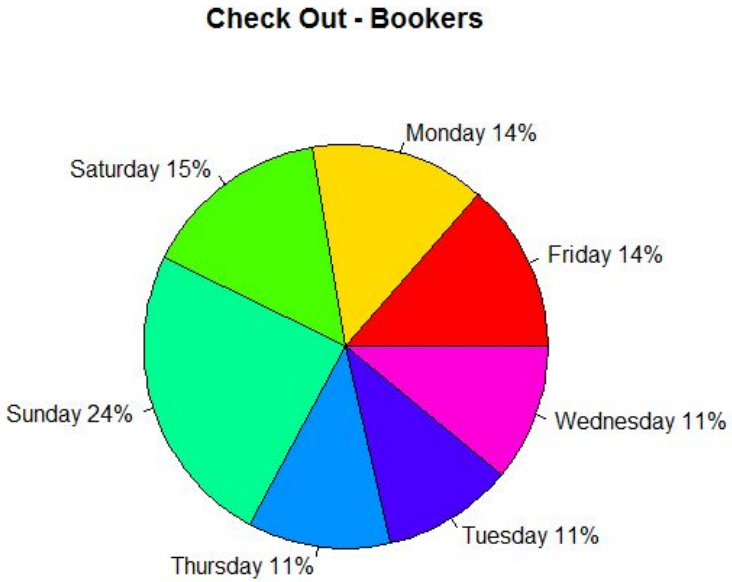


Winter 2015 Domestic Hotel Bookings



Check-in and Check-out Based on Day of Week

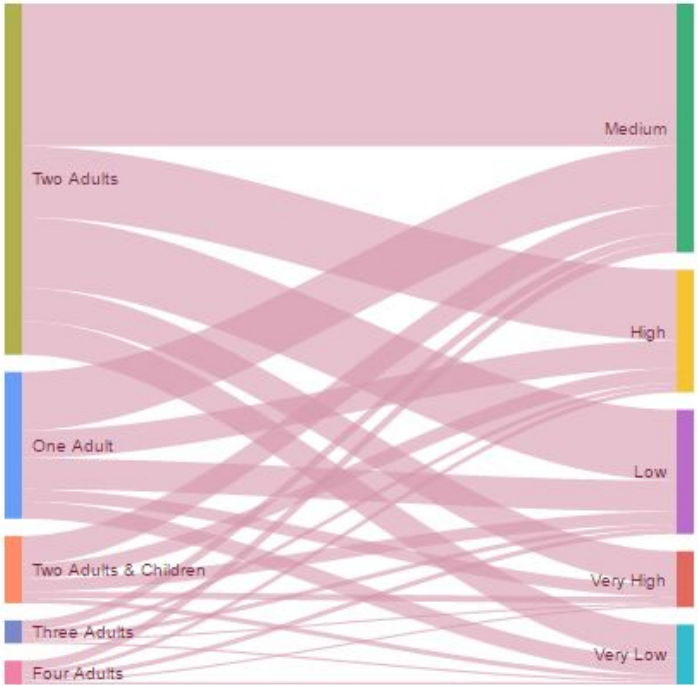




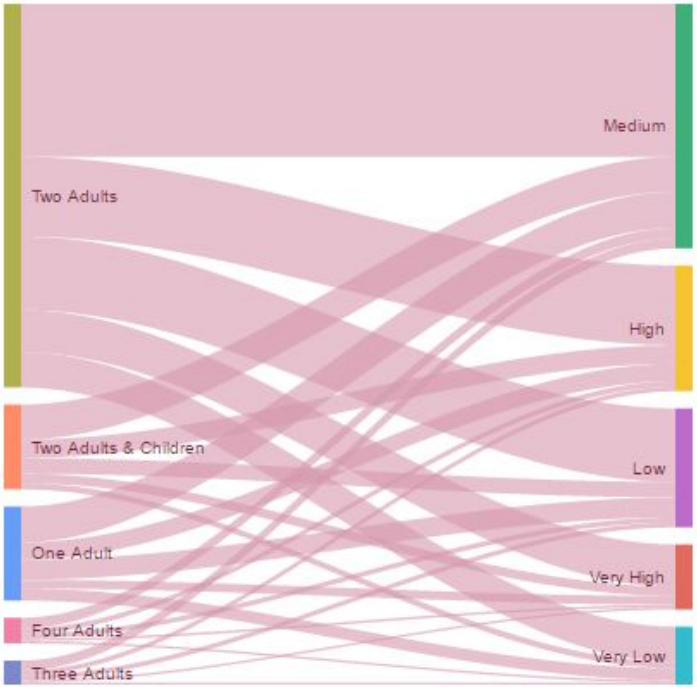
Average length of stay = 2.23 days
Median = 2 days


Expedia 2015 Hotel Bookings by Time of Day
Number of Bookings
7110
31371
34853
26666
12AM-5:59AM
6AM-11:59AM
12PM-5:59PM
6PM-11:59PM
Hour of Day

Relative Hotel Pricing: Booked vs. Clicked



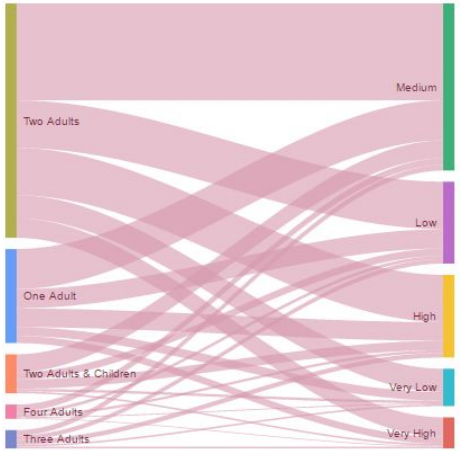
Relative Prices of Hotels Booked



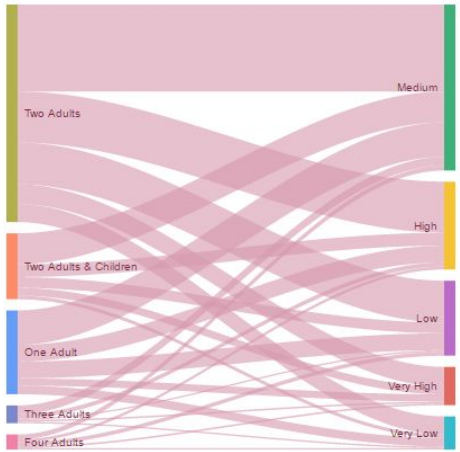
Relative Prices of Hotels Clicked

Seasonal Relative Hotel Pricing for Booked Trips

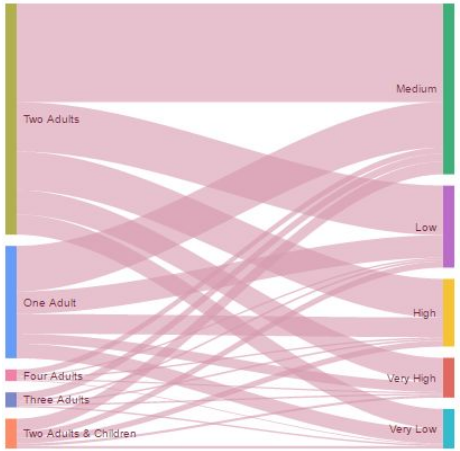
Spring



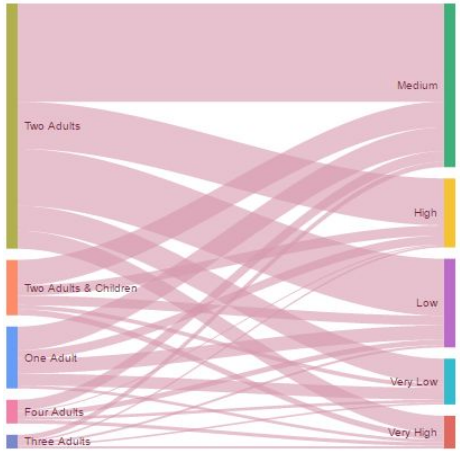
Summer



Fall

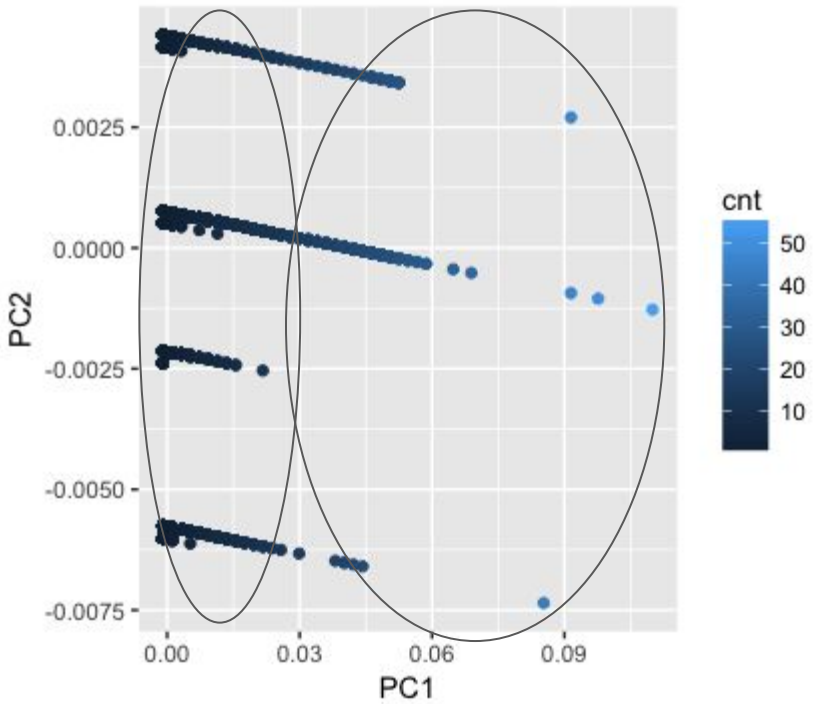


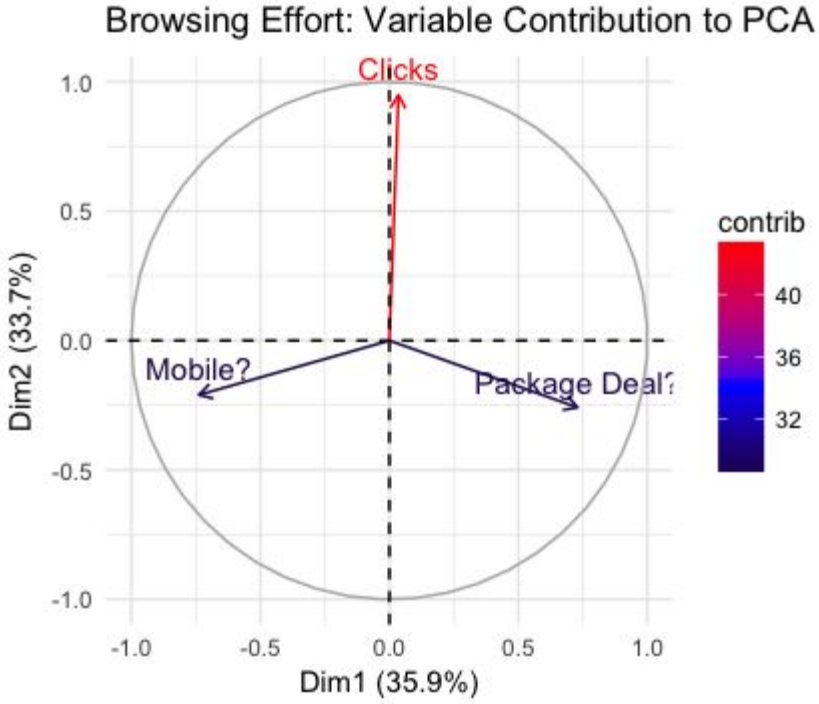
Winter



P(KL)^2

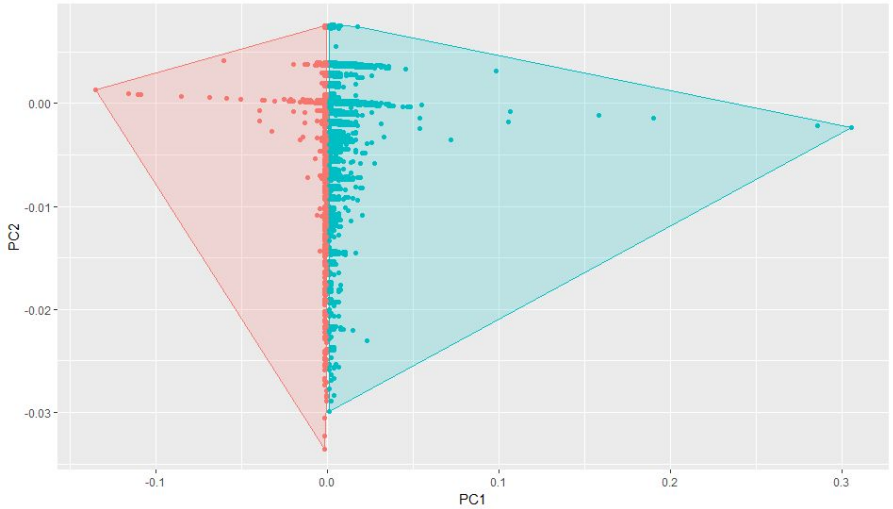
Browsing Effort Cluster Analyses

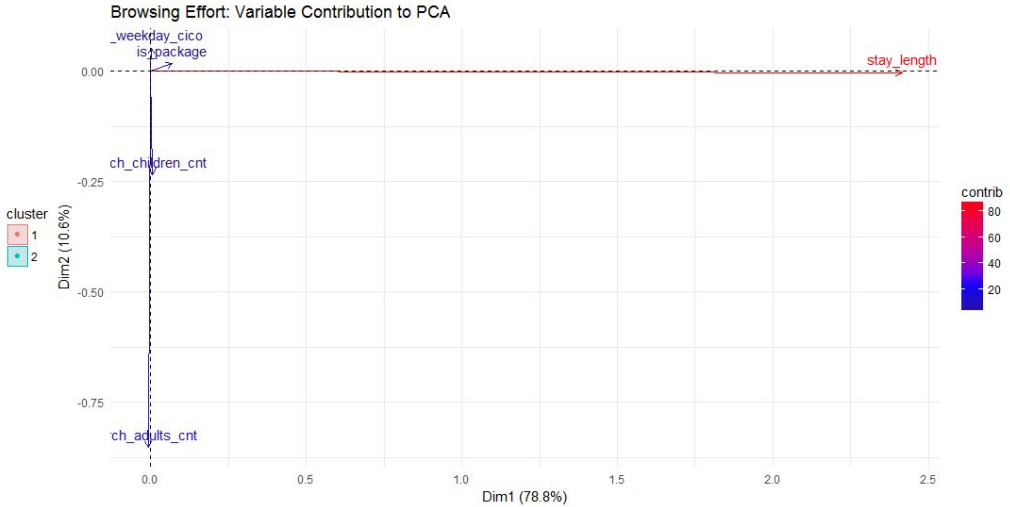




P(KL)^2

Business/Leisure Cluster Analyses

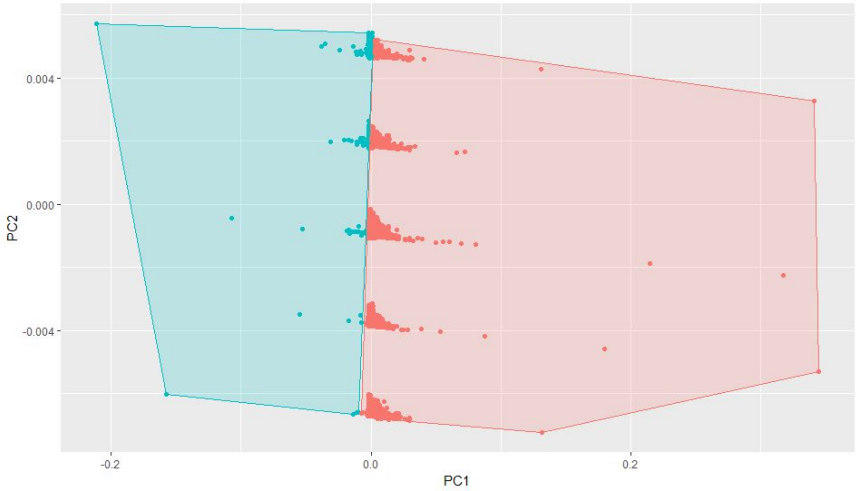


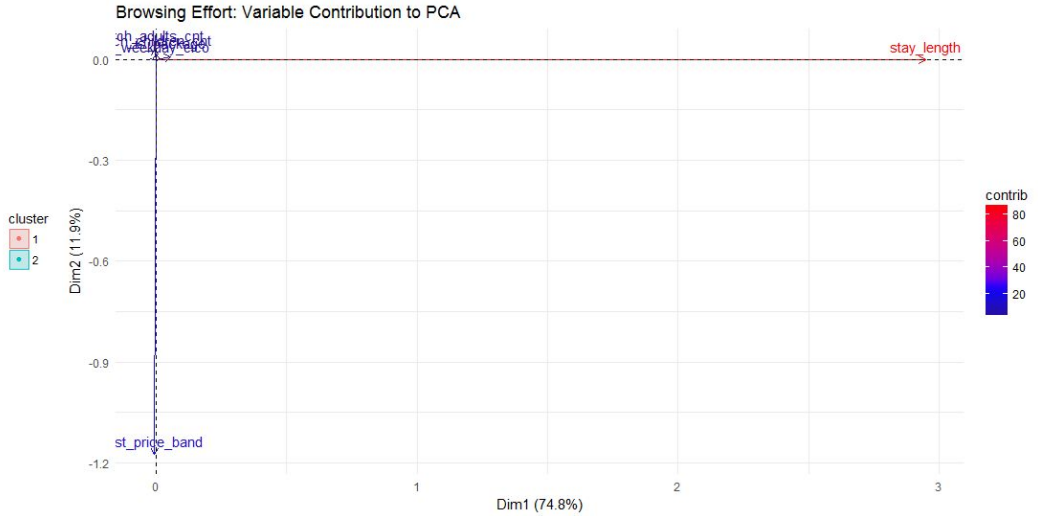


"stay_length","is_weekday_cico","is_package","srch_children_cnt","srch_adults_cnt"

P(KL)^2

Price Band Cluster Analyses

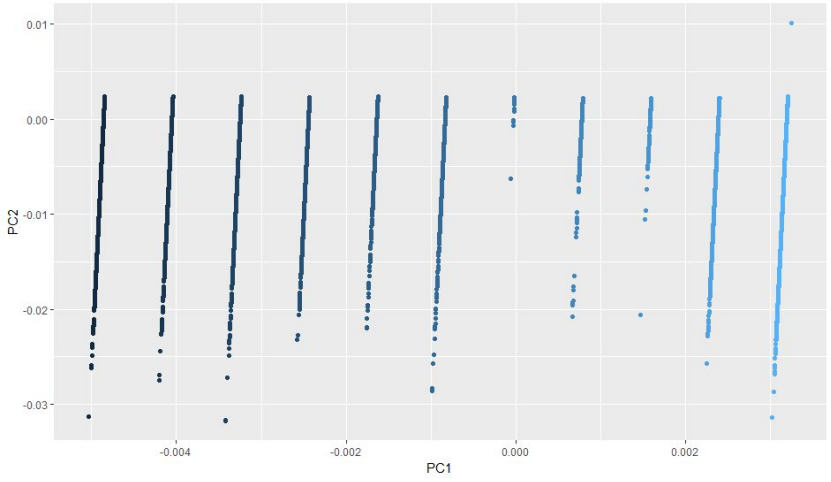


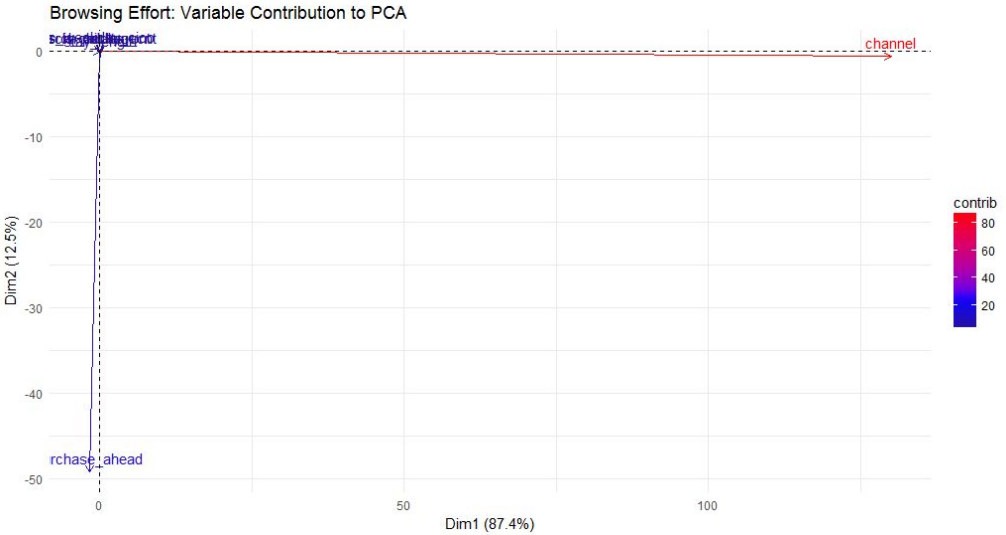


"Stay_length","is_weekday_cico","is_package","srch_children_cnt","srch_adults_cnt","hist_price_band"

P(KL)^2

Channel Cluster Analyses





"Stay_length","is_weekday_cico","is_package","srch_children_cnt","srch_adults_cnt","purchase_ahead","channel"

P(KL)^2

Expedia Stock Regression

```
Call:
lm(formula = Stock_Price ~ Channel + Length_Stay + Booking_per_month +
    Brand_hotel_per_month, data = weirdzz)

Residuals:
     Min       1Q   Median       3Q      Max
-23.2502  -5.4879   0.2353   5.2333  29.4274

Coefficients:
                          Estimate Std. Error  t value Pr(>|t|)
(Intercept)             1.018e+02  2.230e-01  456.600  < 2e-16 ***
Channel262              1.175e-01  1.392e-01    0.844   0.3986
Channel293             -9.485e-01  1.222e-01   -7.759 8.67e-15 ***
Channel324             -3.287e-01  1.552e-01   -2.118   0.0342 *
Channel355             -1.386e+00  3.239e-01   -4.279 1.88e-05 ***
Channel386             -4.193e-01  2.313e-01   -1.813   0.0699 .
Channel417              6.793e-01  2.143e+00    0.317   0.7512
Channel448              6.091e-01  3.301e-01    1.845   0.0650 .
Channel479             -2.302e-01  5.961e-01   -0.386   0.6993
Channel510             -8.809e+00  1.274e-01  -69.135  < 2e-16 ***
Channel541              4.793e+00  1.033e-01   46.392  < 2e-16 ***
Length_Stay            -4.128e-04  8.924e-03   -0.046   0.9631
Booking_per_month       2.997e-01  1.283e-03  233.657  < 2e-16 ***
Brand_hotel_per_month -4.145e-02  1.723e-04 -240.582  < 2e-16 ***
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1

Residual standard error: 8.563 on 74023 degrees of freedom
  (34 observations deleted due to missingness)
Multiple R-squared:  0.6355,    Adjusted R-squared:  0.6355
F-statistic:  9930 on 13 and 74023 DF,  p-value: < 2.2e-16
```

Suggestions For Expedia

1. Selectively market:
    a. cities on coastlines
    b. based on seasons
    c. during certain hours of the day
        i. E.g., increase ad visibility online during work hours using optimally selected channels
    d. to couples or pairs and shift focus based on our seasonal results
        i. E.g., buy one get one X% off
2. Use previous data to identify business or leisure
3. Based on the stock regression data:
    a. maximize booking per month
    b. optimally select channels