

```
In [10]: import PaqueteMineriaDeDatosBasica as pMD
```

```
In [11]: path = "../hotel_bookings.csv"
```

```
In [12]: ad = pMD.AnalisisDatosExploratorio(path,1)
```

```
In [13]: ad.analisisNumerico()
```

```
In [14]: ad.analisis()
```

Dimensiones: (20379, 14)

<bound method NDFrame.head of
ts \
hotel

Resort Hotel	0.925391	-0.363780		-0.099407
Resort Hotel	0.925391	-0.475463		0.799354
Resort Hotel	0.925391	-0.475463		0.799354
Resort Hotel	0.925391	-0.475463		0.799354
Resort Hotel	0.925391	-0.391701		0.799354
...
City Hotel	-1.080624	1.357995		-0.099407
City Hotel	-1.080624	0.967106		-0.099407
City Hotel	-1.080624	0.967106		-0.099407
City Hotel	-1.080624	0.566909		-0.099407
City Hotel	-1.080624	0.352851		-0.099407

hotel		stays_in_week_nights	adults	children	babies	\
Resort Hotel		-1.272075	0.238055	-0.311346	-0.088173	
Resort Hotel		-0.410754	0.238055	-0.311346	-0.088173	
Resort Hotel		-0.410754	0.238055	-0.311346	-0.088173	
Resort Hotel		-0.410754	0.238055	-0.311346	-0.088173	
Resort Hotel		-0.410754	-1.926748	-0.311346	-0.088173	
...
City Hotel		-0.410754	0.238055	-0.311346	-0.088173	
City Hotel		-0.410754	0.238055	-0.311346	-0.088173	
City Hotel		-0.410754	0.238055	-0.311346	-0.088173	
City Hotel		0.450567	0.238055	1.830039	-0.088173	
City Hotel		-0.410754	0.238055	-0.311346	-0.088173	

hotel		previous_cancellations	previous_bookings_not_canceled	\
Resort Hotel		-0.057536		-0.120842
Resort Hotel		-0.057536		-0.120842
Resort Hotel		-0.057536		-0.120842
Resort Hotel		-0.057536		-0.120842
Resort Hotel		-0.057536		-0.120842
...
City Hotel		-0.057536		-0.120842
City Hotel		-0.057536		-0.120842
City Hotel		-0.057536		-0.120842
City Hotel		-0.057536		-0.120842
City Hotel		-0.057536		-0.120842

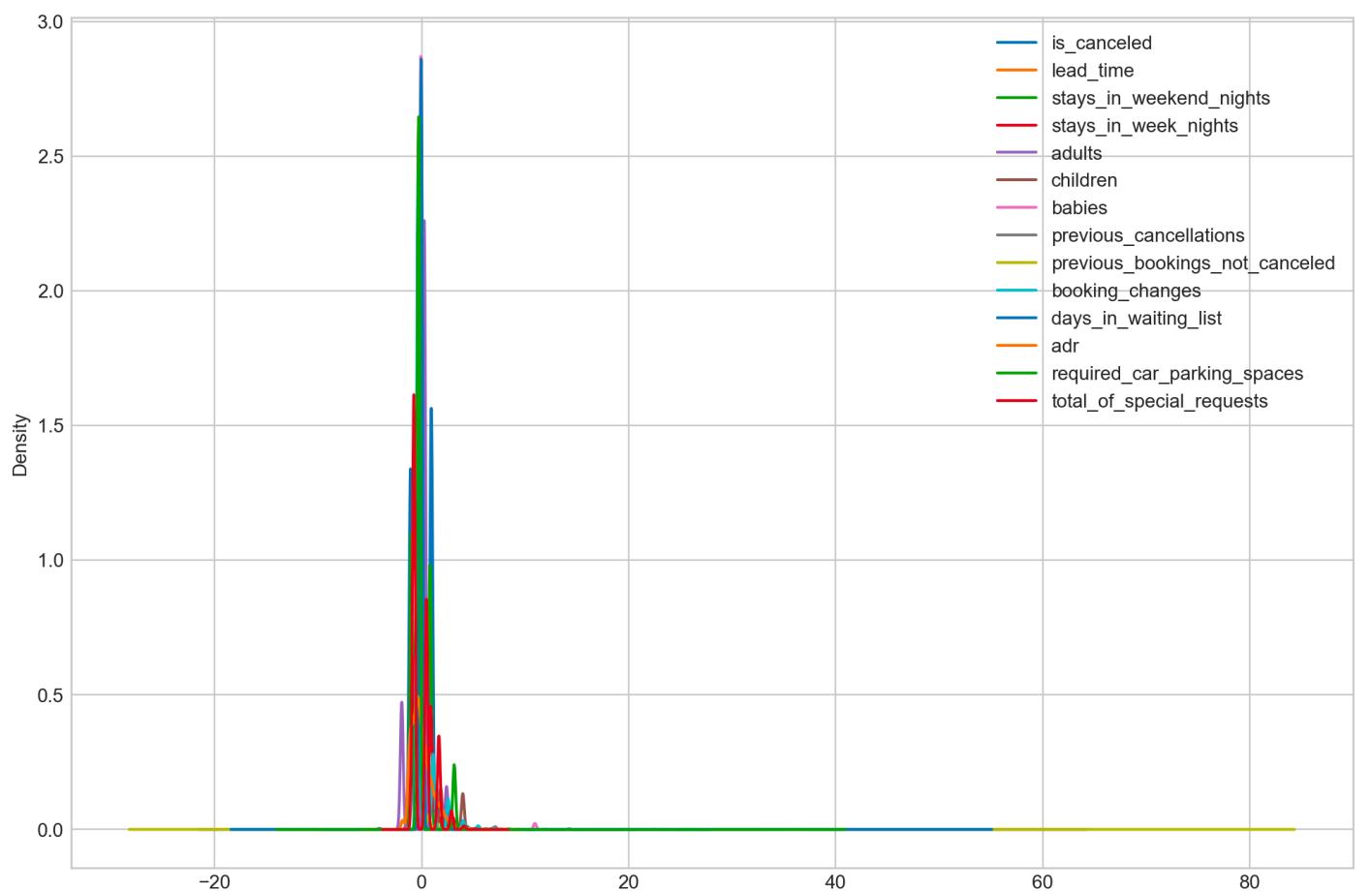
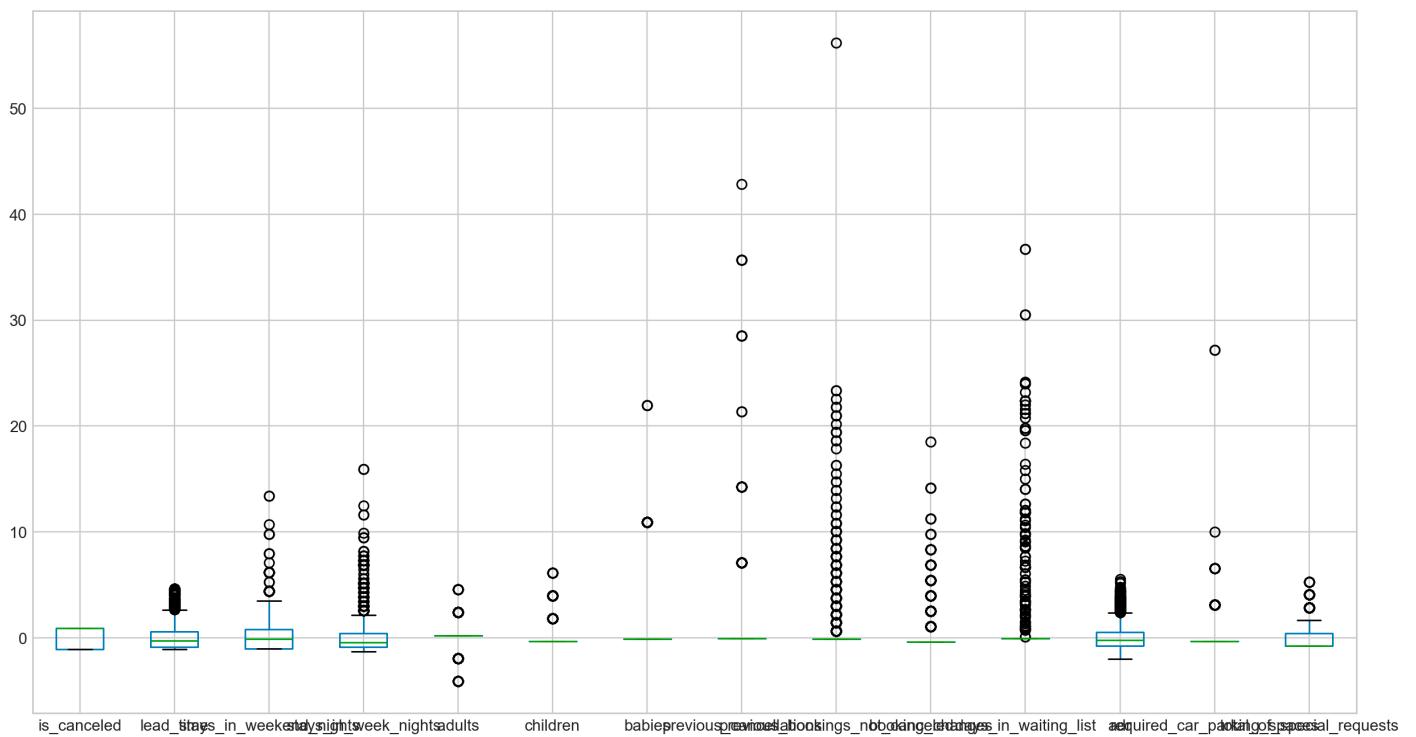
hotel		booking_changes	days_in_waiting_list	adr	\
Resort Hotel		-0.35336	-0.059171	-0.909461	
Resort Hotel		-0.35336	-0.059171	-1.010226	
Resort Hotel		-0.35336	-0.059171	-1.010226	
Resort Hotel		-0.35336	-0.059171	-1.010226	
Resort Hotel		-0.35336	-0.059171	-1.328711	
...
City Hotel		-0.35336	-0.059171	-0.389115	
City Hotel		-0.35336	-0.059171	0.294769	
City Hotel		-0.35336	-0.059171	1.112456	
City Hotel		-0.35336	-0.059171	0.592110	
City Hotel		-0.35336	-0.059171	0.203915	

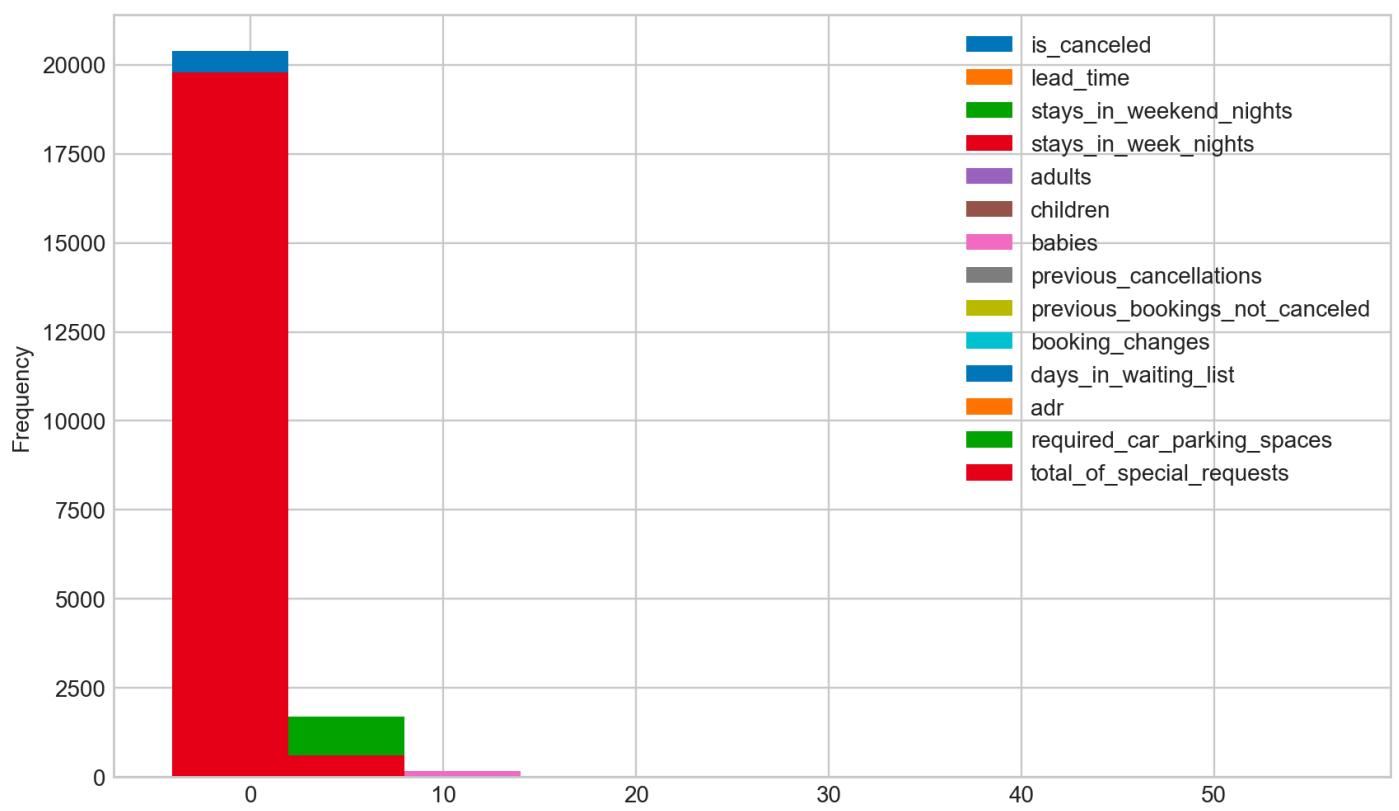
hotel		required_car_parking_spaces	total_of_special_requests	
Resort Hotel		-0.292263	-0.759083	
Resort Hotel		-0.292263	0.450405	

Resort Hotel	-0.292263	0.450405
Resort Hotel	-0.292263	0.450405
Resort Hotel	-0.292263	0.450405
...
City Hotel	-0.292263	0.450405
City Hotel	-0.292263	-0.759083
City Hotel	-0.292263	-0.759083
City Hotel	-0.292263	0.450405
City Hotel	-0.292263	-0.759083

[20379 rows x 14 columns]>

	is_canceled	lead_time	stays_in_weekend_nights	\
count	2.037900e+04	2.037900e+04	2.037900e+04	
mean	-1.338870e-16	-4.462902e-17	-1.115725e-17	
std	1.000025e+00	1.000025e+00	1.000025e+00	
min	-1.080624e+00	-1.052490e+00	-9.981671e-01	
25%	-1.080624e+00	-8.384313e-01	-9.981671e-01	
50%	9.253913e-01	-2.427902e-01	-9.940656e-02	
75%	9.253913e-01	5.762162e-01	7.993540e-01	
max	9.253913e-01	4.606100e+00	1.338200e+01	
	stays_in_week_nights	adults	children	babies
count	2.037900e+04	2.037900e+04	2.037900e+04	2.037900e+04
mean	-5.578627e-18	-8.925803e-17	2.789313e-17	-7.112749e-17
std	1.000025e+00	1.000025e+00	1.000025e+00	1.000025e+00
min	-1.272075e+00	-4.091551e+00	-3.113463e-01	-8.817277e-02
25%	-8.414144e-01	2.380550e-01	-3.113463e-01	-8.817277e-02
50%	-4.107537e-01	2.380550e-01	-3.113463e-01	-8.817277e-02
75%	4.505675e-01	2.380550e-01	-3.113463e-01	-8.817277e-02
max	1.595435e+01	4.567661e+00	6.112810e+00	2.195935e+01
	previous_cancellations	previous_bookings_not_canceled	\	
count	2.037900e+04		2.037900e+04	
mean	-2.510382e-17		-5.160230e-17	
std	1.000025e+00		1.000025e+00	
min	-5.753605e-02		-1.208415e-01	
25%	-5.753605e-02		-1.208415e-01	
50%	-5.753605e-02		-1.208415e-01	
75%	-5.753605e-02		-1.208415e-01	
max	4.283980e+01		5.616782e+01	
	booking_changes	days_in_waiting_list	adr	\
count	2.037900e+04	2.037900e+04	2.037900e+04	
mean	3.905039e-17	-6.973284e-18	2.454596e-16	
std	1.000025e+00	1.000025e+00	1.000025e+00	
min	-3.533604e-01	-5.917069e-02	-1.966342e+00	
25%	-3.533604e-01	-5.917069e-02	-7.376640e-01	
50%	-3.533604e-01	-5.917069e-02	-2.090582e-01	
75%	-3.533604e-01	-5.917069e-02	5.177749e-01	
max	1.852438e+01	3.669212e+01	5.572568e+00	
	required_car_parking_spaces	total_of_special_requests		
count	2.037900e+04	2.037900e+04		
mean	2.231451e-17	1.283084e-16		
std	1.000025e+00	1.000025e+00		
min	-2.922634e-01	-7.590832e-01		
25%	-2.922634e-01	-7.590832e-01		
50%	-2.922634e-01	-7.590832e-01		
75%	-2.922634e-01	4.504052e-01		
max	2.717072e+01	5.288359e+00		

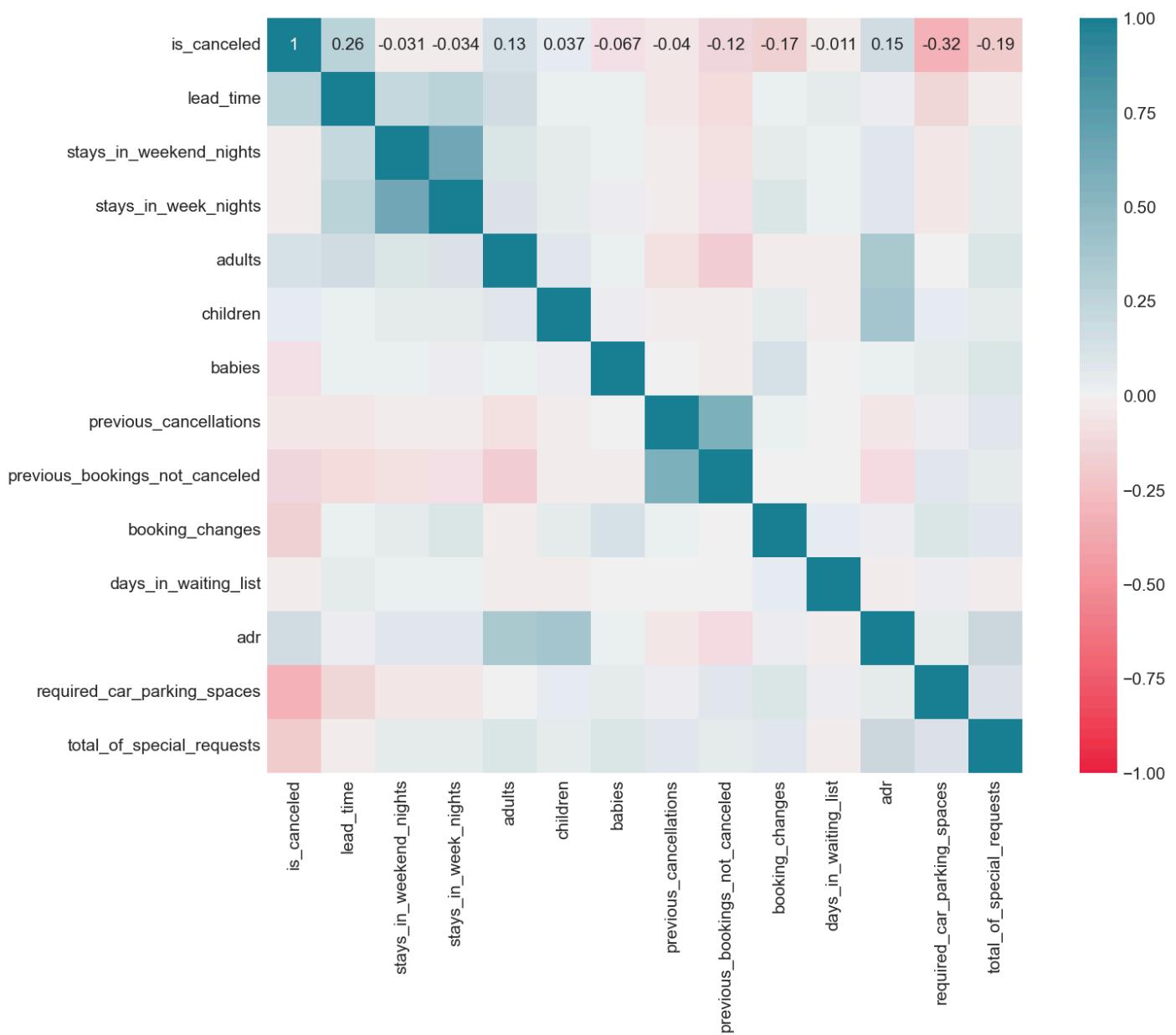




	is_canceled	lead_time	stays_in_weekend_nights	\
is_canceled	1.000000	0.260963	-0.030541	
lead_time	0.260963	1.000000	0.213132	
stays_in_weekend_nights	-0.030541	0.213132	1.000000	
stays_in_week_nights	-0.033810	0.266513	0.639274	
adults	0.126196	0.163298	0.094219	
...	
booking_changes	-0.171726	0.019278	0.057671	
days_in_waiting_list	-0.010772	0.047493	0.007969	
adr	0.151439	0.024757	0.066786	
required_car_parking_spaces	-0.315827	-0.143377	-0.048129	
total_of_special_requests	-0.193808	-0.027868	0.057842	
	stays_in_week_nights	adults	children	\
is_canceled	-0.033810	0.126196	0.037068	
lead_time	0.266513	0.163298	0.016819	
stays_in_weekend_nights	0.639274	0.094219	0.057729	
stays_in_week_nights	1.000000	0.116996	0.046790	
adults	0.116996	1.000000	0.070251	
...	
booking_changes	0.091302	-0.017381	0.044096	
days_in_waiting_list	0.011858	-0.013537	-0.018423	
adr	0.085589	0.363396	0.381309	
required_car_parking_spaces	-0.061214	-0.000441	0.032732	
total_of_special_requests	0.058332	0.105286	0.048981	
	babies	previous_cancellations	\	
is_canceled	-0.067068	-0.039654		
lead_time	0.011221	-0.041445		
stays_in_weekend_nights	0.023322	-0.034098		
stays_in_week_nights	0.025983	-0.033001		
adults	0.019819	-0.082757		
...	
booking_changes	0.117305	0.009727		
days_in_waiting_list	-0.002208	-0.002847		
adr	0.022576	-0.047518		
required_car_parking_spaces	0.059651	0.026541		
total_of_special_requests	0.101214	0.081501		
	previous_bookings_not_canceled	booking_changes	\	
is_canceled	-0.119887	-0.171726		
lead_time	-0.103860	0.019278		
stays_in_weekend_nights	-0.075005	0.057671		
stays_in_week_nights	-0.068652	0.091302		
adults	-0.174117	-0.017381		
...	
booking_changes	0.004038	1.000000		
days_in_waiting_list	-0.002410	0.033307		
adr	-0.098767	0.026920		
required_car_parking_spaces	0.083733	0.090949		
total_of_special_requests	0.059671	0.076419		
	days_in_waiting_list	adr	\	
is_canceled	-0.010772	0.151439		
lead_time	0.047493	0.024757		
stays_in_weekend_nights	0.007969	0.066786		
stays_in_week_nights	0.011858	0.085589		
adults	-0.013537	0.363396		
...	
booking_changes	0.033307	0.026920		
days_in_waiting_list	1.000000	-0.035457		
adr	-0.035457	1.000000		

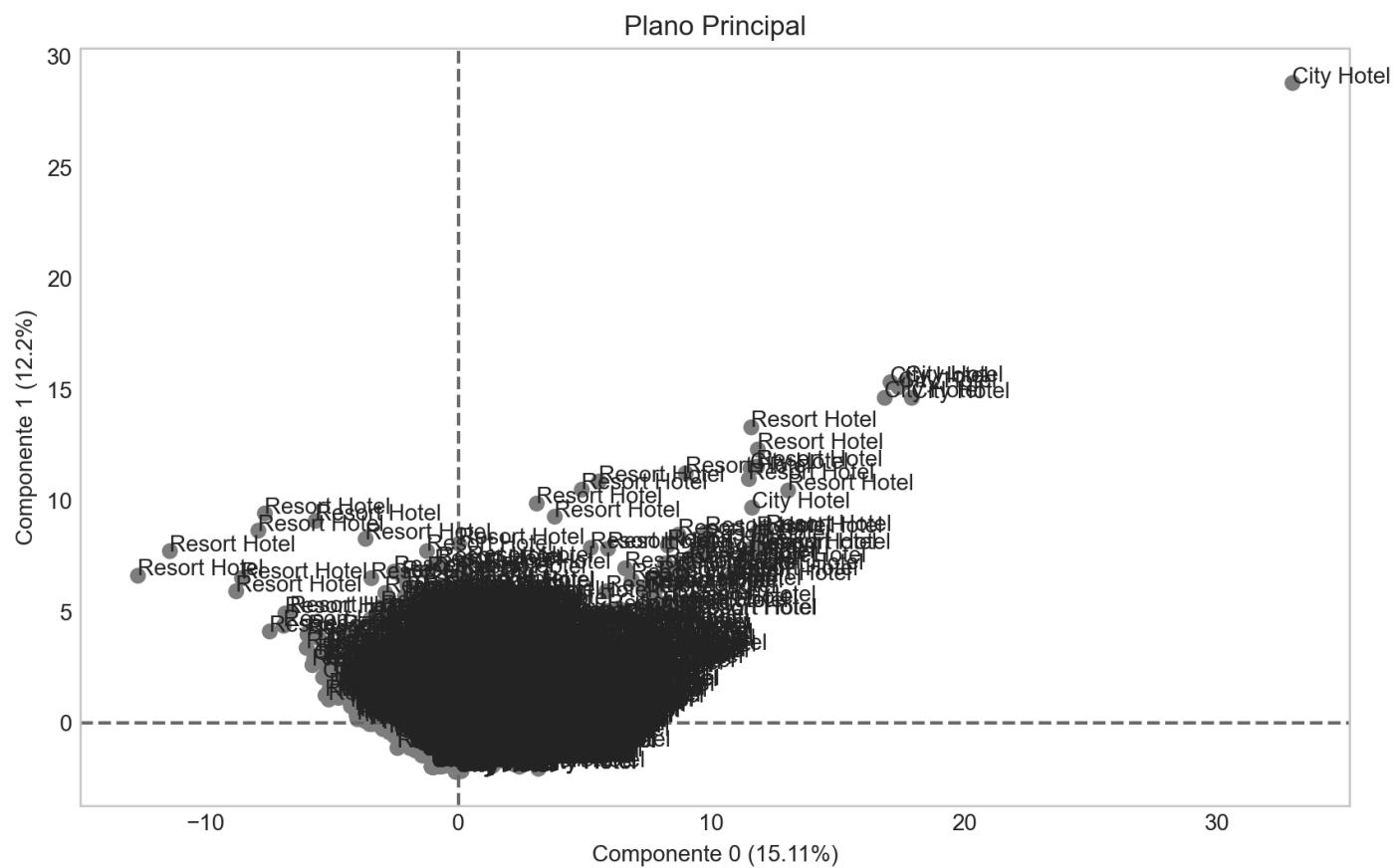
required_car_parking_spaces	0.029656	0.051168
total_of_special_requests	-0.037087	0.198512
is_canceled	required_car_parking_spaces \	-0.315827
lead_time		-0.143377
stays_in_weekend_nights		-0.048129
stays_in_week_nights		-0.061214
adults		-0.000441
...		...
booking_changes		0.090949
days_in_waiting_list		0.029656
adr		0.051168
required_car_parking_spaces		1.000000
total_of_special_requests		0.112689
	total_of_special_requests	
is_canceled		-0.193808
lead_time		-0.027868
stays_in_weekend_nights		0.057842
stays_in_week_nights		0.058332
adults		0.105286
...		...
booking_changes		0.076419
days_in_waiting_list		-0.037087
adr		0.198512
required_car_parking_spaces		0.112689
total_of_special_requests		1.000000

[14 rows x 14 columns]

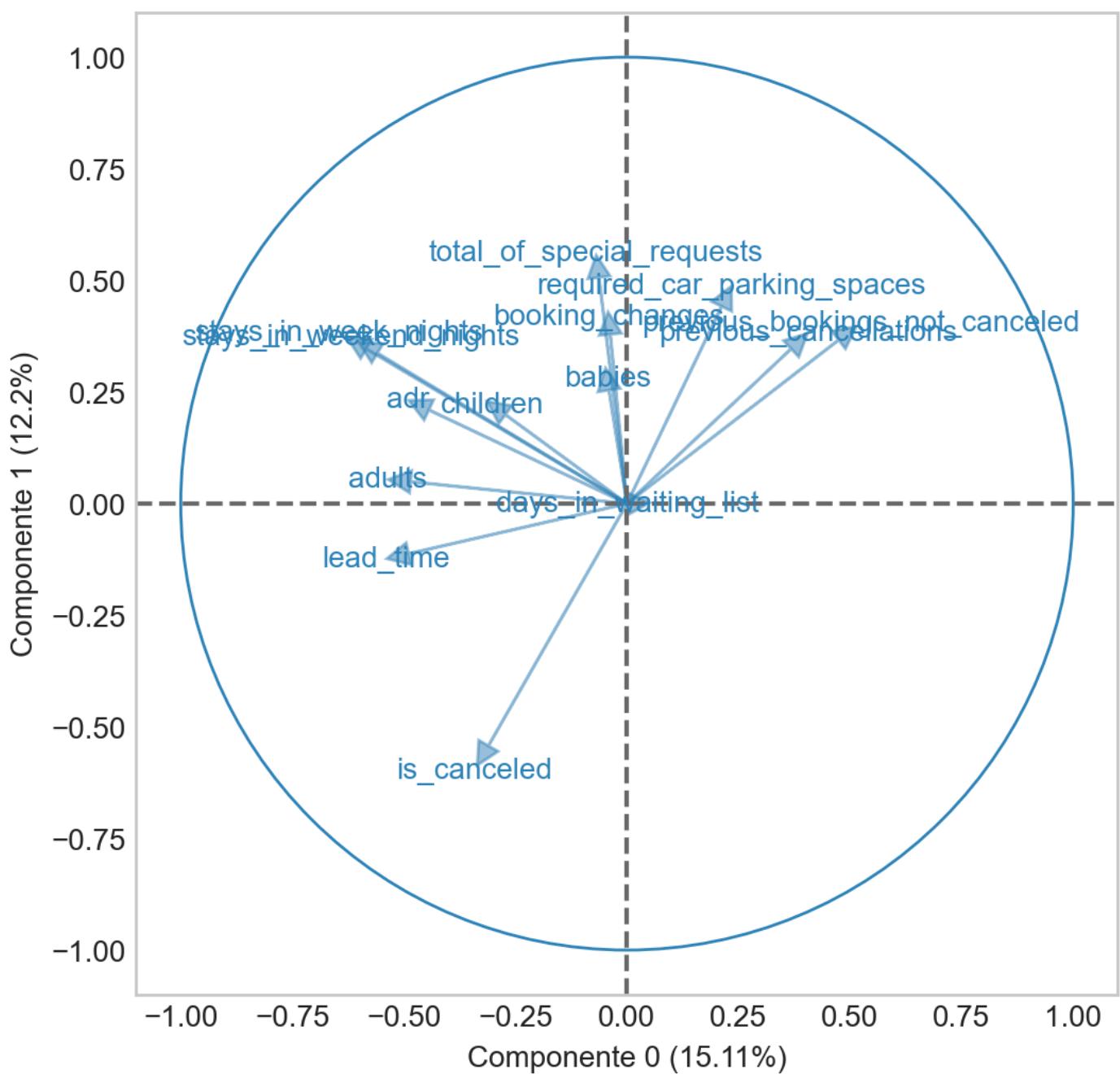


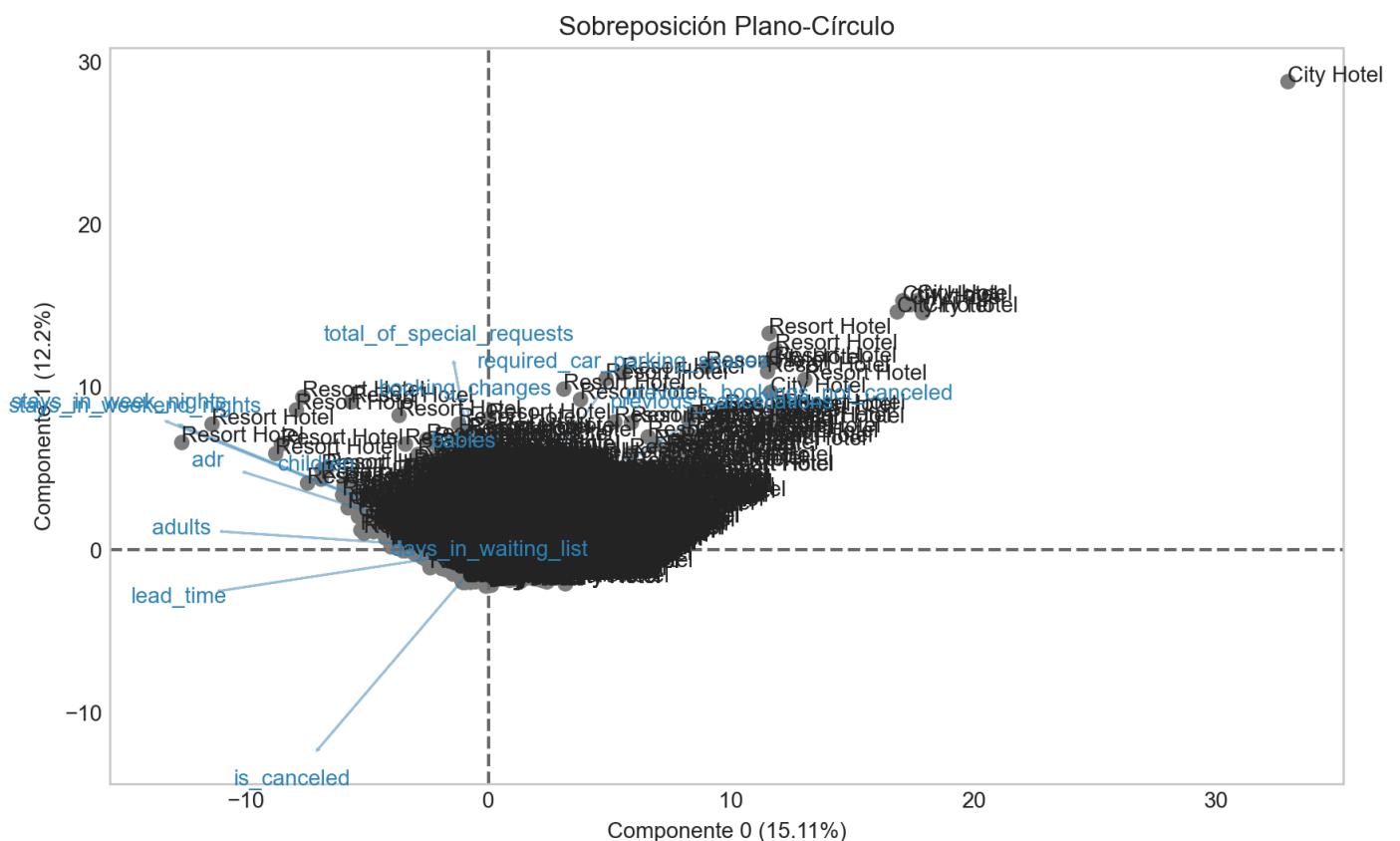
```
In [15]: Vacp = pMD.NoSupervisado(ad.df)
```

```
In [16]: Vacp.ACP(2)
```



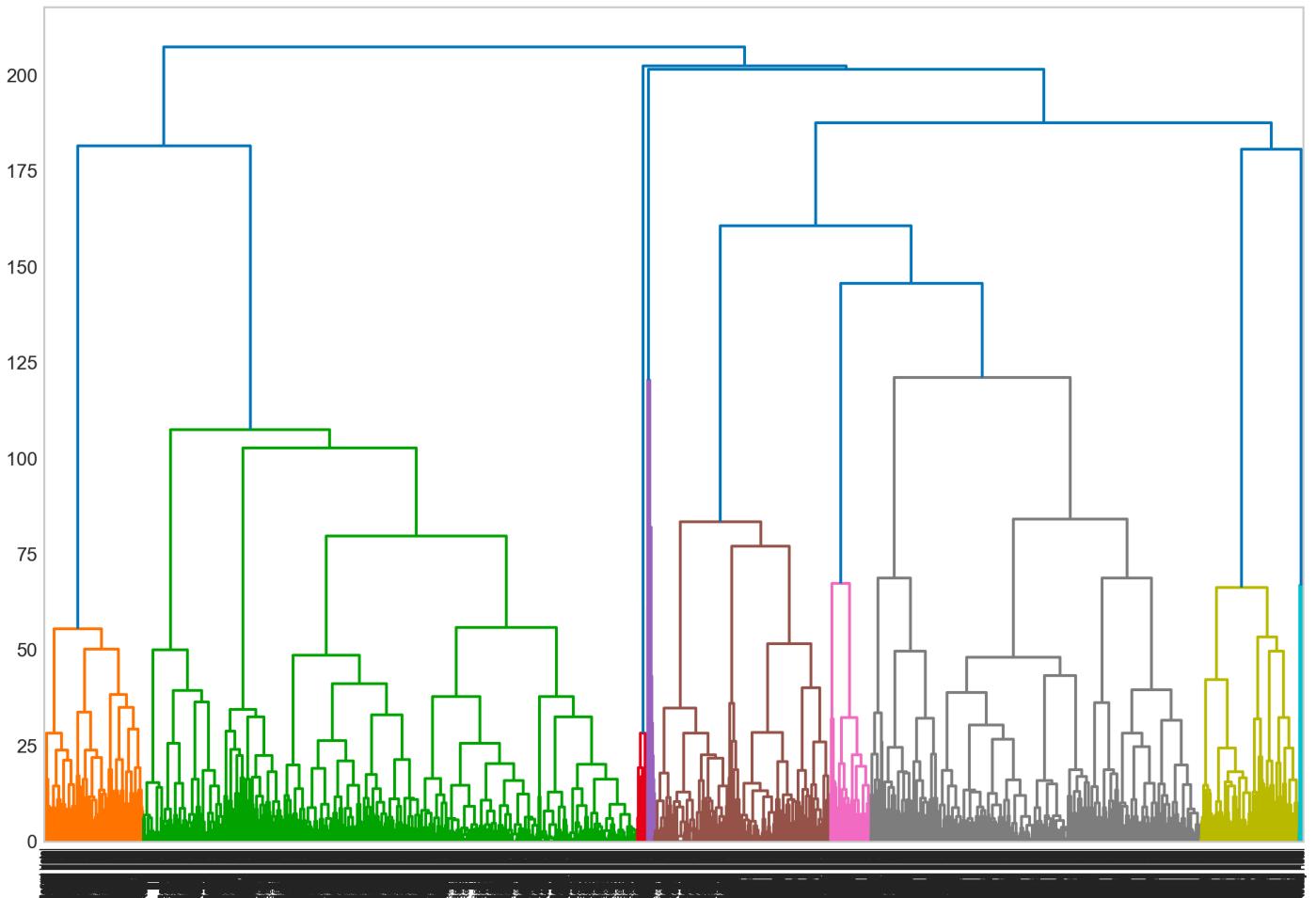
Círculo de Correlación



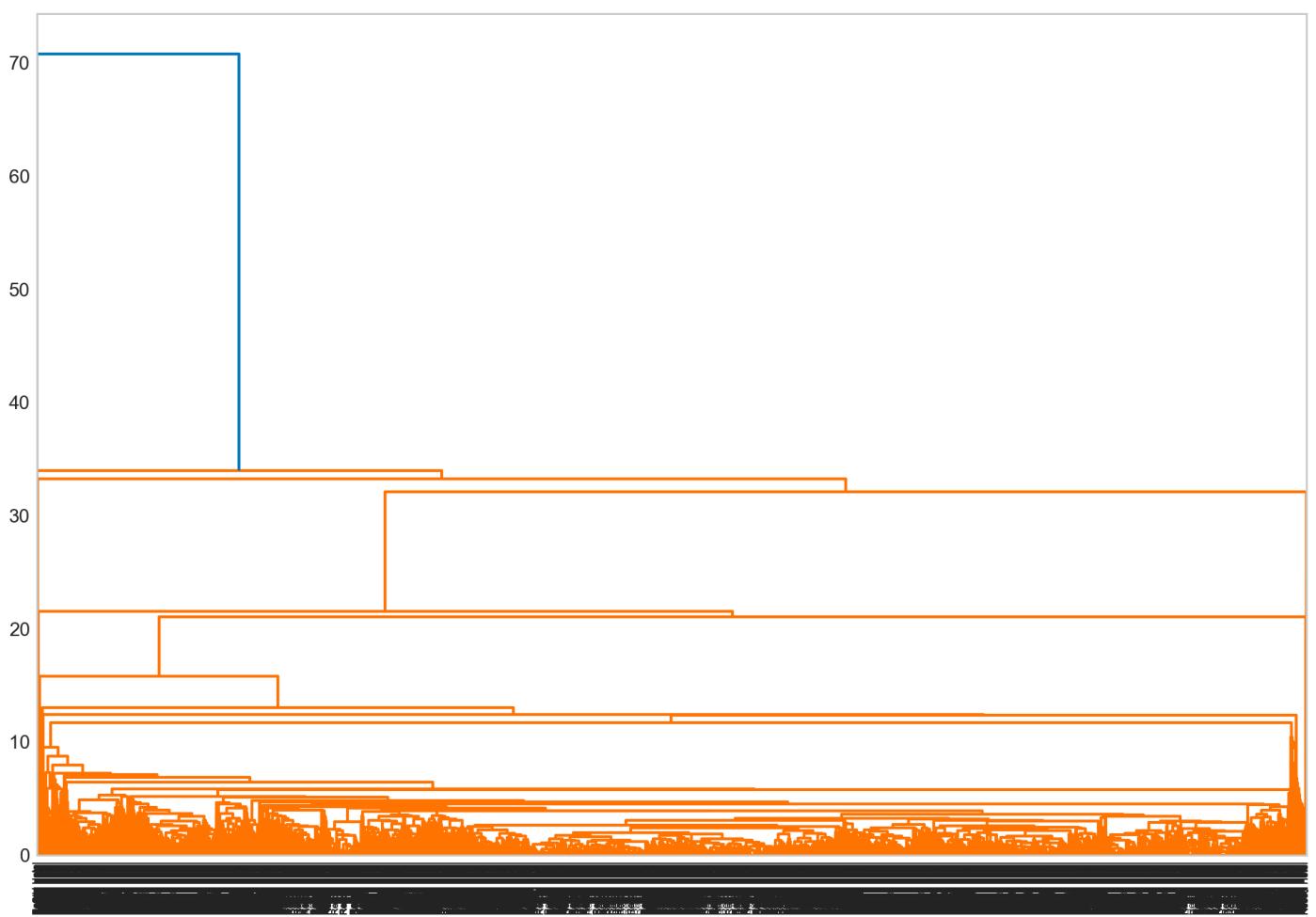


In [17]: Vacp.HAC()

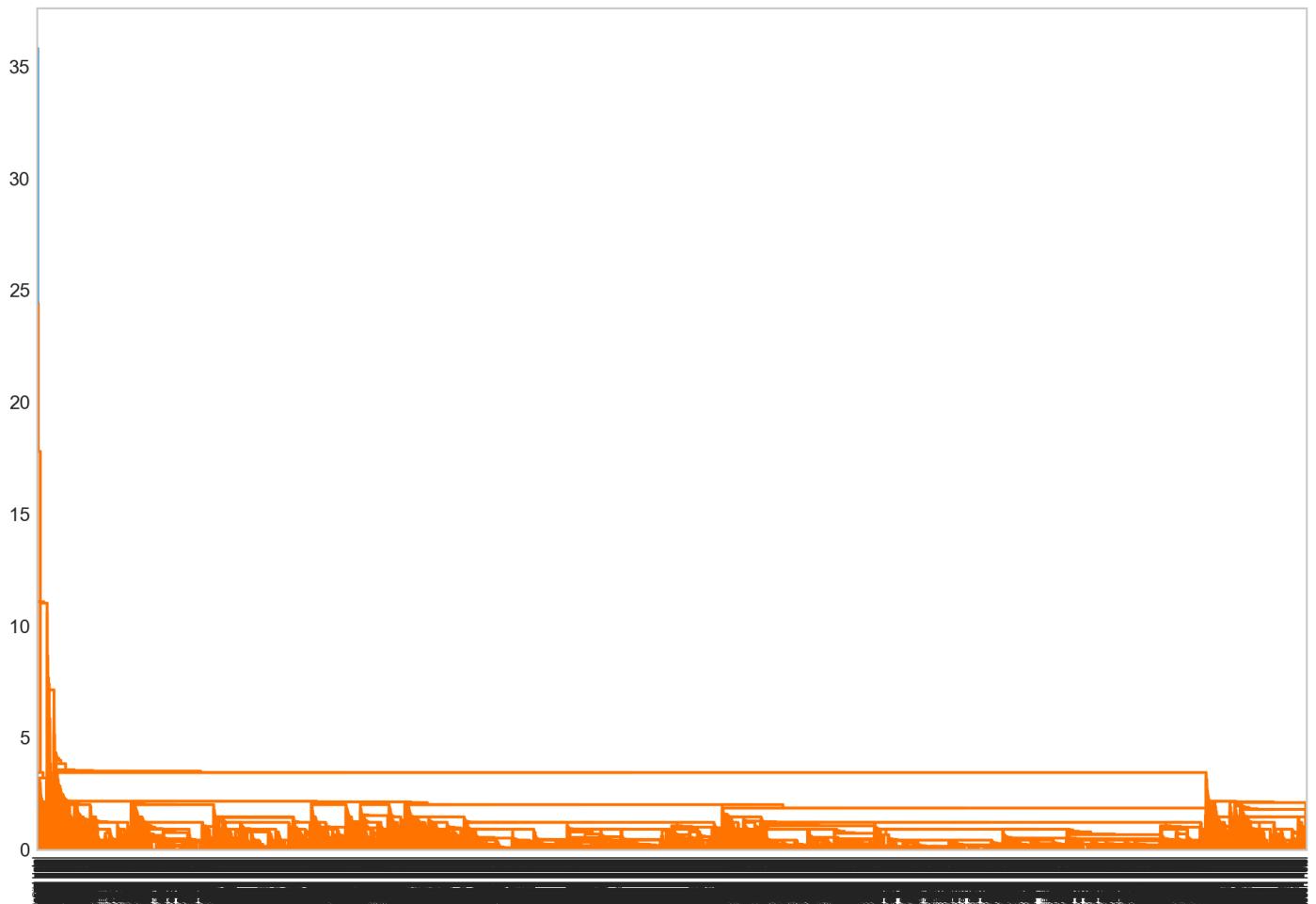
Agregación de Ward:



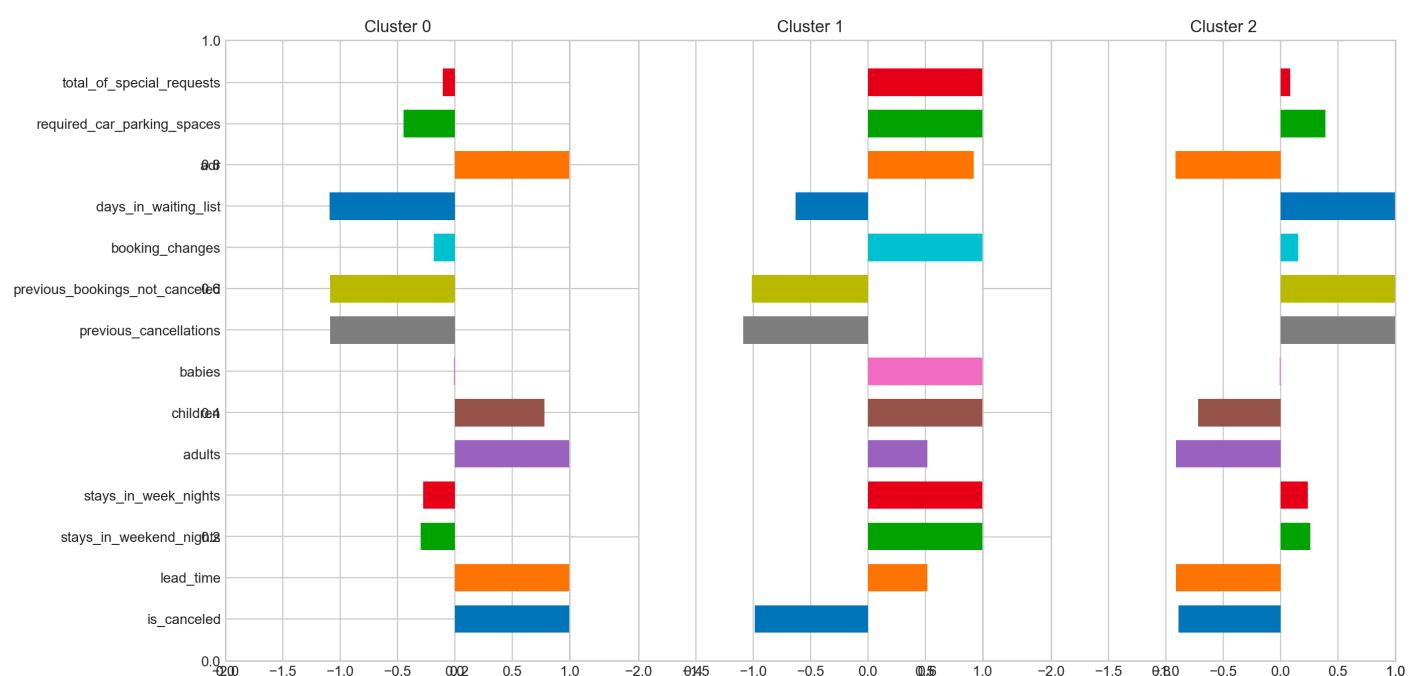
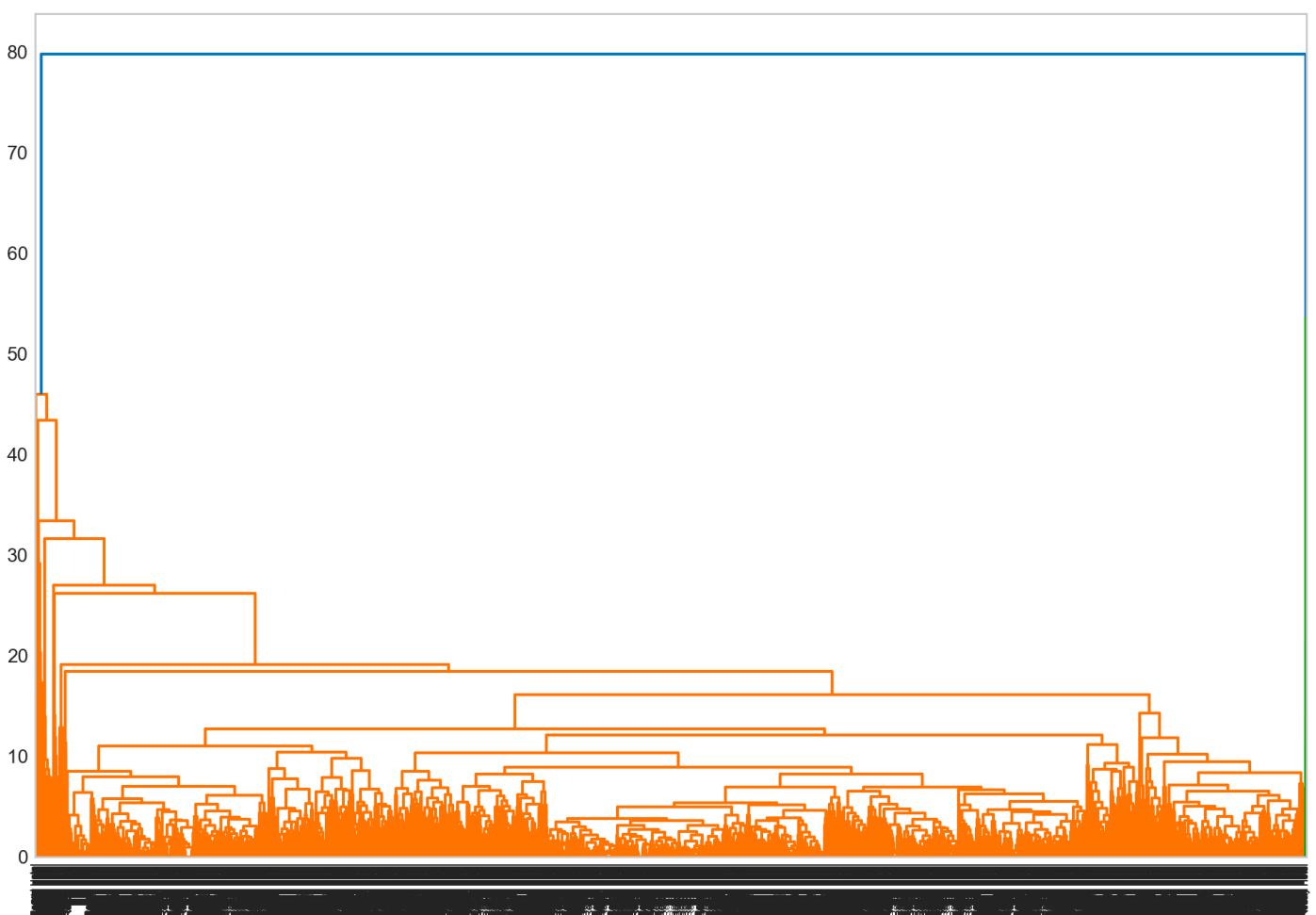
Salto promedio:

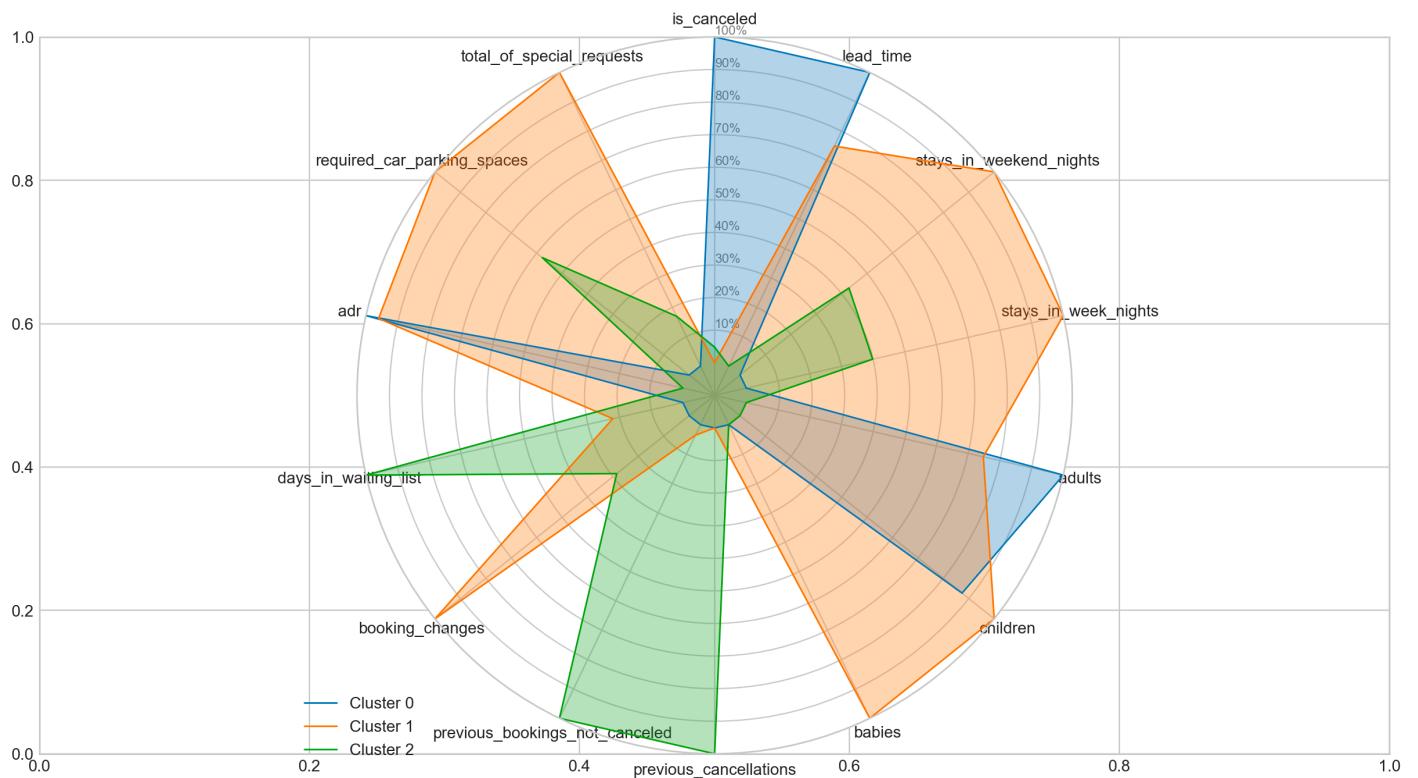
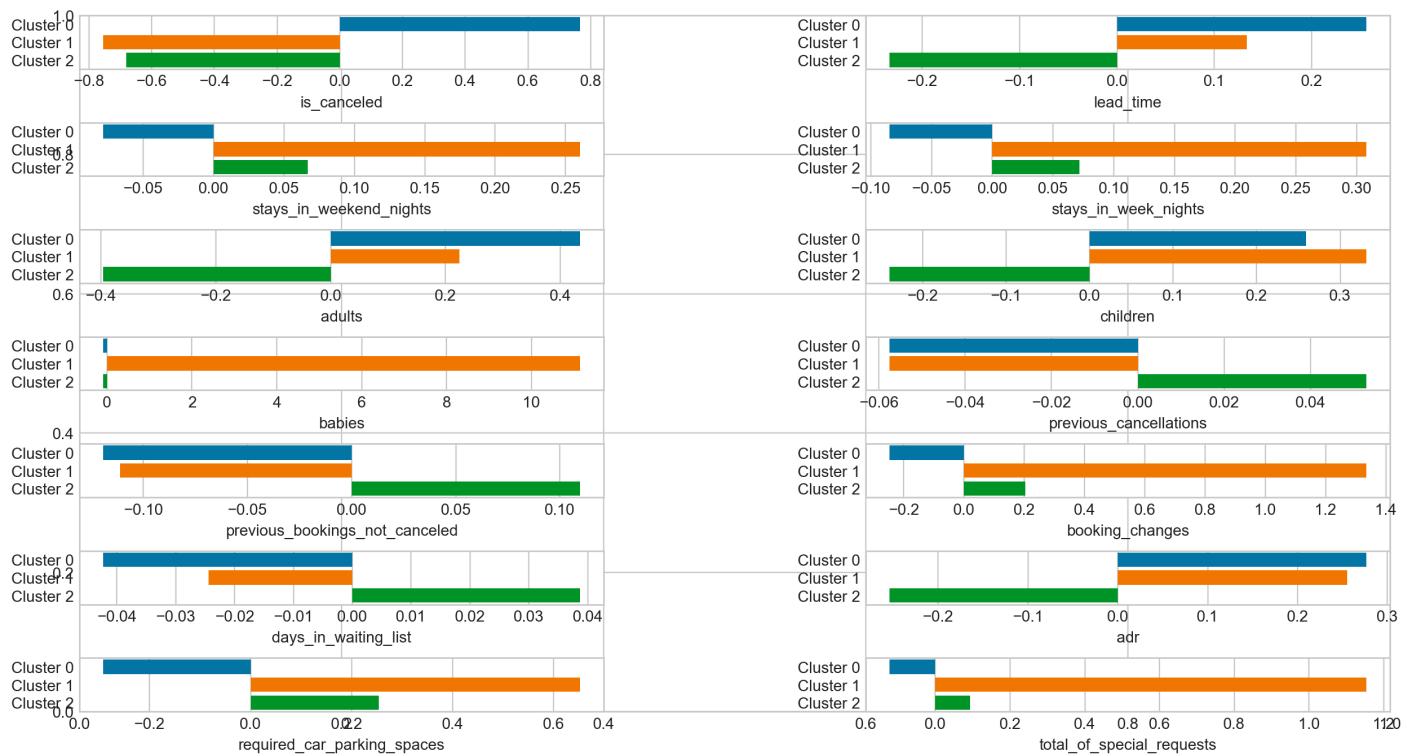


Salto mínimo:

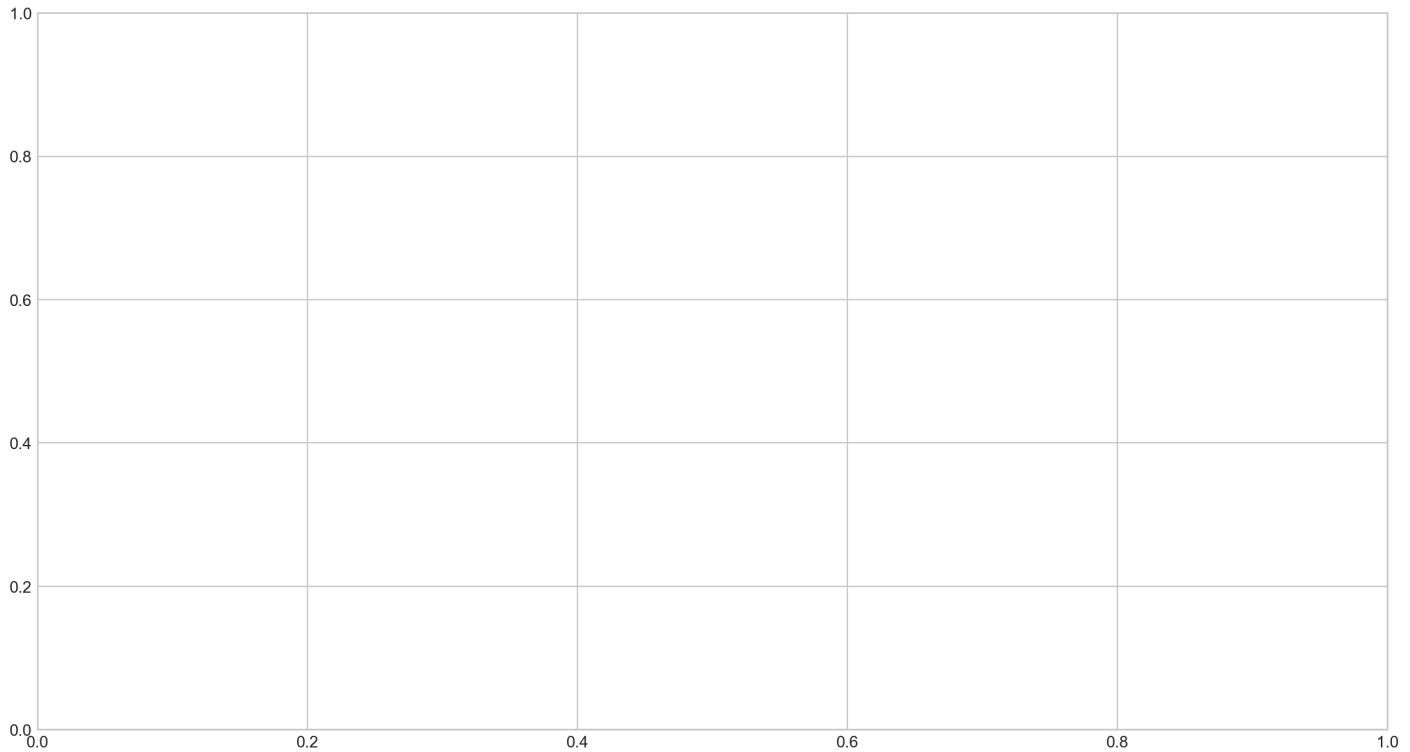
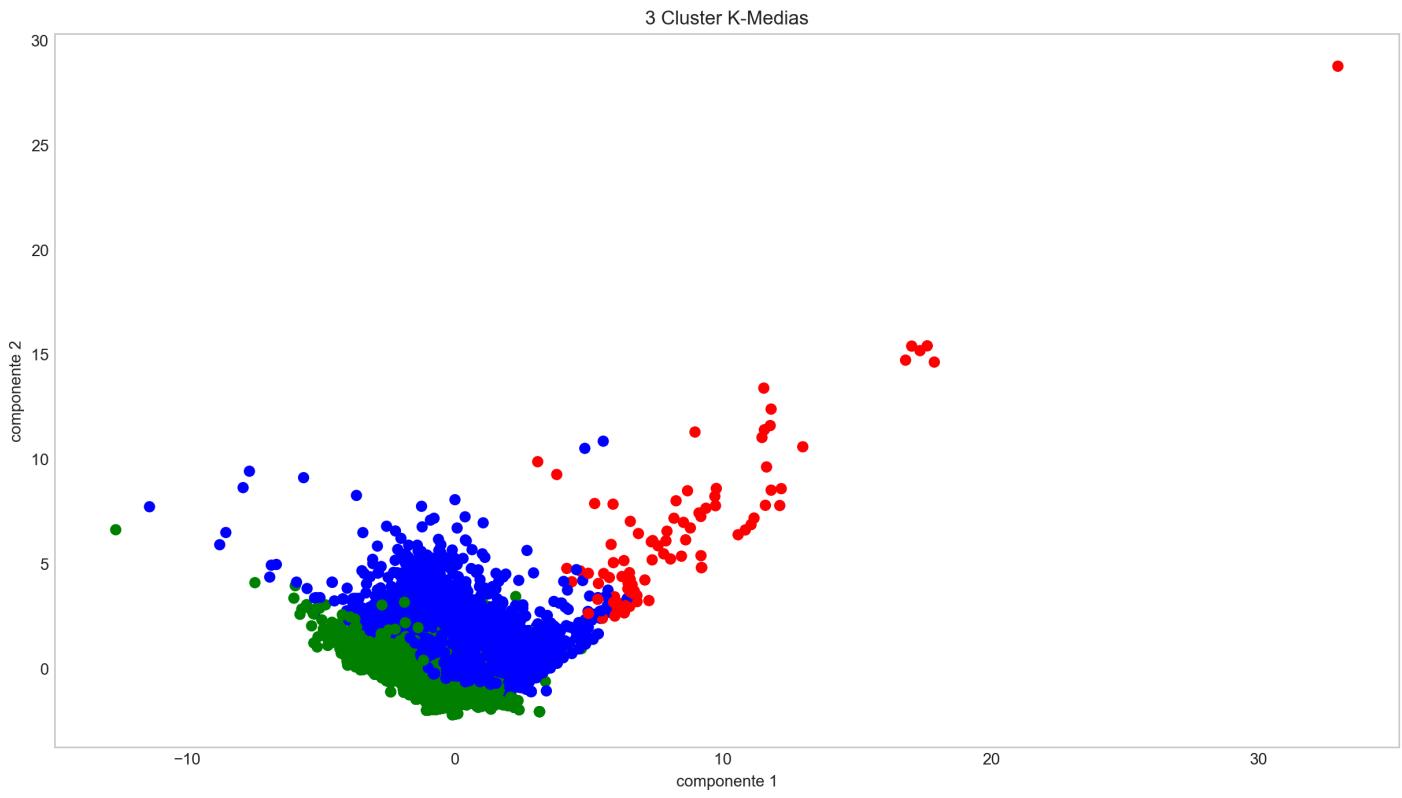


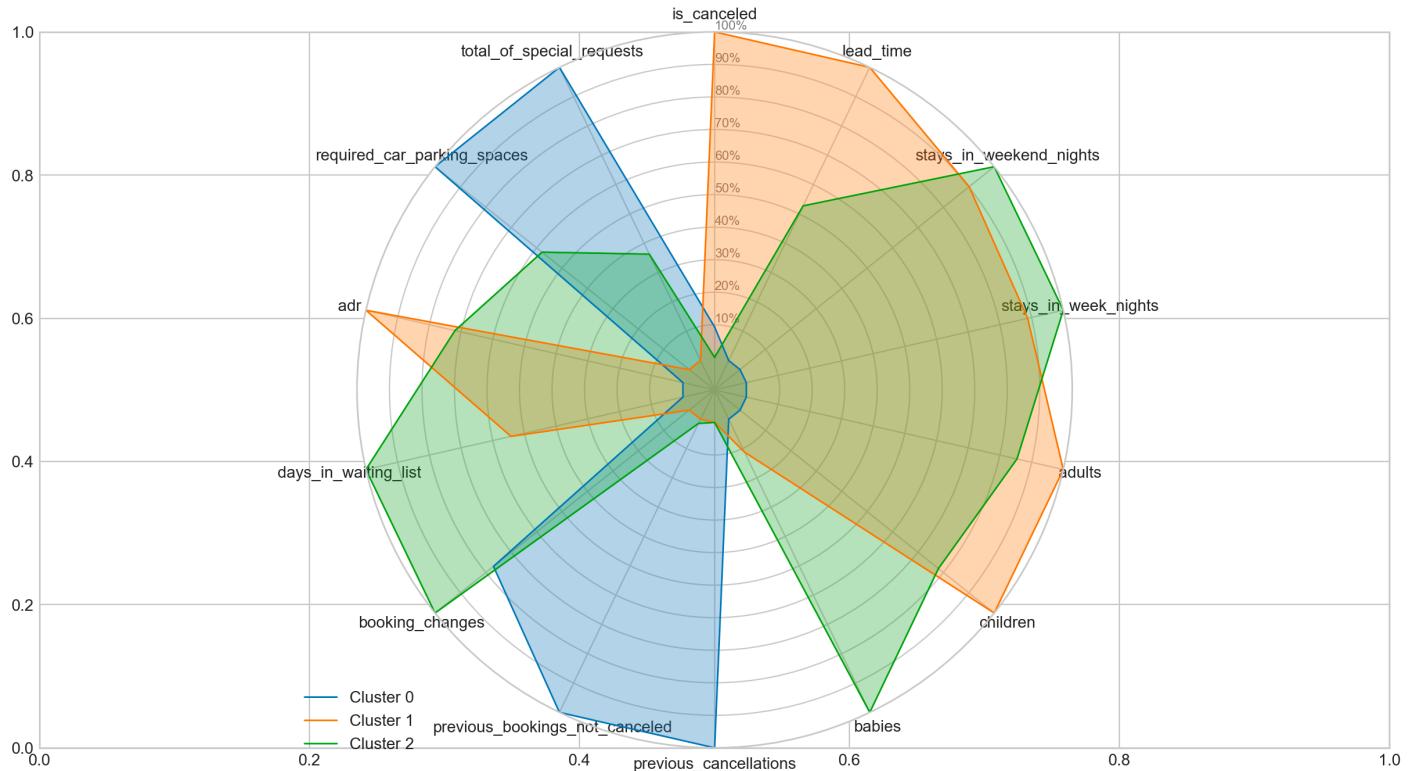
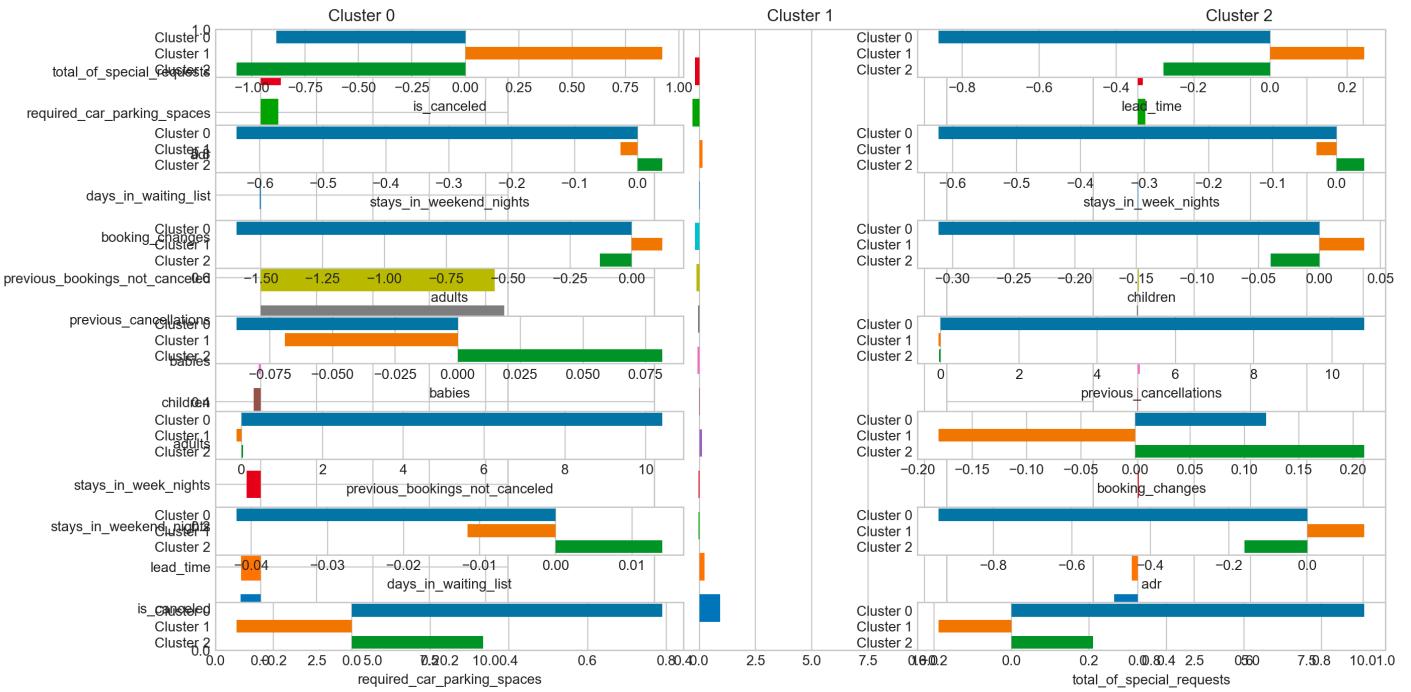
Salto máximo:

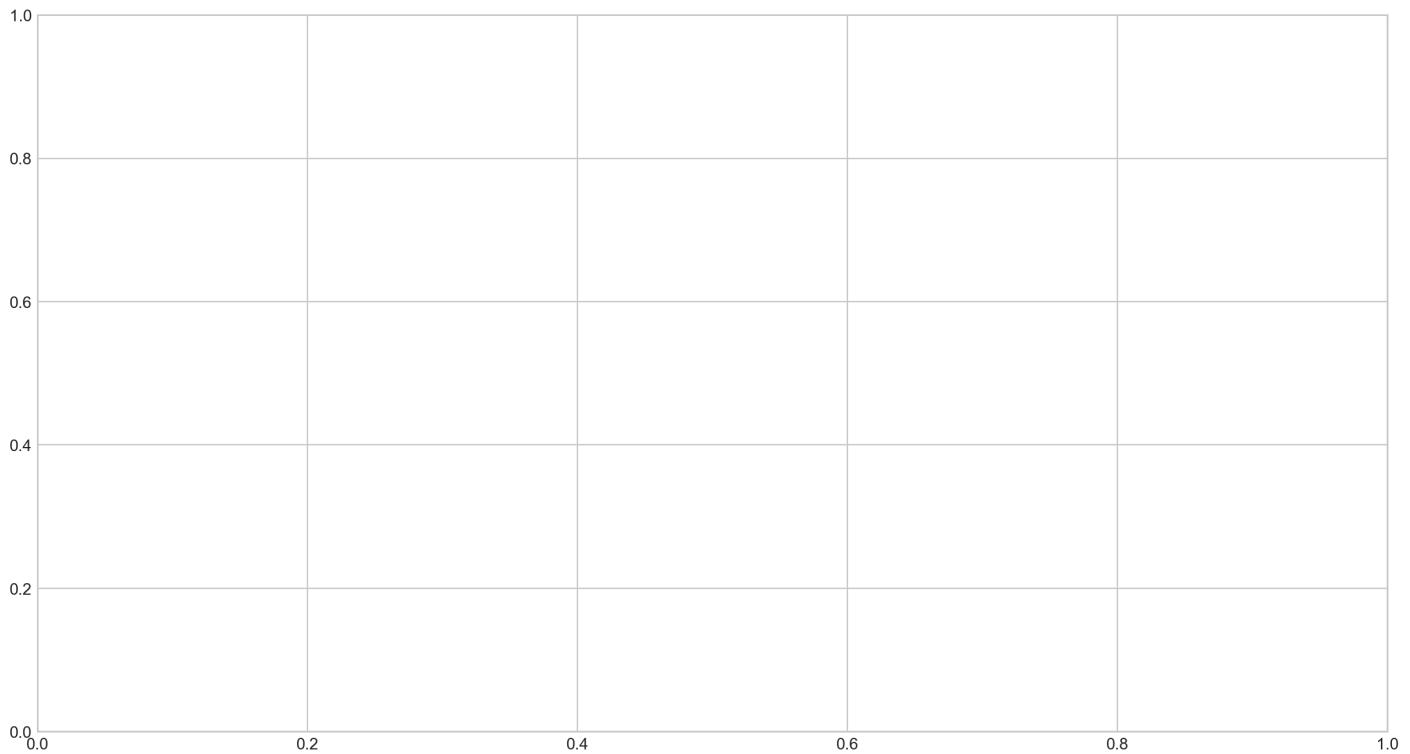
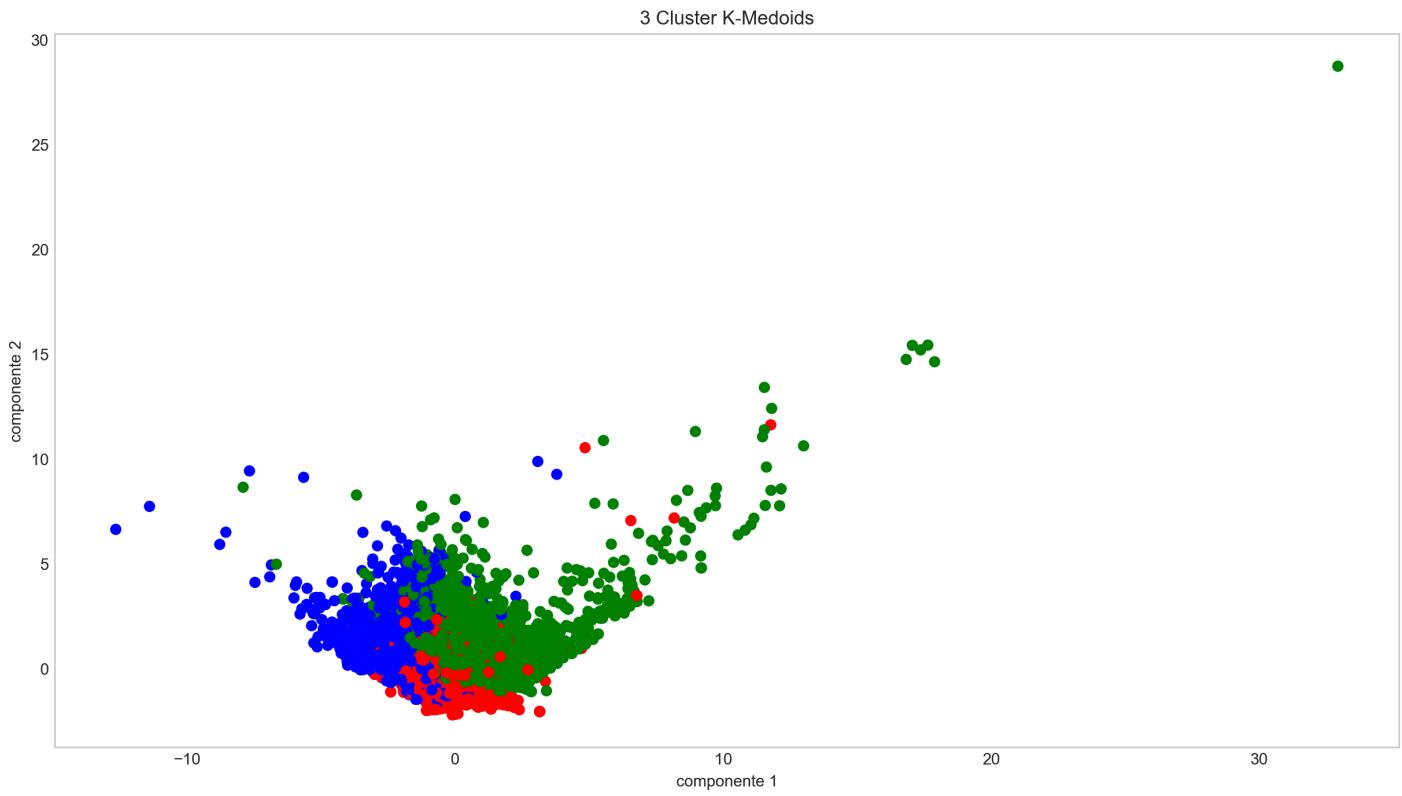


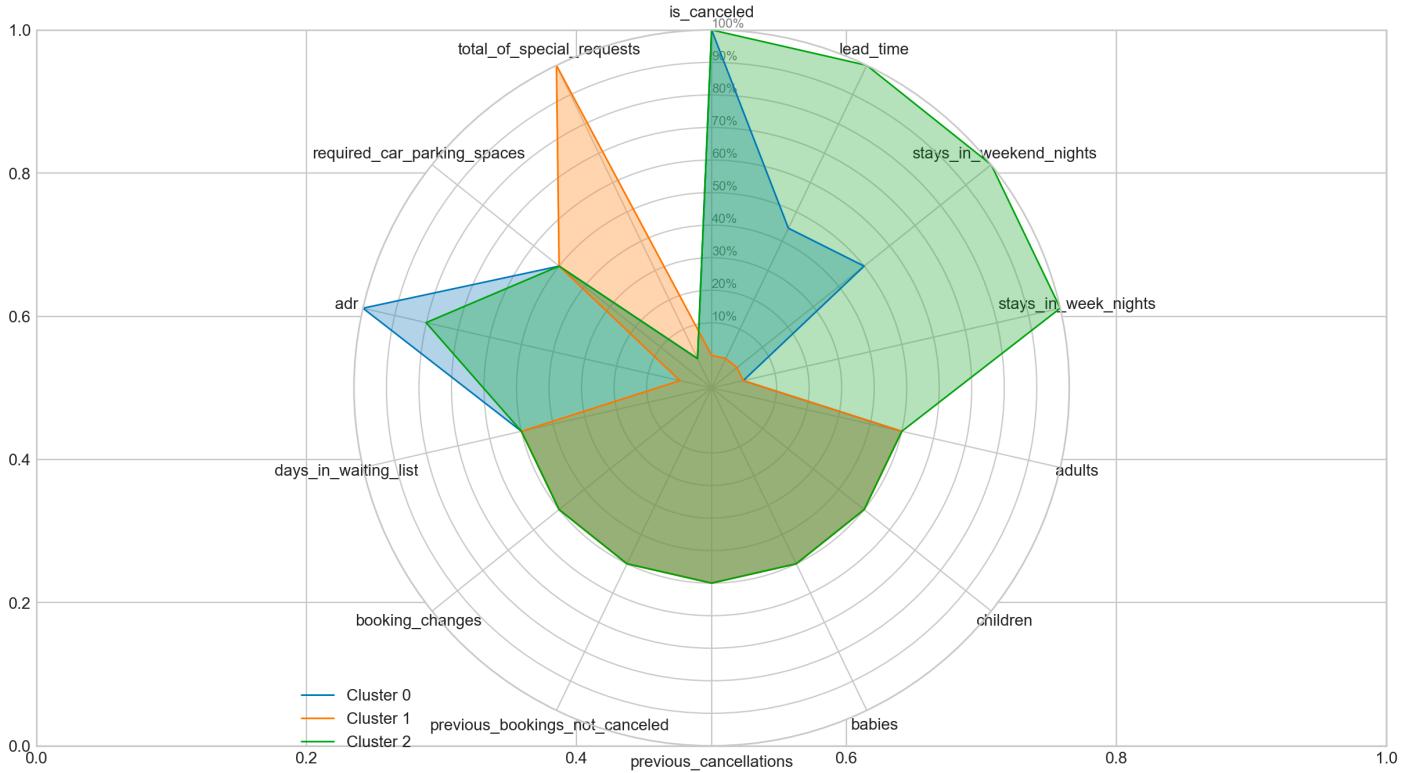
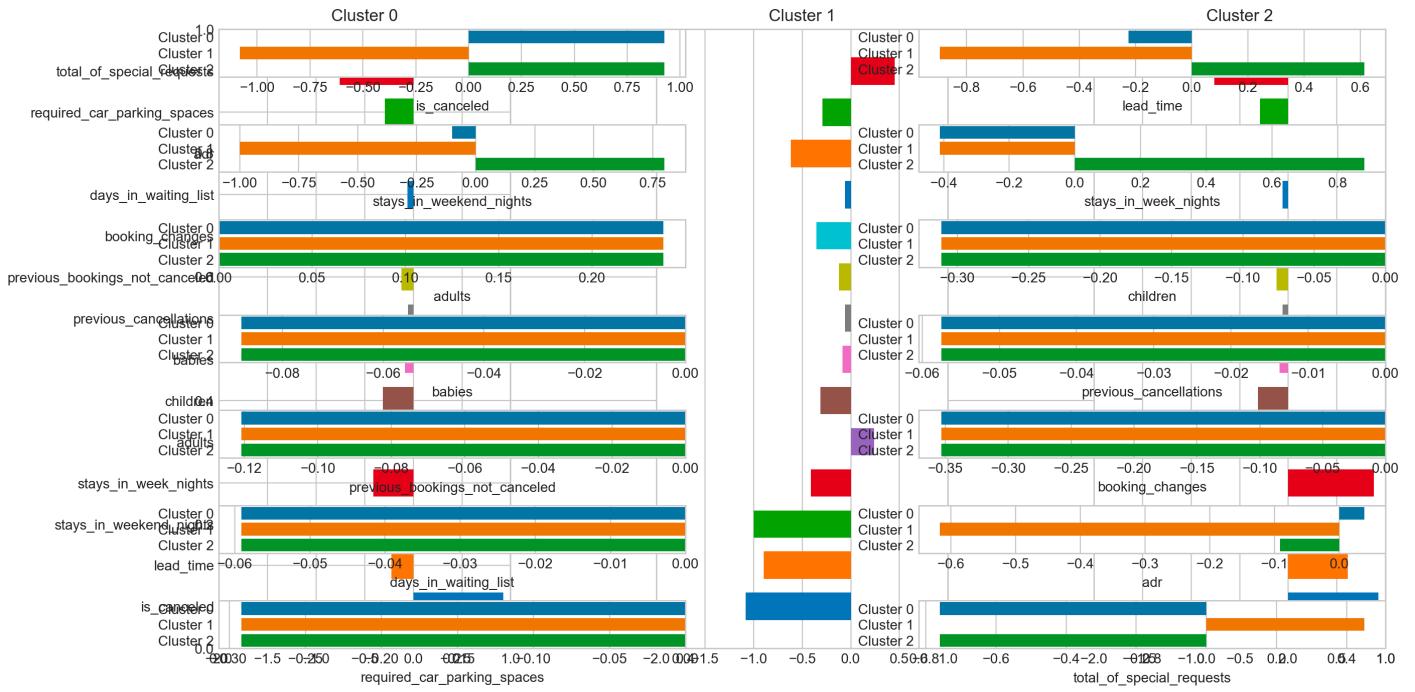


```
In [18]: Vacp.Kmeans()
```









In []:

In []: