**3.3 Análisis Multivariado**

Para poder culminar nuestro estudio es necesario realizar un análisis más elaborado; de tal manera que podamos establecer relaciones entre más de 2 variables.

En esta parte nos disponemos a investigar como se agrupa el siguiente grupo de variables:

1. Situación que propicia el robo: ¿Se puede establecer alguna relación entre el día, la hora y la zona del robo?

Para decidir como agrupar las variables vamos a hacer uso del Análisis de Componentes Principales estudiado en el capítulo 2. Mediante este método estadístico obtendremos grupos de variables que tienen características de variabilidad similares dentro del grupo y diferentes fuera de él.

A continuación estudiaremos las relaciones entre el día, la hora y la zona del robo:

**3.3.1 Día Vs. Hora Vs. Zona**

El número total de modalidades de las variables que nos disponemos estudiar es 65. El objetivo es agruparlas de acuerdo a sus características de variabilidad en no mas de 10 variables con el objeto de encontrar conjuntos mas pequeños claramente distinguibles unos de otros.

El primer paso a seguir es calcular la matriz de covarianzas de las 65 variables originales, luego calcularemos sus valores propios para determinar que porcentaje de la varianza total está contenido en cada componente y con que tanta información contribuye cada uno. A continuación de este procedimiento determinaremos que componentes consideraremos importantes y elegiremos un número razonable de ellos tomando en cuenta la cantidad de información proporcionada por cada una.

La tabla 3.60 muestra la matriz de covarianzas de las variables originales; esta es una matriz triangular superior debido a que toda matriz de covarianzas es simétrica (A=AT).

**Tabla 3.61:** Matriz de Varianzas y Covarianzas de las variables Día, Hora y Zona.

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | *LUN* | *MAR* | *MIER* | *JUE* | *VIER* | *SAB* | *DOM* | *H00* | *H01* | *H02* | *H03* | *H04* | *H05* | *H06* | *H07* | *H08* | *H09* | *H10* | *H11* | *H12* | *H13* | *H14* | *H15* | *H16* | *H17* | *H18* | *H19* | *H20* | *H21* | *H22* | *H23* | *N0* |
| LUN | 8.80 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| MAR | -1.16 | 8.68 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| MIER | -1.17 | -1.18 | 8.44 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| JUE | -1.29 | -1.30 | -1.31 | 10.70 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| VIER | -1.27 | -1.28 | -1.29 | -1.42 | 10.44 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| SAB | -1.07 | -1.07 | -1.08 | -1.19 | -1.18 | 7.61 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| DOM | -1.02 | -1.02 | -1.03 | -1.14 | -1.12 | -0.94 | 6.91 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| H00 | -0.05 | 0.04 | -0.09 | -0.02 | 0.06 | 0.17 | 0.20 | 0.20 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| H01 | 0.05 | 0.06 | -0.02 | 0.02 | 0.15 | 0.07 | -0.06 | 0.00 | 0.14 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| H02 | 0.01 | -0.05 | 0.03 | 0.01 | 0.21 | 0.24 | -0.06 | 0.02 | 0.03 | 0.18 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| H03 | -0.04 | -0.09 | -0.06 | 0.09 | -0.01 | 0.21 | 0.14 | 0.01 | 0.00 | 0.02 | 0.16 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| H04 | -0.02 | -0.09 | -0.01 | 0.23 | 0.01 | 0.00 | 0.06 | 0.00 | 0.00 | -0.01 | 0.00 | 0.16 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| H05 | 0.00 | 0.02 | 0.03 | 0.06 | -0.02 | 0.10 | -0.04 | -0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.14 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| H06 | 0.22 | 0.00 | 0.03 | 0.04 | 0.10 | 0.01 | -0.05 | 0.00 | 0.00 | -0.01 | 0.01 | -0.01 | 0.01 | 0.20 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| H07 | 0.24 | 0.13 | 0.24 | 0.16 | 0.13 | -0.01 | -0.13 | 0.03 | 0.01 | 0.02 | 0.01 | -0.01 | -0.01 | 0.01 | 0.37 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| H08 | 0.09 | 0.08 | -0.02 | 0.20 | 0.28 | -0.09 | -0.05 | 0.01 | 0.00 | 0.00 | -0.01 | 0.01 | 0.00 | 0.01 | 0.01 | 0.26 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| H09 | 0.06 | 0.03 | 0.03 | 0.09 | 0.05 | 0.01 | -0.04 | -0.01 | 0.00 | 0.00 | 0.01 | 0.02 | 0.02 | 0.00 | 0.00 | 0.00 | 0.20 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| H10 | 0.09 | 0.15 | -0.14 | -0.03 | 0.00 | 0.18 | -0.02 | 0.00 | 0.00 | -0.02 | -0.01 | 0.00 | -0.01 | 0.01 | 0.00 | 0.01 | -0.01 | 0.22 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| H11 | 0.03 | 0.00 | 0.08 | 0.05 | 0.12 | 0.18 | 0.06 | 0.03 | 0.03 | 0.03 | 0.02 | 0.00 | 0.00 | 0.01 | 0.01 | 0.00 | 0.00 | 0.00 | 0.27 |  |  |  |  |  |  |  |  |  |  |  |  |  |
| H12 | -0.04 | -0.10 | -0.01 | 0.25 | 0.24 | 0.05 | -0.01 | -0.02 | -0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.01 | 0.01 | 0.01 | 0.01 | 0.03 | 0.01 | 0.26 |  |  |  |  |  |  |  |  |  |  |  |  |
| H13 | 0.03 | 0.14 | 0.09 | 0.02 | -0.05 | -0.01 | 0.02 | 0.00 | 0.00 | 0.00 | 0.00 | -0.01 | 0.00 | 0.01 | -0.01 | 0.00 | 0.00 | -0.01 | 0.01 | 0.00 | 0.19 |  |  |  |  |  |  |  |  |  |  |  |
| H14 | -0.01 | 0.12 | 0.02 | 0.07 | 0.08 | -0.06 | 0.05 | 0.00 | 0.00 | 0.00 | -0.01 | 0.00 | -0.01 | -0.01 | 0.01 | 0.02 | -0.01 | 0.02 | 0.00 | 0.01 | 0.00 | 0.19 |  |  |  |  |  |  |  |  |  |  |
| H15 | -0.09 | 0.07 | 0.18 | 0.16 | 0.04 | -0.03 | -0.03 | 0.00 | -0.01 | 0.00 | 0.02 | 0.01 | 0.01 | 0.00 | -0.01 | 0.00 | 0.00 | -0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.18 |  |  |  |  |  |  |  |  |  |
| H16 | 0.10 | 0.03 | -0.11 | 0.05 | 0.02 | 0.03 | 0.05 | 0.01 | -0.01 | 0.00 | -0.01 | -0.01 | 0.00 | 0.02 | 0.01 | 0.01 | -0.01 | 0.00 | -0.01 | 0.00 | 0.00 | 0.01 | -0.01 | 0.15 |  |  |  |  |  |  |  |  |
| H17 | 0.05 | 0.00 | 0.12 | 0.03 | 0.01 | -0.05 | 0.11 | 0.00 | 0.00 | -0.01 | 0.01 | -0.01 | 0.01 | 0.01 | 0.01 | 0.00 | 0.01 | -0.01 | -0.01 | -0.01 | 0.00 | -0.01 | 0.01 | -0.02 | 0.17 |  |  |  |  |  |  |  |
| H18 | -0.02 | 0.07 | -0.01 | 0.17 | 0.23 | -0.10 | 0.02 | 0.01 | 0.01 | 0.01 | 0.00 | -0.02 | 0.00 | 0.01 | 0.01 | 0.00 | 0.01 | 0.01 | 0.02 | 0.01 | -0.01 | 0.02 | -0.01 | 0.00 | 0.01 | 0.26 |  |  |  |  |  |  |
| H19 | 0.48 | 0.33 | 0.30 | 0.25 | 0.33 | -0.24 | -0.16 | -0.02 | 0.00 | 0.02 | -0.02 | 0.00 | 0.00 | 0.00 | 0.07 | 0.02 | -0.03 | -0.01 | 0.00 | 0.04 | 0.01 | 0.00 | 0.04 | 0.02 | 0.02 | 0.02 | 0.83 |  |  |  |  |  |
| H20 | 0.40 | 0.73 | 0.42 | 0.24 | 0.05 | -0.18 | 0.35 | 0.02 | 0.02 | 0.02 | 0.00 | 0.03 | -0.03 | 0.01 | 0.11 | 0.04 | 0.06 | -0.05 | 0.08 | 0.01 | 0.05 | 0.00 | 0.00 | -0.01 | 0.06 | 0.00 | 0.01 | 1.44 |  |  |  |  |
| H21 | 0.07 | 0.06 | 0.23 | 0.45 | 0.21 | -0.01 | 0.35 | 0.01 | 0.02 | 0.02 | 0.02 | 0.02 | 0.01 | 0.00 | 0.07 | 0.05 | -0.01 | -0.04 | 0.05 | -0.03 | 0.00 | 0.04 | 0.02 | -0.01 | 0.00 | 0.01 | 0.12 | 0.05 | 0.92 |  |  |  |
| H22 | 0.08 | -0.02 | -0.09 | 0.31 | 0.70 | 0.24 | 0.00 | 0.02 | 0.01 | 0.03 | 0.01 | -0.02 | 0.00 | 0.04 | 0.01 | 0.01 | 0.01 | 0.04 | 0.01 | 0.04 | 0.00 | 0.01 | 0.04 | 0.01 | 0.02 | 0.01 | 0.10 | 0.06 | 0.06 | 0.67 |  |  |
| H23 | 0.09 | -0.06 | 0.13 | 0.15 | -0.06 | 0.36 | -0.11 | 0.00 | 0.00 | 0.01 | -0.01 | 0.00 | -0.01 | 0.00 | 0.01 | 0.03 | -0.03 | 0.02 | 0.01 | 0.00 | 0.01 | 0.00 | 0.01 | 0.00 | 0.00 | -0.01 | 0.01 | 0.04 | -0.05 | 0.04 | 0.42 |  |
| N0 | -0.01 | -0.01 | 0.01 | -0.01 | -0.01 | 0.01 | -0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.01 |
| N1 | -0.04 | 0.00 | 0.00 | 0.09 | -0.07 | 0.03 | 0.17 | 0.00 | -0.01 | 0.01 | 0.02 | 0.00 | 0.02 | 0.00 | 0.01 | 0.00 | 0.01 | -0.01 | 0.00 | -0.01 | 0.01 | 0.02 | 0.01 | 0.01 | 0.01 | 0.00 | 0.01 | 0.06 | 0.03 | -0.02 | 0.01 | 0.00 |
| N2 | 0.21 | 0.17 | -0.08 | 0.51 | 0.12 | 0.01 | 0.24 | 0.02 | 0.01 | 0.03 | 0.01 | -0.01 | 0.01 | 0.04 | 0.04 | 0.04 | 0.02 | 0.01 | 0.01 | 0.03 | 0.03 | 0.06 | 0.02 | 0.02 | 0.02 | 0.04 | 0.14 | 0.24 | 0.12 | 0.12 | 0.09 | 0.00 |
| N3 | 0.05 | 0.43 | 0.29 | 0.18 | 0.20 | 0.02 | -0.08 | 0.04 | 0.04 | 0.02 | 0.01 | 0.00 | -0.03 | 0.02 | 0.07 | 0.03 | 0.01 | 0.05 | 0.03 | 0.04 | 0.06 | 0.04 | 0.01 | 0.00 | 0.03 | 0.04 | 0.08 | 0.21 | 0.16 | 0.07 | 0.03 | 0.00 |
| N4 | 0.07 | 0.11 | 0.05 | 0.09 | 0.02 | 0.09 | -0.04 | 0.00 | 0.01 | 0.01 | 0.00 | 0.01 | 0.01 | 0.00 | 0.01 | 0.03 | -0.01 | 0.01 | 0.01 | 0.02 | 0.02 | 0.02 | 0.01 | 0.01 | 0.02 | 0.00 | 0.05 | 0.02 | 0.05 | 0.02 | 0.05 | 0.00 |
| N5 | 0.04 | 0.01 | 0.11 | 0.07 | 0.11 | 0.01 | -0.04 | 0.02 | 0.00 | 0.01 | -0.01 | 0.01 | 0.00 | 0.01 | 0.02 | 0.01 | 0.01 | 0.02 | 0.02 | 0.02 | 0.00 | 0.00 | 0.01 | 0.01 | -0.01 | 0.02 | 0.03 | 0.03 | 0.01 | 0.05 | 0.02 | 0.00 |
| N6 | -0.05 | -0.01 | 0.06 | 0.04 | 0.10 | 0.03 | 0.06 | 0.00 | 0.00 | 0.01 | 0.00 | 0.00 | 0.01 | 0.00 | 0.01 | 0.00 | 0.00 | 0.00 | 0.03 | 0.02 | 0.00 | 0.00 | 0.00 | -0.01 | 0.01 | 0.02 | 0.02 | 0.02 | 0.02 | 0.01 | 0.00 | 0.00 |
| N8 | -0.02 | -0.02 | -0.02 | 0.02 | 0.04 | 0.02 | -0.02 | 0.01 | 0.00 | 0.00 | 0.01 | 0.00 | 0.00 | 0.00 | -0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.01 | -0.01 | -0.02 | 0.01 | 0.01 | 0.01 | 0.00 |
| N9 | 0.03 | 0.12 | -0.07 | 0.01 | 0.00 | 0.04 | 0.03 | 0.01 | 0.01 | 0.02 | 0.00 | -0.01 | 0.02 | 0.00 | 0.01 | 0.01 | 0.00 | 0.00 | 0.01 | -0.01 | 0.00 | 0.00 | -0.01 | 0.02 | 0.00 | 0.01 | 0.03 | 0.01 | 0.02 | 0.01 | -0.01 | 0.00 |
| N10 | -0.04 | 0.22 | 0.15 | 0.10 | -0.01 | 0.10 | 0.17 | 0.04 | 0.01 | 0.03 | 0.00 | 0.01 | -0.01 | 0.02 | 0.05 | -0.02 | 0.00 | 0.01 | 0.04 | 0.00 | 0.04 | -0.01 | 0.04 | 0.01 | 0.02 | 0.01 | 0.06 | 0.17 | 0.09 | 0.08 | 0.00 | 0.01 |
| N11 | 0.18 | 0.23 | 0.17 | 0.64 | -0.02 | 0.14 | 0.15 | 0.05 | 0.01 | 0.01 | -0.02 | 0.07 | 0.02 | 0.03 | 0.09 | 0.03 | 0.00 | -0.03 | 0.05 | 0.05 | 0.09 | 0.04 | 0.04 | -0.02 | 0.02 | 0.06 | 0.20 | 0.24 | 0.28 | 0.15 | 0.05 | 0.00 |
| N12 | -0.01 | -0.01 | -0.01 | -0.01 | 0.02 | 0.01 | 0.02 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| N13 | 0.00 | 0.00 | 0.00 | 0.02 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| N14 | -0.02 | 0.01 | 0.01 | -0.01 | 0.01 | 0.04 | -0.03 | 0.00 | 0.00 | -0.01 | 0.00 | 0.00 | 0.00 | 0.00 | -0.01 | 0.01 | 0.00 | 0.00 | 0.01 | 0.00 | -0.01 | 0.00 | 0.01 | 0.00 | 0.01 | 0.00 | 0.01 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 |
| N15 | 0.00 | 0.00 | 0.00 | 0.03 | 0.00 | 0.00 | 0.00 | 0.00 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| N16 | 0.01 | -0.01 | -0.01 | -0.01 | 0.04 | 0.03 | -0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.01 | 0.01 | 0.01 | 0.01 | 0.00 |
| N17 | -0.04 | 0.04 | -0.02 | 0.09 | 0.08 | -0.01 | 0.00 | -0.01 | 0.01 | 0.01 | 0.00 | 0.00 | 0.00 | 0.01 | 0.01 | 0.01 | 0.01 | 0.00 | 0.01 | 0.01 | 0.00 | 0.00 | 0.01 | 0.00 | 0.00 | 0.01 | 0.02 | 0.01 | 0.00 | -0.01 | 0.01 | 0.00 |
| O1 | 0.06 | 0.00 | -0.06 | -0.02 | 0.09 | 0.01 | -0.01 | 0.00 | 0.01 | 0.01 | 0.00 | 0.01 | 0.01 | 0.00 | -0.01 | 0.01 | 0.00 | 0.00 | 0.00 | -0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.01 | 0.01 | 0.00 | 0.01 | 0.02 | 0.00 |
| O2 | -0.02 | -0.02 | -0.02 | 0.03 | 0.03 | -0.02 | -0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | -0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | -0.01 | -0.01 | 0.00 | -0.01 | 0.00 |
| O3 | -0.03 | 0.02 | 0.00 | -0.01 | 0.06 | 0.13 | -0.01 | 0.00 | 0.00 | 0.01 | 0.01 | 0.01 | 0.01 | -0.01 | 0.00 | 0.00 | 0.00 | 0.01 | 0.02 | 0.00 | 0.00 | 0.00 | 0.01 | 0.00 | 0.00 | 0.00 | 0.01 | 0.00 | 0.02 | 0.04 | 0.02 | 0.00 |
| O4 | -0.01 | 0.13 | 0.03 | -0.01 | 0.19 | 0.05 | 0.00 | 0.01 | 0.01 | 0.03 | 0.00 | 0.00 | 0.01 | 0.02 | 0.00 | 0.00 | 0.00 | 0.01 | -0.01 | 0.02 | -0.01 | 0.01 | 0.03 | 0.03 | 0.02 | 0.01 | 0.05 | 0.06 | 0.05 | 0.04 | 0.02 | 0.00 |
| O5 | -0.02 | -0.01 | 0.00 | 0.00 | 0.00 | 0.01 | -0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.01 | 0.00 | -0.01 | -0.01 | 0.00 | 0.00 | 0.00 | 0.00 |
| P | 0.06 | 0.08 | 0.09 | -0.02 | 0.21 | -0.03 | -0.04 | 0.01 | 0.02 | 0.01 | 0.00 | 0.00 | 0.01 | 0.02 | 0.01 | 0.00 | 0.02 | 0.01 | 0.01 | 0.00 | 0.00 | 0.00 | 0.03 | 0.00 | 0.01 | 0.02 | 0.04 | 0.04 | 0.03 | 0.07 | -0.01 | 0.00 |
| S1 | 0.00 | 0.07 | 0.00 | 0.00 | -0.03 | -0.02 | 0.01 | 0.00 | 0.00 | 0.00 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 |
| S2 | 0.09 | 0.00 | 0.02 | -0.05 | 0.13 | -0.02 | 0.03 | 0.01 | 0.01 | -0.01 | 0.00 | 0.00 | 0.00 | 0.01 | 0.01 | 0.01 | -0.01 | 0.02 | 0.01 | 0.03 | 0.01 | 0.01 | 0.01 | 0.00 | 0.00 | 0.02 | 0.02 | 0.01 | 0.01 | 0.04 | 0.00 | 0.00 |
| S3 | 0.06 | -0.11 | 0.11 | 0.00 | 0.08 | 0.10 | 0.01 | -0.01 | 0.01 | 0.01 | 0.02 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.00 | 0.02 | 0.00 | 0.00 | 0.01 | 0.00 | 0.00 | -0.01 | 0.00 | 0.02 | 0.03 | 0.02 | 0.02 | 0.03 | 0.00 |
| S4 | 0.01 | 0.08 | 0.03 | 0.00 | -0.01 | 0.05 | 0.02 | 0.01 | 0.00 | 0.00 | 0.02 | 0.00 | 0.00 | 0.01 | 0.01 | 0.00 | 0.01 | 0.01 | 0.02 | 0.00 | 0.01 | 0.00 | 0.00 | 0.00 | -0.01 | 0.00 | 0.00 | 0.04 | 0.01 | 0.01 | 0.01 | 0.00 |
| S5 | 0.08 | -0.09 | -0.02 | 0.05 | 0.15 | 0.02 | -0.02 | 0.01 | 0.01 | 0.01 | 0.00 | 0.00 | -0.01 | 0.00 | 0.02 | 0.01 | 0.02 | 0.01 | 0.01 | 0.01 | 0.01 | 0.00 | 0.00 | 0.01 | 0.01 | 0.02 | -0.01 | 0.00 | 0.01 | 0.02 | 0.01 | 0.00 |
| S6 | 0.20 | 0.07 | -0.04 | -0.06 | 0.22 | -0.03 | 0.06 | 0.01 | 0.00 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 | -0.01 | 0.05 | 0.05 | 0.00 | 0.00 | 0.02 | -0.01 | 0.02 | 0.01 | 0.01 | 0.02 | 0.01 | 0.07 | 0.10 | 0.00 | 0.04 | 0.02 | 0.00 |
| C1 | 0.06 | 0.00 | 0.20 | 0.18 | 0.05 | -0.06 | -0.05 | 0.00 | 0.01 | 0.02 | 0.01 | 0.02 | 0.03 | -0.01 | -0.01 | 0.04 | 0.02 | -0.02 | 0.01 | 0.01 | 0.00 | 0.01 | 0.01 | -0.01 | 0.00 | 0.01 | 0.07 | 0.06 | 0.04 | 0.03 | 0.00 | 0.00 |
| C2 | 0.05 | -0.08 | 0.10 | 0.07 | 0.33 | 0.21 | -0.05 | -0.02 | 0.03 | 0.02 | 0.02 | 0.00 | -0.01 | 0.03 | 0.06 | 0.01 | 0.01 | 0.00 | 0.01 | 0.01 | 0.02 | 0.01 | 0.03 | -0.01 | 0.01 | 0.05 | 0.05 | 0.16 | 0.04 | 0.08 | 0.02 | 0.00 |
| C3 | 0.59 | 0.06 | 0.17 | 0.11 | 0.33 | 0.09 | -0.13 | 0.02 | 0.03 | 0.02 | 0.03 | 0.02 | 0.00 | 0.05 | 0.16 | 0.07 | 0.00 | 0.04 | 0.05 | 0.05 | -0.01 | -0.01 | 0.01 | 0.02 | 0.03 | 0.00 | 0.11 | 0.19 | 0.15 | 0.13 | 0.05 | 0.00 |
| C4 | 0.20 | 0.25 | 0.04 | 0.61 | 0.16 | -0.01 | 0.11 | 0.06 | -0.01 | 0.05 | 0.04 | 0.03 | 0.01 | 0.06 | 0.14 | 0.07 | 0.02 | 0.04 | 0.07 | 0.03 | 0.00 | 0.01 | 0.02 | 0.03 | 0.04 | 0.03 | 0.19 | 0.18 | 0.11 | 0.08 | 0.05 | 0.00 |
| C5 | 0.06 | -0.07 | 0.09 | 0.31 | 0.24 | 0.02 | 0.11 | 0.02 | 0.02 | 0.02 | 0.02 | -0.01 | 0.03 | 0.03 | 0.05 | 0.04 | 0.03 | 0.03 | 0.06 | 0.05 | -0.01 | 0.02 | 0.02 | 0.04 | 0.03 | 0.00 | 0.01 | 0.10 | 0.07 | 0.08 | 0.03 | 0.00 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | *N1* | *N2* | *N3* | *N4* | *N5* | *N6* | *N8* | *N9* | *N10* | *N11* | *N12* | *N13* | *N14* | *N15* | *N16* | *N17* | *O1* | *O2* | *O3* | *O4* | *O5* | *P* | *S1* | *S2* | *S3* | *S4* | *S5* | *S6* | *C1* | *C2* | *C3* | *C4* | *C5* |
| N1 | 0.16 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| N2 | 0.03 | 0.65 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| N3 | -0.02 | 0.09 | 0.63 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| N4 | 0.00 | 0.03 | -0.01 | 0.22 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| N5 | 0.00 | 0.00 | 0.01 | 0.00 | 0.10 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| N6 | -0.01 | 0.02 | 0.02 | 0.00 | 0.01 | 0.07 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| N8 | 0.00 | 0.00 | 0.01 | 0.00 | 0.00 | 0.00 | 0.02 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| N9 | 0.01 | 0.02 | 0.01 | -0.01 | -0.01 | 0.00 | 0.00 | 0.13 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| N10 | -0.01 | 0.04 | 0.05 | 0.01 | 0.00 | 0.01 | 0.00 | -0.02 | 0.45 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| N11 | 0.00 | 0.10 | 0.16 | -0.01 | 0.01 | 0.04 | 0.00 | -0.02 | 0.10 | 1.09 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| N12 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.01 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| N13 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| N14 | 0.00 | 0.01 | -0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.01 | 0.00 | 0.00 | 0.00 | 0.03 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| N15 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| N16 | 0.00 | 0.00 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.01 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| N17 | 0.01 | 0.01 | 0.02 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.06 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| O1 | 0.00 | 0.01 | 0.02 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 | -0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.05 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| O2 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | -0.01 | -0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.02 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| O3 | 0.00 | -0.01 | 0.00 | 0.00 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.12 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| O4 | 0.00 | 0.03 | 0.03 | 0.02 | 0.01 | 0.00 | 0.00 | 0.00 | 0.01 | 0.00 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.02 | -0.01 | 0.00 | -0.01 | 0.27 |  |  |  |  |  |  |  |  |  |  |  |  |  |
| O5 | 0.00 | 0.00 | -0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | -0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.02 |  |  |  |  |  |  |  |  |  |  |  |  |
| P | -0.01 | -0.01 | 0.03 | 0.01 | 0.02 | 0.01 | 0.00 | 0.00 | 0.01 | 0.05 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.01 | 0.01 | 0.00 | 0.13 |  |  |  |  |  |  |  |  |  |  |  |
| S1 | 0.00 | -0.01 | -0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | -0.01 | -0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.02 |  |  |  |  |  |  |  |  |  |  |
| S2 | 0.00 | 0.01 | 0.00 | 0.02 | 0.01 | 0.00 | 0.00 | 0.00 | 0.01 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.01 | 0.00 | 0.00 | -0.01 | 0.00 | 0.00 | 0.01 | 0.00 | 0.10 |  |  |  |  |  |  |  |  |  |
| S3 | 0.00 | 0.00 | -0.01 | 0.00 | 0.02 | 0.00 | 0.00 | 0.00 | 0.00 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.01 | 0.00 | 0.00 | 0.01 | 0.02 | 0.00 | 0.00 | 0.00 | -0.01 | 0.15 |  |  |  |  |  |  |  |  |
| S4 | 0.00 | 0.02 | -0.01 | 0.01 | 0.00 | -0.01 | 0.00 | 0.01 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.01 | 0.07 |  |  |  |  |  |  |  |
| S5 | -0.02 | -0.01 | 0.02 | -0.01 | 0.00 | 0.00 | 0.00 | 0.00 | -0.02 | -0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.01 | 0.00 | 0.01 | 0.00 | 0.00 | 0.01 | 0.00 | 0.01 | 0.00 | 0.01 | 0.15 |  |  |  |  |  |  |
| S6 | 0.01 | 0.02 | -0.03 | 0.03 | 0.01 | 0.00 | 0.00 | -0.01 | 0.00 | -0.03 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | -0.01 | 0.00 | 0.00 | 0.00 | 0.02 | 0.00 | 0.01 | 0.01 | 0.00 | 0.02 | 0.00 | 0.01 | 0.29 |  |  |  |  |  |
| C1 | 0.01 | 0.03 | 0.02 | 0.03 | 0.00 | 0.00 | 0.00 | -0.01 | -0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.01 | 0.00 | 0.00 | 0.02 | 0.00 | 0.00 | -0.02 | 0.01 | 0.01 | -0.01 | 0.00 | -0.01 | 0.01 | 0.29 |  |  |  |  |
| C2 | 0.00 | 0.02 | -0.01 | 0.00 | 0.02 | 0.00 | -0.01 | 0.03 | -0.02 | -0.01 | 0.00 | 0.00 | 0.01 | 0.00 | 0.00 | 0.01 | 0.00 | -0.01 | -0.01 | -0.01 | 0.00 | 0.02 | 0.00 | 0.01 | 0.02 | 0.00 | -0.01 | 0.00 | -0.01 | 0.59 |  |  |  |
| C3 | 0.00 | 0.00 | 0.06 | 0.02 | 0.04 | 0.03 | 0.00 | 0.03 | 0.03 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.02 | 0.00 | 0.01 | -0.02 | -0.01 | 0.04 | 0.01 | 0.00 | 0.01 | 0.00 | 0.03 | 0.02 | 0.00 | 0.02 | 0.84 |  |  |
| C4 | 0.01 | 0.05 | 0.04 | 0.03 | 0.02 | 0.03 | -0.01 | 0.01 | 0.05 | 0.06 | 0.00 | 0.01 | -0.01 | 0.00 | 0.00 | -0.01 | -0.02 | -0.01 | 0.01 | 0.01 | -0.01 | 0.02 | 0.01 | 0.01 | 0.00 | 0.02 | 0.01 | 0.02 | -0.02 | -0.03 | 0.03 | 0.93 |  |
| C5 | 0.03 | 0.03 | -0.03 | 0.00 | 0.03 | 0.01 | 0.00 | 0.01 | -0.01 | -0.02 | 0.00 | 0.00 | -0.01 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.01 | -0.02 | 0.00 | 0.01 | 0.00 | 0.02 | 0.01 | 0.02 | 0.02 | 0.02 | 0.03 | 0.03 | 0.01 | 0.10 | 0.47 |

Inicialmente obtendremos 65 componentes (igual al total de variables); de estos elegiremos los que contribuyan con mayor información que una sola variable; para este caso el porcentaje de la varianza contenido en cada componente debería ser mayor que 100 / 65; en otras palabras



**Tabla 3.62:** Valores propios, % de varianza y % de varianza acumulada de la matriz de covarianzas

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Comp.** | Eigen Valores | % de la Varianza | Porcentaje Acumulado |  | **Comp.** | Eigen %Valores | % de la Varianza | Porcentaje Acumulado |
| **1** | 12.12 | 15.52 | 15.52 |  | **34** | 0.16 | 0.21 | 97.35 |
| **2** | 11.41 | 14.61 | 30.13 |  | **35** | 0.16 | 0.20 | 97.55 |
| **3** | 9.99 | 12.79 | 42.92 |  | **36** | 0.15 | 0.20 | 97.74 |
| **4** | 9.80 | 12.54 | 55.46 |  | **37** | 0.15 | 0.19 | 97.93 |
| **5** | 9.11 | 11.67 | 67.13 |  | **38** | 0.15 | 0.19 | 98.12 |
| **6** | 8.16 | 10.45 | 77.58 |  | **39** | 0.14 | 0.18 | 98.30 |
| **7** | 3.54 | 4.54 | 82.11 |  | **40** | 0.13 | 0.16 | 98.47 |
| **8** | 1.26 | 1.61 | 83.72 |  | **41** | 0.12 | 0.16 | 98.62 |
| **9** | 1.05 | 1.35 | 85.07 |  | **42** | 0.12 | 0.15 | 98.77 |
| **10** | 0.87 | 1.12 | 86.19 |  | **43** | 0.11 | 0.15 | 98.92 |
| **11** | 0.79 | 1.01 | 87.19 |  | **44** | 0.10 | 0.13 | 99.06 |
| **12** | 0.71 | 0.91 | 88.10 |  | **45** | 0.10 | 0.13 | 99.18 |
| **13** | 0.63 | 0.81 | 88.92 |  | **46** | 0.09 | 0.12 | 99.30 |
| **14** | 0.62 | 0.79 | 89.71 |  | **47** | 0.09 | 0.11 | 99.42 |
| **15** | 0.55 | 0.70 | 90.42 |  | **48** | 0.08 | 0.10 | 99.51 |
| **16** | 0.51 | 0.66 | 91.07 |  | **49** | 0.07 | 0.09 | 99.60 |
| **17** | 0.47 | 0.60 | 91.68 |  | **50** | 0.06 | 0.07 | 99.67 |
| **18** | 0.42 | 0.54 | 92.22 |  | **51** | 0.05 | 0.07 | 99.74 |
| **19** | 0.40 | 0.52 | 92.73 |  | **52** | 0.05 | 0.06 | 99.80 |
| **20** | 0.36 | 0.46 | 93.19 |  | **53** | 0.04 | 0.05 | 99.85 |
| **21** | 0.32 | 0.40 | 93.60 |  | **54** | 0.03 | 0.04 | 99.89 |
| **22** | 0.30 | 0.38 | 93.98 |  | **55** | 0.02 | 0.03 | 99.91 |
| **23** | 0.29 | 0.38 | 94.36 |  | **56** | 0.02 | 0.02 | 99.94 |
| **24** | 0.28 | 0.36 | 94.71 |  | **57** | 0.01 | 0.02 | 99.95 |
| **25** | 0.26 | 0.33 | 95.04 |  | **58** | 0.01 | 0.02 | 99.97 |
| **26** | 0.24 | 0.30 | 95.35 |  | **59** | 0.01 | 0.01 | 99.98 |
| **27** | 0.23 | 0.30 | 95.64 |  | **60** | 0.01 | 0.01 | 99.99 |
| **28** | 0.21 | 0.27 | 95.92 |  | **61** | 0.01 | 0.01 | 99.99 |
| **29** | 0.21 | 0.26 | 96.18 |  | **62** | 0.00 | 0.00 | 100.00 |
| **30** | 0.20 | 0.25 | 96.44 |  | **63** | 0.00 | 0.00 | 100 |
| **31** | 0.19 | 0.24 | 96.68 |  | **64** | 0.00 | 0.00 | 100 |
| **32** | 0.19 | 0.24 | 96.91 |  | **65** | 0.00 | 0.00 | 100 |
| **33** | 0.18 | 0.23 | 97.14 |  |  |  |  |  |

Vemos claramente que las 8 primeras componentes contribuyen con mas de 1.54% por variable, acumulando entre ellas un 83.72% de la varianza total. Esto es bueno, ya que podremos reemplazar las 65 variables originales por un número reducido de componentes que explicarán una gran parte de la información total.

Proseguimos a calcular la matriz de vectores propios correspondientes a cada valor propio que acumule más del 1.54% de la varianza total.

**Tabla 3.61:** Valores propios de los componentes principales de las variables día, hora y zona.

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| **LUN** | 0.40 | -0.02 | 0.20 | 0.01 | 0.16 | 0.23 | 0.42 | 0.03 |
| **MAR** | 0.47 | -0.13 | -0.25 | -0.24 | -0.23 | 0.41 | 0.41 | 0.06 |
| **MIER** | 0.46 | -0.29 | -0.16 | -0.33 | -0.22 | -0.04 | 0.48 | 0.03 |
| **JUE** | 0.50 | 0.06 | 0.05 | 0.10 | 0.27 | 0.19 | 0.30 | -0.01 |
| **VIER** | -0.09 | 0.48 | 0.02 | 0.13 | 0.33 | 0.17 | 0.37 | 0.00 |
| **SAB** | -0.11 | -0.03 | -0.07 | -0.09 | -0.37 | 0.28 | 0.05 | 0.01 |
| **DOM** | -0.06 | 0.14 | -0.08 | -0.12 | -0.17 | 0.34 | 0.25 | 0.05 |
| **H00** | -0.01 | 0.01 | -0.02 | 0.02 | -0.17 | -0.04 | 0.10 | 0.02 |
| **H01** | -0.02 | 0.03 | 0.00 | 0.02 | 0.00 | 0.14 | 0.05 | 0.00 |
| **H02** | -0.03 | 0.04 | 0.01 | -0.02 | -0.05 | 0.16 | 0.09 | 0.00 |
| **H03** | 0.02 | 0.01 | 0.01 | -0.01 | -0.18 | -0.02 | 0.06 | 0.00 |
| **H04** | 0.06 | 0.04 | 0.11 | -0.02 | -0.01 | -0.02 | 0.04 | 0.00 |
| **H05** | 0.02 | 0.00 | -0.01 | 0.00 | -0.01 | 0.13 | 0.02 | 0.03 |
| **H06** | -0.01 | 0.01 | 0.06 | 0.02 | 0.03 | 0.03 | 0.07 | 0.40 |
| **H07** | 0.01 | 0.01 | 0.03 | 0.00 | 0.10 | 0.08 | 0.10 | 0.41 |
| **H08** | 0.00 | 0.19 | 0.01 | 0.04 | 0.06 | 0.02 | 0.09 | 0.01 |
| **H09** | 0.01 | -0.12 | 0.01 | 0.01 | 0.02 | 0.02 | 0.14 | -0.07 |
| **H10** | -0.01 | -0.02 | 0.00 | 0.17 | -0.05 | 0.04 | 0.04 | 0.03 |
| **H11** | -0.01 | 0.02 | 0.00 | -0.02 | -0.03 | 0.02 | 0.25 | -0.02 |
| **H12** | 0.02 | 0.20 | 0.01 | -0.01 | 0.00 | 0.02 | 0.08 | 0.01 |
| **H13** | 0.01 | -0.03 | -0.02 | 0.01 | 0.03 | 0.01 | 0.21 | 0.01 |
| **H14** | 0.00 | 0.02 | -0.02 | 0.02 | 0.03 | -0.01 | 0.20 | 0.04 |
| **H15** | 0.03 | 0.03 | -0.04 | -0.04 | 0.15 | 0.02 | 0.06 | 0.04 |
| **H16** | 0.01 | 0.01 | 0.03 | 0.14 | -0.01 | -0.01 | 0.03 | 0.01 |
| **H17** | 0.00 | -0.01 | 0.01 | -0.02 | 0.03 | -0.03 | 0.07 | -0.32 |
| **H18** | 0.00 | 0.14 | -0.02 | 0.02 | 0.04 | -0.01 | 0.07 | 0.03 |
| **H19** | 0.20 | 0.05 | 0.06 | 0.06 | 0.14 | 0.09 | 0.29 | 0.39 |
| **H20** | 0.24 | -0.08 | -0.06 | 0.10 | 0.14 | -0.05 | 0.20 | -0.84 |
| **H21** | 0.08 | 0.09 | 0.00 | -0.03 | 0.06 | -0.07 | 0.42 | 0.44 |
| **H22** | -0.04 | 0.21 | 0.03 | 0.04 | -0.03 | 0.07 | 0.22 | 0.10 |
| **H23** | 0.04 | -0.01 | 0.03 | -0.04 | -0.06 | 0.21 | 0.13 | -0.04 |
| **N0** | 0.00 | 0.00 | 0.00 | -0.06 | 0.00 | 0.00 | 0.00 | 0.00 |
| **N1** | 0.03 | -0.01 | -0.01 | -0.01 | -0.02 | -0.15 | 0.05 | -0.03 |
| **N2** | 0.20 | 0.07 | 0.03 | 0.08 | 0.04 | -0.04 | 0.13 | -0.04 |
| **N3** | 0.21 | 0.02 | -0.08 | 0.03 | 0.12 | 0.08 | 0.21 | 0.04 |
| **N4** | -0.12 | 0.00 | 0.00 | 0.02 | 0.01 | 0.11 | 0.08 | 0.04 |
| **N5** | 0.00 | 0.03 | 0.01 | -0.02 | 0.03 | 0.03 | 0.17 | 0.00 |
| **N6** | -0.01 | 0.03 | -0.02 | -0.02 | 0.00 | -0.01 | 0.16 | 0.02 |
| **N8** | 0.00 | 0.07 | 0.00 | 0.00 | -0.01 | 0.01 | 0.00 | 0.01 |
| **N9** | 0.00 | -0.01 | -0.01 | 0.14 | -0.01 | 0.00 | 0.04 | 0.01 |
| **N10** | 0.22 | -0.02 | -0.06 | 0.00 | 0.01 | -0.01 | 0.12 | 0.00 |
| **N11** | 0.26 | 0.04 | -0.01 | 0.03 | 0.06 | 0.03 | 0.20 | 0.37 |
| **N12** | -0.01 | 0.01 | 0.07 | 0.00 | -0.01 | -0.01 | 0.00 | 0.00 |
| **N13** | 0.01 | 0.00 | 0.07 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **N14** | 0.00 | 0.00 | -0.01 | 0.00 | 0.00 | 0.12 | 0.00 | -0.01 |
| **N15** | 0.01 | 0.00 | 0.05 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **N16** | -0.01 | 0.01 | 0.07 | 0.00 | -0.01 | 0.01 | 0.01 | 0.00 |
| **N17** | 0.01 | 0.13 | -0.02 | 0.01 | 0.01 | 0.00 | 0.02 | 0.00 |
| **O1** | -0.02 | 0.02 | 0.12 | 0.02 | 0.00 | 0.01 | 0.02 | 0.00 |
| **O2** | 0.00 | 0.08 | 0.00 | 0.00 | 0.00 | 0.00 | -0.01 | 0.00 |
| **O3** | -0.01 | 0.01 | -0.01 | 0.00 | -0.13 | 0.03 | 0.04 | 0.02 |
| **O4** | -0.04 | 0.03 | -0.03 | 0.12 | 0.01 | 0.02 | 0.09 | 0.02 |
| **O5** | 0.00 | 0.00 | 0.00 | -0.11 | 0.00 | 0.00 | -0.08 | 0.00 |
| **P** | -0.12 | 0.03 | 0.00 | 0.00 | 0.05 | 0.03 | 0.08 | 0.02 |
| **S1** | 0.00 | -0.01 | -0.08 | 0.01 | 0.01 | 0.00 | 0.00 | -0.01 |
| **S2** | -0.03 | 0.01 | 0.12 | 0.01 | 0.02 | -0.01 | 0.05 | 0.02 |
| **S3** | -0.01 | 0.01 | 0.03 | -0.14 | -0.01 | 0.02 | 0.06 | -0.01 |
| **S4** | 0.00 | -0.01 | -0.01 | 0.11 | 0.00 | 0.01 | 0.05 | -0.02 |
| **S5** | -0.01 | 0.14 | 0.04 | 0.00 | 0.00 | 0.01 | 0.03 | -0.01 |
| **S6** | -0.05 | 0.02 | 0.14 | 0.05 | 0.03 | -0.01 | 0.09 | -0.06 |
| **C1** | 0.03 | 0.02 | 0.01 | -0.04 | 0.16 | 0.03 | 0.08 | 0.00 |
| **C2** | 0.14 | 0.08 | 0.02 | -0.04 | -0.02 | 0.07 | 0.16 | -0.16 |
| **C3** | 0.18 | 0.03 | 0.14 | 0.04 | 0.10 | 0.11 | 0.22 | -0.04 |
| **C4** | 0.15 | 0.09 | 0.01 | 0.07 | 0.08 | 0.01 | 0.17 | 0.06 |
| **C5** | 0.03 | 0.09 | 0.03 | -0.02 | 0.02 | -0.01 | 0.18 | -0.46 |

Cuando se trabaja con la matriz de covarianzas resulta complicado establecer que valores con altos y cuales no. Es por eso que es útil calcular los coeficientes de correlación bivariados entre las componentes principales y las modalidades de las variables en estudio. En la tabla 3.62 se encuentran dichos coeficientes para el ejercicio en cuestión.