In [1]:

```
#convert txt to csv
import pandas as pd
import matplotlib.pyplot as plt
```

In [2]:

```
dfg = pd.read_csv('wat-good-time-interval-100.csv')
```

In [3]:

```
dfm = pd.read_csv('wat-mal-time-interval-100.csv')
```

In [4]:

```
dfg.head()
```

Out[4]:

| | time_intervals | r0 | r1 | r2 | r3 | r4 | r5 | r6 | r7 | r8 | ... | inport_north | inport_south | inport_east |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | 100 | 6 | 1 | 1 | 1 | 5 | 5 | 5 | 6 | 0 | ... | 5 | 15 | 1 |
| 1 | 200 | 6 | 0 | 0 | 0 | 6 | 0 | 0 | 0 | 6 | ... | 10 | 0 | 2 |
| 2 | 300 | 6 | 1 | 1 | 0 | 5 | 5 | 6 | 0 | 0 | ... | 5 | 10 | 1 |
| 3 | 400 | 6 | 1 | 1 | 1 | 5 | 5 | 5 | 6 | 0 | ... | 5 | 15 | 1 |
| 4 | 500 | 7 | 2 | 0 | 0 | 5 | 6 | 0 | 0 | 0 | ... | 5 | 5 | 1 |

5 rows × 32 columns

In [5]:

```
dfm.head()
```

Out[5]:

| | time_intervals | r0 | r1 | r2 | r3 | r4 | r5 | r6 | r7 | r8 | ... | inport_north | inport_south | inport_east |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | 100 | 7 | 8 | 1 | 1 | 5 | 11 | 5 | 6 | 0 | ... | 20 | 16 | 4 |
| 1 | 200 | 6 | 6 | 0 | 0 | 7 | 5 | 0 | 0 | 12 | ... | 20 | 0 | 4 |
| 2 | 300 | 6 | 7 | 2 | 0 | 5 | 10 | 7 | 0 | 0 | ... | 20 | 15 | 4 |
| 3 | 400 | 6 | 7 | 2 | 2 | 5 | 5 | 5 | 7 | 0 | ... | 5 | 15 | 2 |
| 4 | 500 | 7 | 8 | 1 | 0 | 5 | 11 | 5 | 5 | 0 | ... | 10 | 15 | 1 |

5 rows × 32 columns

In [6]:

```
df = dfg.append(dfm, ignore_index=True)
```

In [7]:

```
df.head()
```

Out[7]:

| | time_intervals | r0 | r1 | r2 | r3 | r4 | r5 | r6 | r7 | r8 | ... | inport_north | inport_south | inport_east |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | 100 | 6 | 1 | 1 | 1 | 5 | 5 | 5 | 6 | 0 | ... | 5 | 15 | 1 |
| 1 | 200 | 6 | 0 | 0 | 0 | 6 | 0 | 0 | 0 | 6 | ... | 10 | 0 | 2 |
| 2 | 300 | 6 | 1 | 1 | 0 | 5 | 5 | 6 | 0 | 0 | ... | 5 | 10 | 1 |
| 3 | 400 | 6 | 1 | 1 | 1 | 5 | 5 | 5 | 6 | 0 | ... | 5 | 15 | 1 |
| 4 | 500 | 7 | 2 | 0 | 0 | 5 | 6 | 0 | 0 | 0 | ... | 5 | 5 | 1 |

5 rows × 32 columns

In [8]:

```
df = df.sort_values('time_intervals')
```

In [9]:

```
df.head(50)
```

Out[9]:

| | time_intervals | r0 | r1 | r2 | r3 | r4 | r5 | r6 | r7 | r8 | ... | inport_north | inport_south | inport_ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | 100 | 6 | 1 | 1 | 1 | 5 | 5 | 5 | 6 | 0 | ... | 5 | 15 | |
| 31529 | 100 | 7 | 8 | 1 | 1 | 5 | 11 | 5 | 6 | 0 | ... | 20 | 16 | |
| 31530 | 200 | 6 | 6 | 0 | 0 | 7 | 5 | 0 | 0 | 12 | ... | 20 | 0 | |
| 1 | 200 | 6 | 0 | 0 | 0 | 6 | 0 | 0 | 0 | 6 | ... | 10 | 0 | |
| 2 | 300 | 6 | 1 | 1 | 0 | 5 | 5 | 6 | 0 | 0 | ... | 5 | 10 | |
| 31531 | 300 | 6 | 7 | 2 | 0 | 5 | 10 | 7 | 0 | 0 | ... | 20 | 15 | |
| 3 | 400 | 6 | 1 | 1 | 1 | 5 | 5 | 5 | 6 | 0 | ... | 5 | 15 | |
| 31532 | 400 | 6 | 7 | 2 | 2 | 5 | 5 | 5 | 7 | 0 | ... | 5 | 15 | |
| 4 | 500 | 7 | 2 | 0 | 0 | 5 | 6 | 0 | 0 | 0 | ... | 5 | 5 | |
| 31533 | 500 | 7 | 8 | 1 | 0 | 5 | 11 | 5 | 5 | 0 | ... | 10 | 15 | |
| 31534 | 600 | 6 | 12 | 6 | 1 | 0 | 5 | 0 | 1 | 0 | ... | 0 | 10 | |
| 5 | 600 | 6 | 6 | 1 | 1 | 0 | 0 | 0 | 1 | 0 | ... | 0 | 5 | |
| 31535 | 700 | 11 | 17 | 0 | 0 | 5 | 12 | 5 | 5 | 0 | ... | 25 | 20 | |
| 6 | 700 | 11 | 6 | 0 | 0 | 5 | 5 | 5 | 5 | 0 | ... | 5 | 20 | |
| 31536 | 800 | 1 | 7 | 2 | 1 | 0 | 5 | 1 | 1 | 2 | ... | 17 | 19 | |
| 7 | 800 | 1 | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 2 | ... | 2 | 9 | |
| 31537 | 900 | 6 | 2 | 2 | 4 | 5 | 0 | 0 | 1 | 5 | ... | 13 | 12 | |
| 8 | 900 | 6 | 1 | 1 | 1 | 5 | 0 | 0 | 1 | 5 | ... | 13 | 12 | |
| 31538 | 1000 | 10 | 12 | 6 | 3 | 10 | 6 | 1 | 0 | 8 | ... | 34 | 24 | |
| 9 | 1000 | 10 | 1 | 0 | 0 | 10 | 1 | 0 | 0 | 8 | ... | 19 | 9 | |
| 31539 | 1100 | 8 | 7 | 0 | 0 | 7 | 7 | 0 | 0 | 1 | ... | 11 | 0 | |
| 10 | 1100 | 8 | 0 | 0 | 0 | 7 | 0 | 0 | 0 | 1 | ... | 6 | 0 | |
| 31540 | 1200 | 6 | 7 | 2 | 0 | 5 | 5 | 1 | 0 | 5 | ... | 25 | 0 | |
| 11 | 1200 | 6 | 1 | 1 | 0 | 5 | 0 | 0 | 0 | 5 | ... | 15 | 0 | |
| 12 | 1300 | 6 | 1 | 0 | 0 | 5 | 1 | 1 | 0 | 5 | ... | 10 | 10 | |
| 31541 | 1300 | 6 | 7 | 1 | 0 | 5 | 6 | 2 | 0 | 5 | ... | 20 | 15 | |
| 13 | 1400 | 6 | 1 | 0 | 0 | 5 | 1 | 0 | 0 | 5 | ... | 15 | 5 | |
| 31542 | 1400 | 6 | 7 | 1 | 1 | 5 | 6 | 0 | 1 | 5 | ... | 30 | 10 | |
| 14 | 1500 | 6 | 1 | 1 | 0 | 5 | 5 | 1 | 0 | 0 | ... | 5 | 5 | |
| 31543 | 1500 | 7 | 9 | 1 | 0 | 6 | 14 | 1 | 0 | 6 | ... | 21 | 16 | |
| 31544 | 1600 | 6 | 8 | 1 | 1 | 6 | 6 | 0 | 1 | 5 | ... | 33 | 20 | |
| 15 | 1600 | 6 | 0 | 0 | 0 | 6 | 0 | 0 | 0 | 5 | ... | 15 | 10 | |
| 16 | 1700 | 11 | 6 | 0 | 0 | 5 | 0 | 0 | 0 | 0 | ... | 5 | 5 | |
| 31545 | 1700 | 17 | 13 | 0 | 0 | 5 | 0 | 0 | 0 | 0 | ... | 6 | 6 | |

| | time_intervals | r0 | r1 | r2 | r3 | r4 | r5 | r6 | r7 | r8 | ... | inport_north | inport_south | inport_ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 17 | 1800 | 6 | 1 | 1 | 0 | 5 | 5 | 6 | 0 | 0 | ... | 5 | 10 | |
| 31546 | 1800 | 7 | 8 | 1 | 0 | 6 | 5 | 6 | 0 | 0 | ... | 5 | 11 | |
| 18 | 1900 | 6 | 6 | 6 | 6 | 0 | 0 | 0 | 0 | 0 | ... | 0 | 15 | |
| 31547 | 1900 | 6 | 12 | 7 | 7 | 5 | 5 | 0 | 1 | 0 | ... | 5 | 17 | |
| 19 | 2000 | 7 | 7 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | ... | 0 | 5 | |
| 31548 | 2000 | 8 | 13 | 1 | 1 | 1 | 7 | 0 | 1 | 1 | ... | 16 | 14 | |
| 20 | 2100 | 5 | 0 | 0 | 0 | 5 | 0 | 0 | 1 | 5 | ... | 10 | 15 | |
| 31549 | 2100 | 5 | 11 | 0 | 0 | 5 | 3 | 0 | 0 | 5 | ... | 19 | 15 | |
| 31550 | 2200 | 7 | 7 | 1 | 0 | 0 | 6 | 1 | 0 | 0 | ... | 15 | 0 | |
| 21 | 2200 | 7 | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | ... | 0 | 0 | |
| 22 | 2300 | 6 | 1 | 1 | 0 | 5 | 0 | 1 | 0 | 5 | ... | 10 | 10 | |
| 31551 | 2300 | 6 | 7 | 2 | 1 | 5 | 5 | 1 | 1 | 5 | ... | 25 | 20 | |
| 31552 | 2400 | 6 | 7 | 1 | 0 | 5 | 0 | 1 | 0 | 5 | ... | 10 | 10 | |
| 23 | 2400 | 6 | 0 | 0 | 0 | 5 | 0 | 0 | 0 | 5 | ... | 10 | 10 | |
| 24 | 2500 | 5 | 1 | 0 | 0 | 5 | 1 | 0 | 0 | 5 | ... | 10 | 5 | |
| 31553 | 2500 | 6 | 7 | 0 | 0 | 5 | 6 | 0 | 0 | 5 | ... | 25 | 11 | |

50 rows × 32 columns

In [10]:

```
df['tot_packets']= df.iloc[:, 1:16].sum(axis=1)
```

In [11]:

```
df['tot_mean']= df.iloc[:, 1:16].mean(axis=1)
```

In [12]:

```
df
```

Out[12]:

| | time_intervals | r0 | r1 | r2 | r3 | r4 | r5 | r6 | r7 | r8 | ... | inport_east | inport_west | outport_lc |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | 100 | 6 | 1 | 1 | 1 | 5 | 5 | 5 | 6 | 0 | ... | 1 | 3 | |
| 31529 | 100 | 7 | 8 | 1 | 1 | 5 | 11 | 5 | 6 | 0 | ... | 4 | 3 | |
| 31530 | 200 | 6 | 6 | 0 | 0 | 7 | 5 | 0 | 0 | 12 | ... | 4 | 5 | |
| 1 | 200 | 6 | 0 | 0 | 0 | 6 | 0 | 0 | 0 | 6 | ... | 2 | 0 | |
| 2 | 300 | 6 | 1 | 1 | 0 | 5 | 5 | 6 | 0 | 0 | ... | 1 | 2 | |
| ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | |
| 31524 | 3152500 | 6 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | ... | 0 | 0 | |
| 31525 | 3152600 | 7 | 7 | 7 | 0 | 0 | 0 | 0 | 0 | 0 | ... | 0 | 12 | |
| 31526 | 3152700 | 11 | 11 | 11 | 0 | 0 | 0 | 6 | 0 | 0 | ... | 6 | 12 | |
| 31527 | 3152800 | 6 | 0 | 0 | 0 | 6 | 6 | 6 | 0 | 0 | ... | 0 | 0 | |
| 31528 | 3152900 | 6 | 6 | 6 | 6 | 0 | 0 | 0 | 6 | 0 | ... | 12 | 18 | |

63046 rows × 34 columns

In [13]:

```
df.to_csv('wat-time-interval-100.csv',index=False)
```

In [14]:

```
df = pd.read_csv('wat-time-interval-100.csv')
```

In [15]:

```
df.head(50)
```

Out[15]:

| | time_intervals | r0 | r1 | r2 | r3 | r4 | r5 | r6 | r7 | r8 | ... | inport_east | inport_west | outport_loca |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | 100 | 6 | 1 | 1 | 1 | 5 | 5 | 5 | 6 | 0 | ... | 1 | 3 | 6 |
| 1 | 100 | 7 | 8 | 1 | 1 | 5 | 11 | 5 | 6 | 0 | ... | 4 | 3 | 12 |
| 2 | 200 | 6 | 6 | 0 | 0 | 7 | 5 | 0 | 0 | 12 | ... | 4 | 5 | 12 |
| 3 | 200 | 6 | 0 | 0 | 0 | 6 | 0 | 0 | 0 | 6 | ... | 2 | 0 | 6 |
| 4 | 300 | 6 | 1 | 1 | 0 | 5 | 5 | 6 | 0 | 0 | ... | 1 | 2 | 6 |
| 5 | 300 | 6 | 7 | 2 | 0 | 5 | 10 | 7 | 0 | 0 | ... | 4 | 3 | 13 |
| 6 | 400 | 6 | 1 | 1 | 1 | 5 | 5 | 5 | 6 | 0 | ... | 1 | 3 | 6 |
| 7 | 400 | 6 | 7 | 2 | 2 | 5 | 5 | 5 | 7 | 0 | ... | 2 | 5 | 12 |
| 8 | 500 | 7 | 2 | 0 | 0 | 5 | 6 | 0 | 0 | 0 | ... | 1 | 2 | 7 |
| 9 | 500 | 7 | 8 | 1 | 0 | 5 | 11 | 5 | 5 | 0 | ... | 1 | 3 | 13 |
| 10 | 600 | 6 | 12 | 6 | 1 | 0 | 5 | 0 | 1 | 0 | ... | 2 | 3 | 12 |
| 11 | 600 | 6 | 6 | 1 | 1 | 0 | 0 | 0 | 1 | 0 | ... | 1 | 3 | 6 |
| 12 | 700 | 11 | 17 | 0 | 0 | 5 | 12 | 5 | 5 | 0 | ... | 3 | 1 | 22 |
| 13 | 700 | 11 | 6 | 0 | 0 | 5 | 5 | 5 | 5 | 0 | ... | 0 | 1 | 11 |
| 14 | 800 | 1 | 7 | 2 | 1 | 0 | 5 | 1 | 1 | 2 | ... | 6 | 4 | 7 |
| 15 | 800 | 1 | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 2 | ... | 3 | 2 | 1 |
| 16 | 900 | 6 | 2 | 2 | 4 | 5 | 0 | 0 | 1 | 5 | ... | 2 | 5 | 7 |
| 17 | 900 | 6 | 1 | 1 | 1 | 5 | 0 | 0 | 1 | 5 | ... | 2 | 3 | 6 |
| 18 | 1000 | 10 | 12 | 6 | 3 | 10 | 6 | 1 | 0 | 8 | ... | 5 | 2 | 21 |
| 19 | 1000 | 10 | 1 | 0 | 0 | 10 | 1 | 0 | 0 | 8 | ... | 2 | 1 | 10 |
| 20 | 1100 | 8 | 7 | 0 | 0 | 7 | 7 | 0 | 0 | 1 | ... | 6 | 0 | 14 |
| 21 | 1100 | 8 | 0 | 0 | 0 | 7 | 0 | 0 | 0 | 1 | ... | 3 | 0 | 7 |
| 22 | 1200 | 6 | 7 | 2 | 0 | 5 | 5 | 1 | 0 | 5 | ... | 3 | 3 | 12 |
| 23 | 1200 | 6 | 1 | 1 | 0 | 5 | 0 | 0 | 0 | 5 | ... | 1 | 2 | 6 |
| 24 | 1300 | 6 | 1 | 0 | 0 | 5 | 1 | 1 | 0 | 5 | ... | 5 | 1 | 7 |
| 25 | 1300 | 6 | 7 | 1 | 0 | 5 | 6 | 2 | 0 | 5 | ... | 8 | 2 | 13 |
| 26 | 1400 | 6 | 1 | 0 | 0 | 5 | 1 | 0 | 0 | 5 | ... | 1 | 1 | 6 |
| 27 | 1400 | 6 | 7 | 1 | 1 | 5 | 6 | 0 | 1 | 5 | ... | 3 | 3 | 12 |
| 28 | 1500 | 6 | 1 | 1 | 0 | 5 | 5 | 1 | 0 | 0 | ... | 3 | 2 | 6 |
| 29 | 1500 | 7 | 9 | 1 | 0 | 6 | 14 | 1 | 0 | 6 | ... | 5 | 7 | 14 |
| 30 | 1600 | 6 | 8 | 1 | 1 | 6 | 6 | 0 | 1 | 5 | ... | 4 | 2 | 14 |
| 31 | 1600 | 6 | 0 | 0 | 0 | 6 | 0 | 0 | 0 | 5 | ... | 1 | 0 | 6 |
| 32 | 1700 | 11 | 6 | 0 | 0 | 5 | 0 | 0 | 0 | 0 | ... | 0 | 1 | 11 |
| 33 | 1700 | 17 | 13 | 0 | 0 | 5 | 0 | 0 | 0 | 0 | ... | 0 | 6 | 18 |

| | time_intervals | r0 | r1 | r2 | r3 | r4 | r5 | r6 | r7 | r8 | ... | inport_east | inport_west | outport_loca |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 34 | 1800 | 6 | 1 | 1 | 0 | 5 | 5 | 6 | 0 | 0 | ... | 1 | 2 | 6 |
| 35 | 1800 | 7 | 8 | 1 | 0 | 6 | 5 | 6 | 0 | 0 | ... | 2 | 2 | 13 |
| 36 | 1900 | 6 | 6 | 6 | 6 | 0 | 0 | 0 | 0 | 0 | ... | 0 | 3 | 6 |
| 37 | 1900 | 6 | 12 | 7 | 7 | 5 | 5 | 0 | 1 | 0 | ... | 2 | 10 | 12 |
| 38 | 2000 | 7 | 7 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | ... | 0 | 4 | 6 |
| 39 | 2000 | 8 | 13 | 1 | 1 | 1 | 7 | 0 | 1 | 1 | ... | 4 | 9 | 12 |
| 40 | 2100 | 5 | 0 | 0 | 0 | 5 | 0 | 0 | 1 | 5 | ... | 2 | 0 | 6 |
| 41 | 2100 | 5 | 11 | 0 | 0 | 5 | 3 | 0 | 0 | 5 | ... | 1 | 0 | 17 |
| 42 | 2200 | 7 | 7 | 1 | 0 | 0 | 6 | 1 | 0 | 0 | ... | 5 | 2 | 13 |
| 43 | 2200 | 7 | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | ... | 2 | 2 | 7 |
| 44 | 2300 | 6 | 1 | 1 | 0 | 5 | 0 | 1 | 0 | 5 | ... | 2 | 2 | 6 |
| 45 | 2300 | 6 | 7 | 2 | 1 | 5 | 5 | 1 | 1 | 5 | ... | 5 | 4 | 12 |
| 46 | 2400 | 6 | 7 | 1 | 0 | 5 | 0 | 1 | 0 | 5 | ... | 1 | 1 | 11 |
| 47 | 2400 | 6 | 0 | 0 | 0 | 5 | 0 | 0 | 0 | 5 | ... | 0 | 0 | 5 |
| 48 | 2500 | 5 | 1 | 0 | 0 | 5 | 1 | 0 | 0 | 5 | ... | 2 | 1 | 6 |
| 49 | 2500 | 6 | 7 | 0 | 0 | 5 | 6 | 0 | 0 | 5 | ... | 4 | 1 | 13 |

50 rows × 34 columns

In [16]:

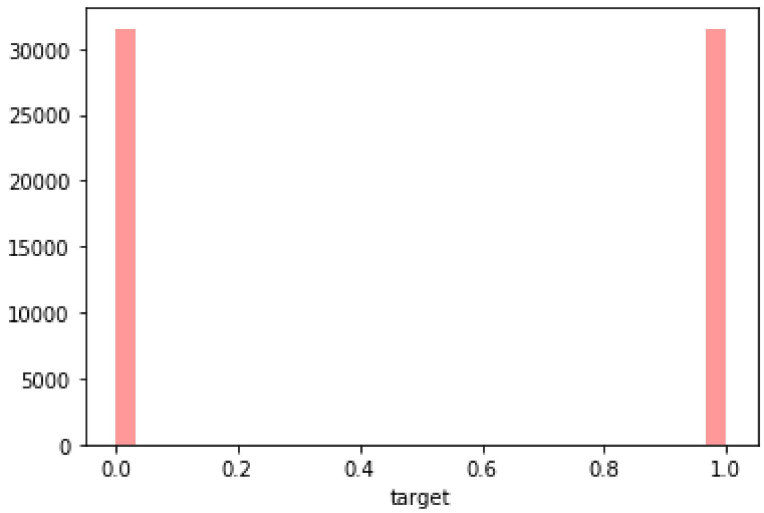
```
import seaborn as sns
```

In [17]:

```
sns.distplot(df['target'], kde = False, bins=30, color='red')
```

Out[17]:

```
<matplotlib.axes._subplots.AxesSubplot at 0x1be1e187f88>
```



In [18]:

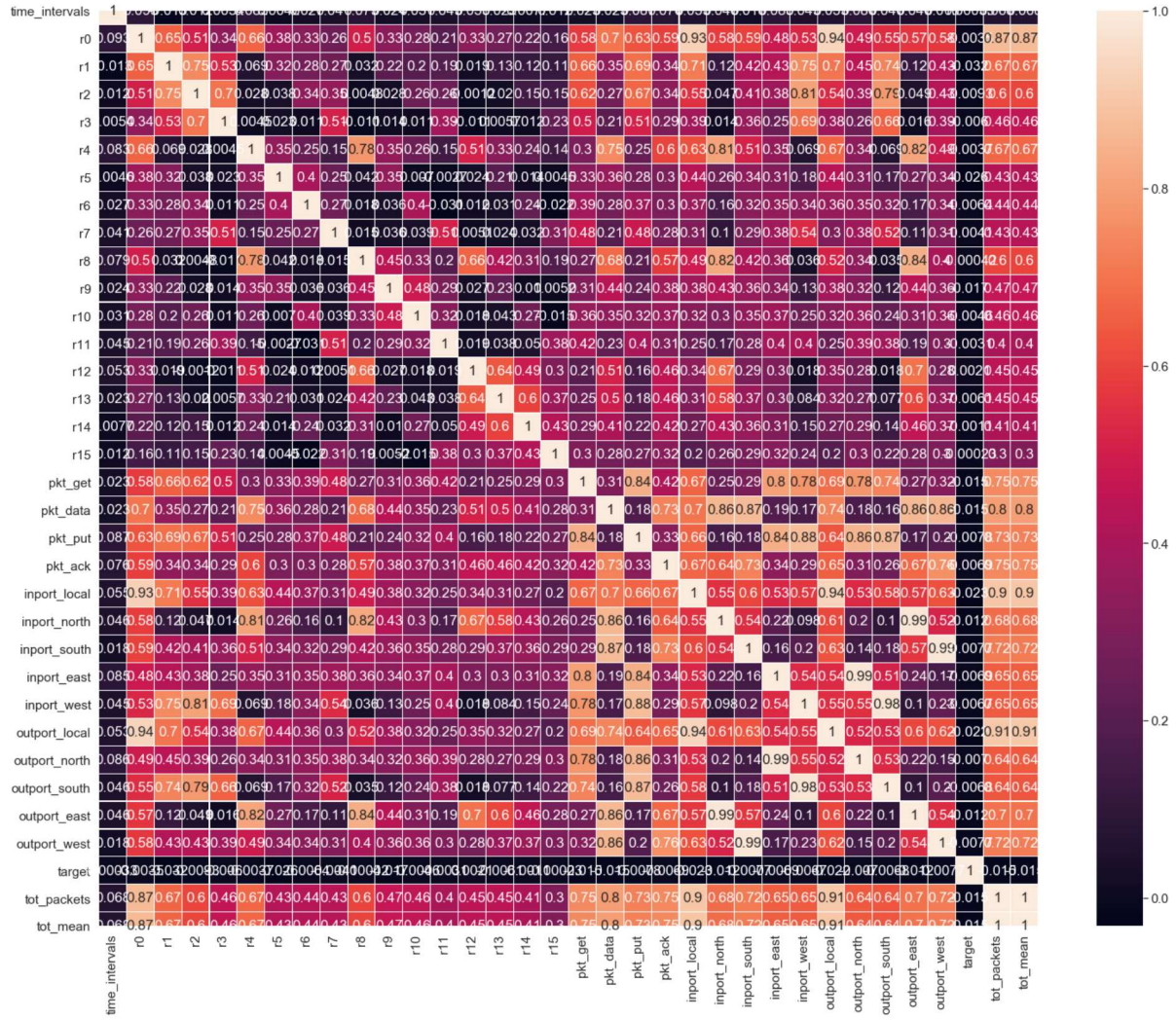
```
df.isnull().sum()
```

Out[18]:

```
time_intervals    0
r0                0
r1                0
r2                0
r3                0
r4                0
r5                0
r6                0
r7                0
r8                0
r9                0
r10               0
r11               0
r12               0
r13               0
r14               0
r15               0
pkt_get           0
pkt_data          0
pkt_put           0
pkt_ack           0
inport_local      0
inport_north      0
inport_south      0
inport_east       0
inport_west       0
outport_local     0
outport_north     0
outport_south     0
outport_east      0
outport_west      0
target            0
tot_packets       0
tot_mean          0
dtype: int64
```

In [19]:

```
plt.figure(figsize=(25,20))
plt.rcParams["axes.labelsize"] = 20
sns.set(font_scale=1.4)
sns.heatmap(df.corr(), annot = True ,linewidths=.1)
plt.show()
```



In [20]:

```
df_corr = df.corr()
df_corr
```

Out[20]:

| | time_intervals | r0 | r1 | r2 | r3 | r4 | r5 | |
|---|---|---|---|---|---|---|---|---|
| time_intervals | 1.000000 | 0.093290 | -0.012849 | 0.011736 | 0.005416 | 0.082749 | 0.004555 | 0.( |
| r0 | 0.093290 | 1.000000 | 0.653889 | 0.507160 | 0.340777 | 0.661897 | 0.379204 | 0.: |
| r1 | -0.012849 | 0.653889 | 1.000000 | 0.750968 | 0.526911 | 0.068831 | 0.317016 | 0.: |
| r2 | 0.011736 | 0.507160 | 0.750968 | 1.000000 | 0.701754 | 0.027827 | 0.037948 | 0.: |
| r3 | 0.005416 | 0.340777 | 0.526911 | 0.701754 | 1.000000 | 0.004526 | 0.022720 | 0.( |
| r4 | 0.082749 | 0.661897 | 0.068831 | 0.027827 | 0.004526 | 1.000000 | 0.349372 | 0.: |
| r5 | 0.004555 | 0.379204 | 0.317016 | 0.037948 | 0.022720 | 0.349372 | 1.000000 | 0.: |
| r6 | 0.026973 | 0.325477 | 0.276059 | 0.343140 | 0.011406 | 0.248422 | 0.398816 | 1.( |
| r7 | 0.040763 | 0.262398 | 0.269963 | 0.352931 | 0.508766 | 0.151741 | 0.250118 | 0.: |
| r8 | 0.078900 | 0.503852 | 0.031960 | 0.004822 | -0.010799 | 0.778664 | 0.042090 | 0.( |
| r9 | 0.023733 | 0.333070 | 0.215330 | 0.027869 | 0.013805 | 0.353675 | 0.349830 | 0.( |
| r10 | 0.031089 | 0.282609 | 0.198526 | 0.257074 | 0.010885 | 0.260424 | 0.006967 | 0.4 |
| r11 | 0.045011 | 0.208082 | 0.194196 | 0.262244 | 0.387462 | 0.145682 | -0.002734 | -0.( |
| r12 | 0.052945 | 0.327811 | 0.019444 | -0.001196 | -0.011293 | 0.513167 | 0.024180 | 0.( |
| r13 | 0.022854 | 0.272327 | 0.133172 | 0.020437 | 0.005685 | 0.325217 | 0.205143 | 0.( |
| r14 | 0.007743 | 0.215413 | 0.124177 | 0.153264 | 0.011667 | 0.244657 | 0.014015 | 0.: |
| r15 | 0.012332 | 0.155611 | 0.114480 | 0.154060 | 0.231545 | 0.144339 | 0.004544 | -0.( |
| pkt_get | 0.023374 | 0.580321 | 0.656525 | 0.621837 | 0.497079 | 0.296395 | 0.327642 | 0. |
| pkt_data | 0.023114 | 0.703021 | 0.348643 | 0.273474 | 0.214634 | 0.750577 | 0.363267 | 0.: |
| pkt_put | 0.087061 | 0.632444 | 0.692807 | 0.669859 | 0.513947 | 0.247464 | 0.277194 | 0.: |
| pkt_ack | 0.076263 | 0.591077 | 0.344848 | 0.338829 | 0.291311 | 0.599954 | 0.295722 | 0.: |
| inport_local | 0.054773 | 0.928790 | 0.714592 | 0.554794 | 0.387384 | 0.625095 | 0.437670 | 0.: |
| inport_north | 0.045741 | 0.582999 | 0.117839 | 0.047455 | 0.013963 | 0.812326 | 0.256095 | 0. |
| inport_south | 0.017659 | 0.594529 | 0.417066 | 0.407609 | 0.361163 | 0.512715 | 0.340630 | 0.: |
| inport_east | 0.084702 | 0.482721 | 0.429038 | 0.376271 | 0.251580 | 0.354242 | 0.313552 | 0.: |
| inport_west | 0.045343 | 0.529766 | 0.750239 | 0.806957 | 0.688074 | 0.068810 | 0.179492 | 0.: |
| outport_local | 0.053308 | 0.939613 | 0.699315 | 0.538435 | 0.377834 | 0.665000 | 0.436844 | 0.: |
| outport_north | 0.085861 | 0.491962 | 0.448013 | 0.392350 | 0.262995 | 0.335248 | 0.309670 | 0.: |
| outport_south | 0.046415 | 0.548348 | 0.736740 | 0.786028 | 0.660620 | 0.068637 | 0.170792 | 0.: |
| outport_east | 0.045768 | 0.566045 | 0.118581 | 0.049323 | 0.015933 | 0.815389 | 0.268189 | 0. |
| outport_west | 0.017681 | 0.576227 | 0.429987 | 0.433140 | 0.390455 | 0.488248 | 0.339310 | 0.: |
| target | 0.000330 | -0.003530 | -0.031543 | -0.009298 | -0.006043 | -0.003693 | -0.026236 | -0.( |
| tot_packets | 0.068217 | 0.867312 | 0.667443 | 0.602962 | 0.463569 | 0.671029 | 0.430830 | 0.4 |
| tot_mean | 0.068217 | 0.867312 | 0.667443 | 0.602962 | 0.463569 | 0.671029 | 0.430830 | 0.4 |

34 rows × 34 columns

In [21]:

```
df_corr['target']
```

Out[21]:

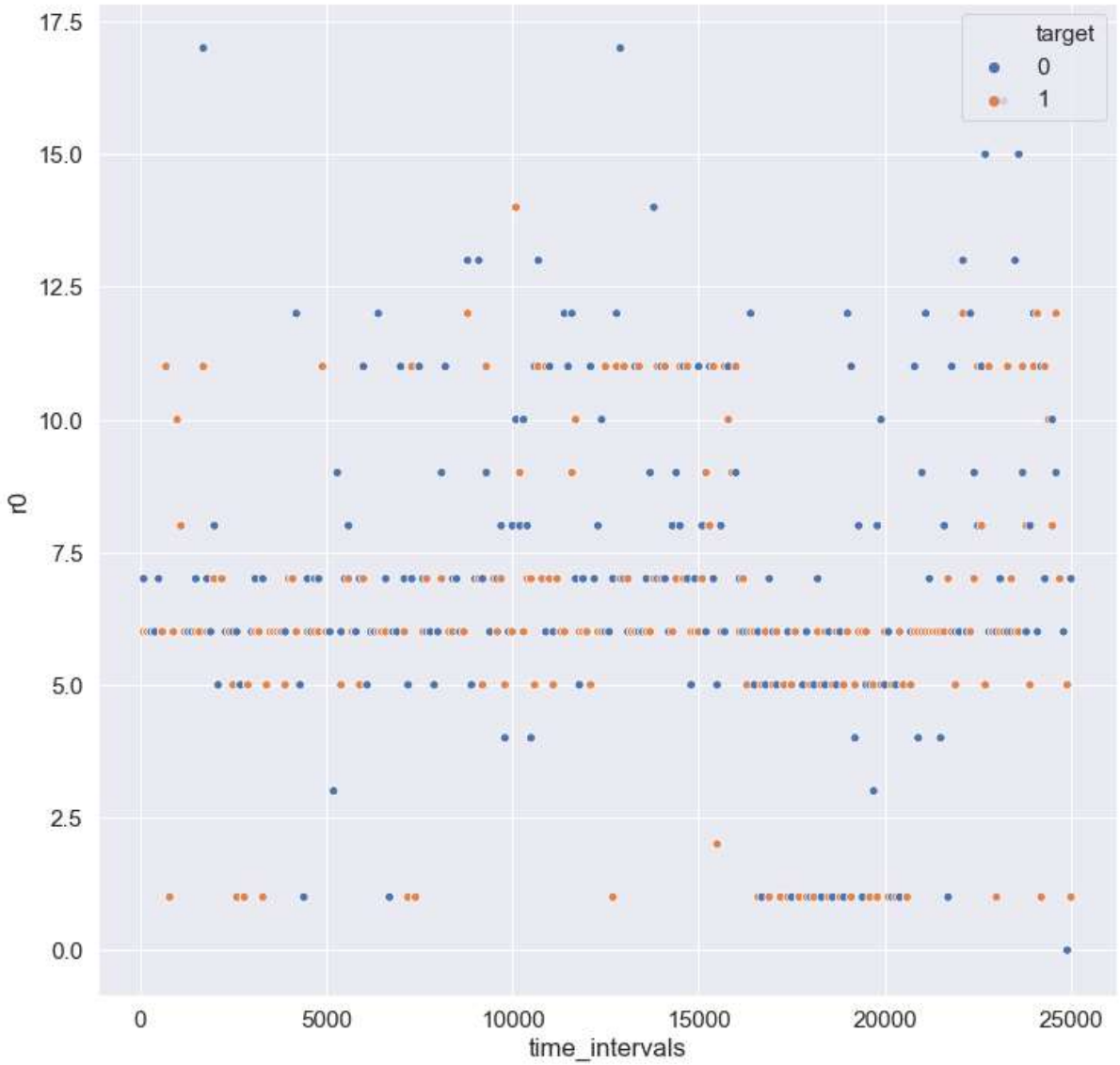
```
time_intervals    0.000330
r0               -0.003530
r1               -0.031543
r2               -0.009298
r3               -0.006043
r4               -0.003693
r5               -0.026236
r6               -0.006352
r7               -0.004051
r8               -0.000416
r9               -0.017239
r10              -0.004554
r11              -0.003103
r12               0.002082
r13              -0.006083
r14              -0.001118
r15              -0.000232
pkt_get          -0.014942
pkt_data         -0.014853
pkt_put          -0.007780
pkt_ack          -0.006861
inport_local     -0.022852
inport_north     -0.011900
inport_south     -0.007653
inport_east      -0.006879
inport_west      -0.006655
outport_local    -0.022217
outport_north    -0.006974
outport_south    -0.006818
outport_east     -0.011909
outport_west     -0.007666
target            1.000000
tot_packets      -0.015419
tot_mean         -0.015419
Name: target, dtype: float64
```

In [23]:

```
dff = pd.read_csv('wat-time-interval-100.csv',nrows=500)
```

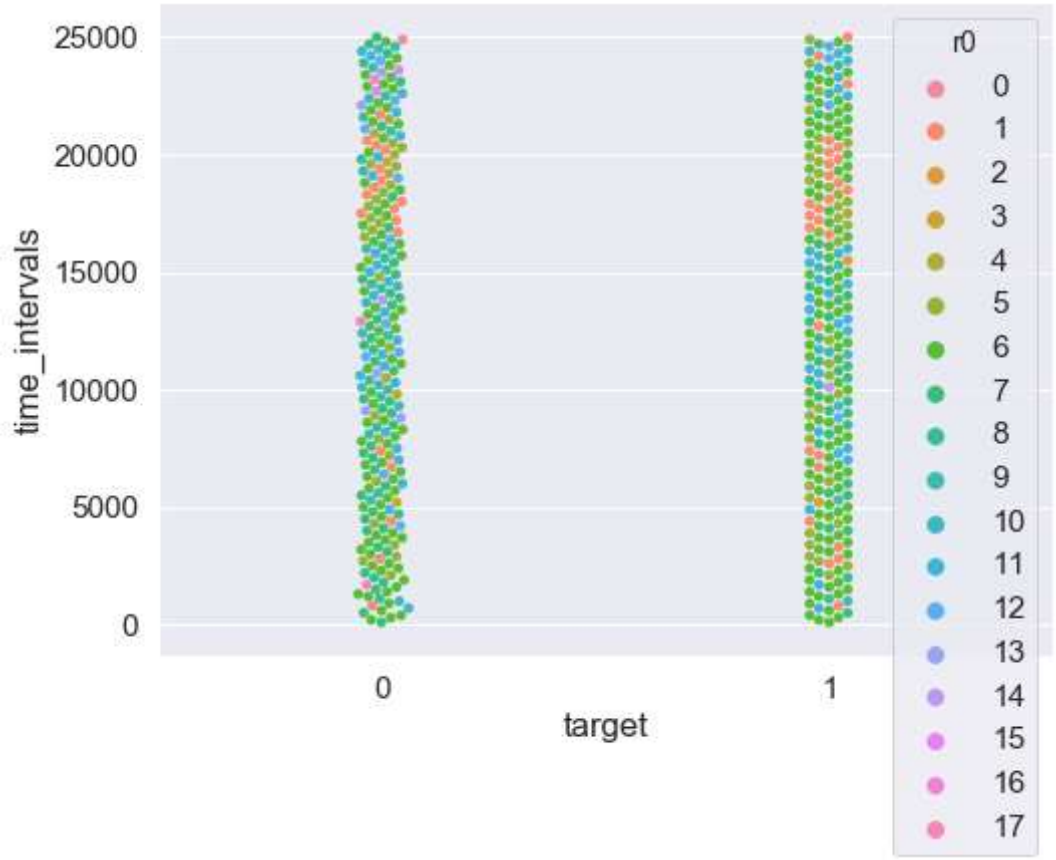
In [24]:

```
plt.figure(figsize=(12,12))
sns.scatterplot(x='time_intervals',y='r0',data=dff, hue='target')
plt.show()
```



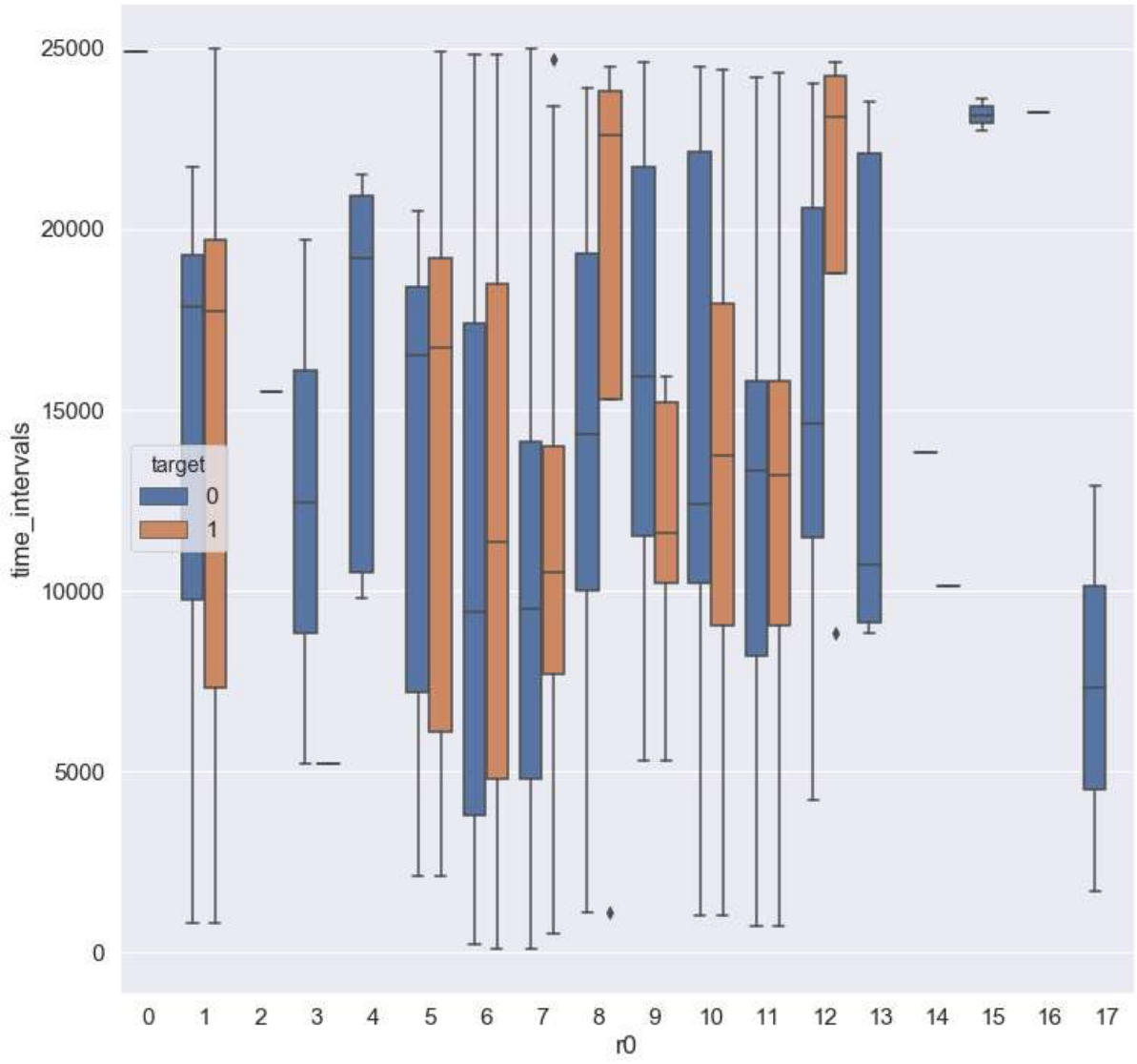
In [25]:

```
plt.figure(figsize=(8,6))
sns.swarmplot(x='target',y='time_intervals',data=dff, hue='r0')
plt.show()
```



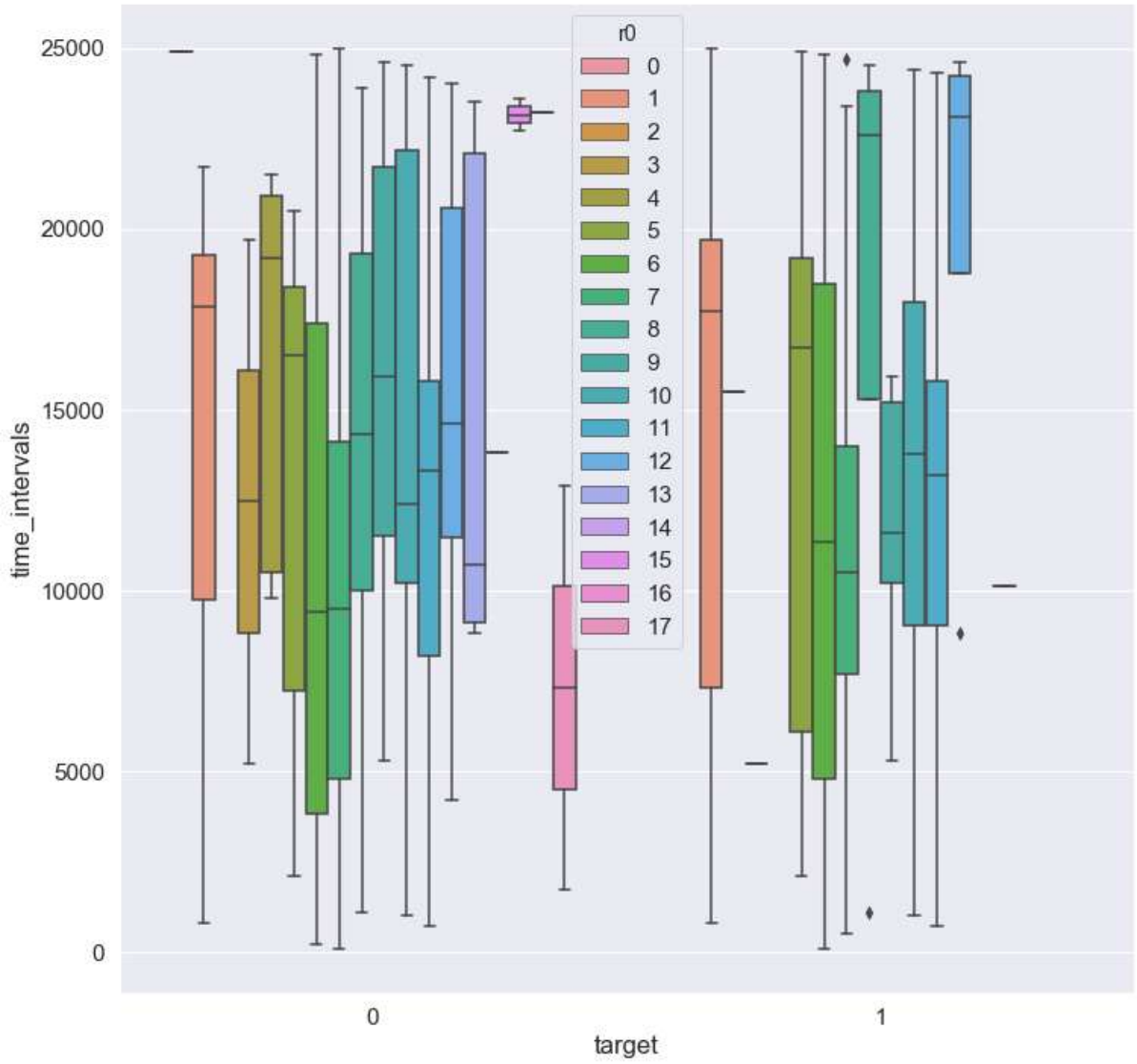
In [26]:

```
plt.figure(figsize=(12,12))
sns.boxplot(x='r0',y='time_intervals',data=dff, hue='target')
plt.show()
```



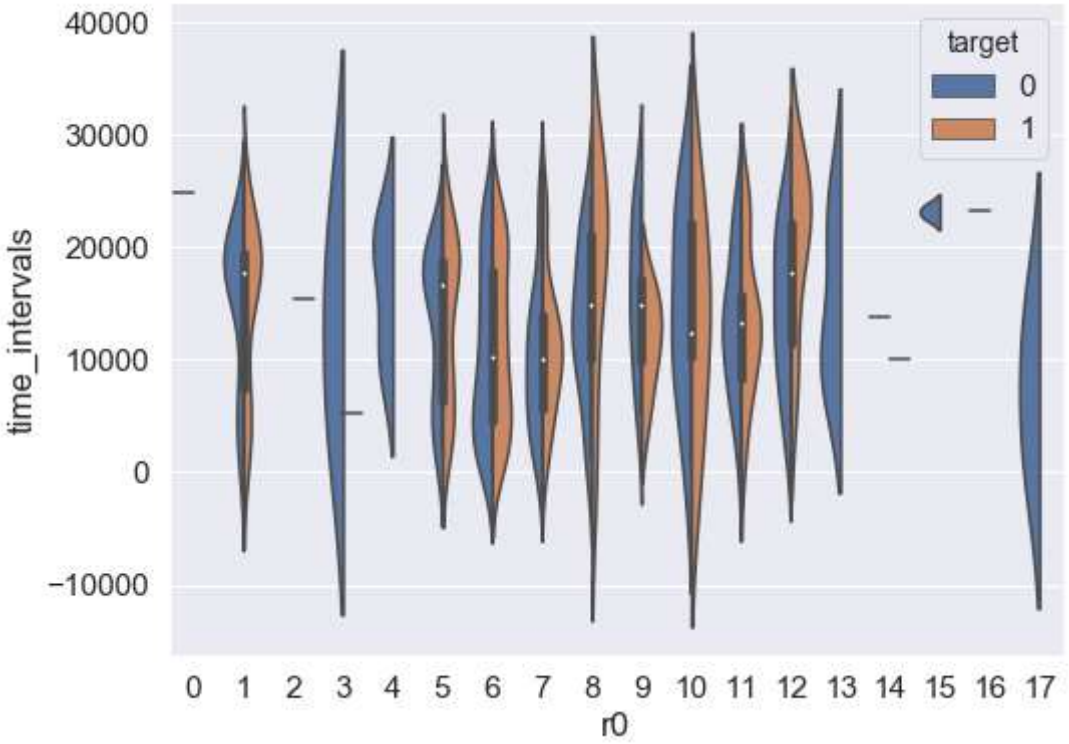
In [27]:

```
plt.figure(figsize=(12,12))
sns.boxplot(x='target',y='time_intervals',data=dff, hue='r0')
plt.show()
```



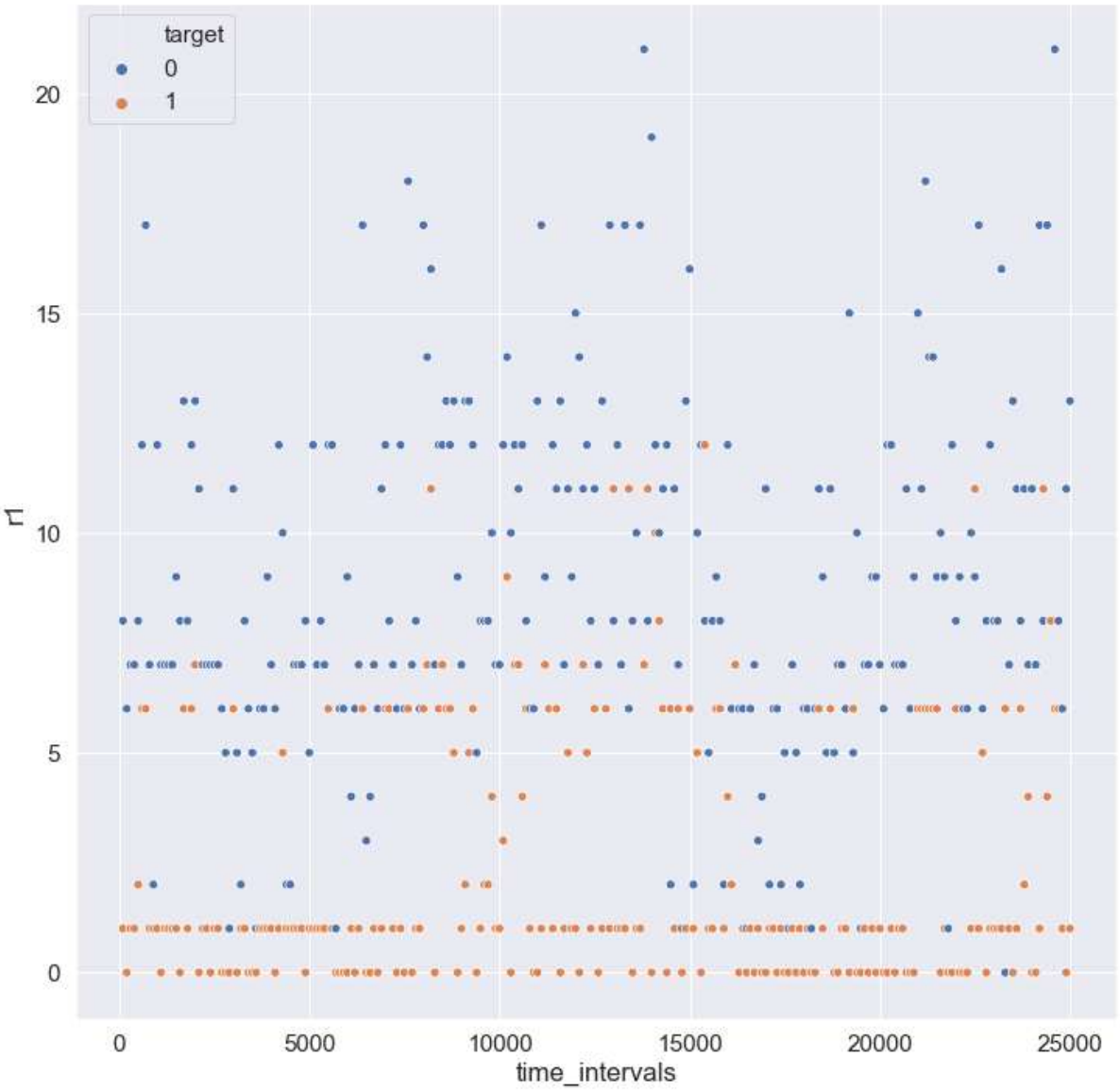
In [28]:

```
plt.figure(figsize=(8,6))
sns.violinplot(x='r0',y='time_intervals',data=dff, hue='target', split=True)
plt.show()
```



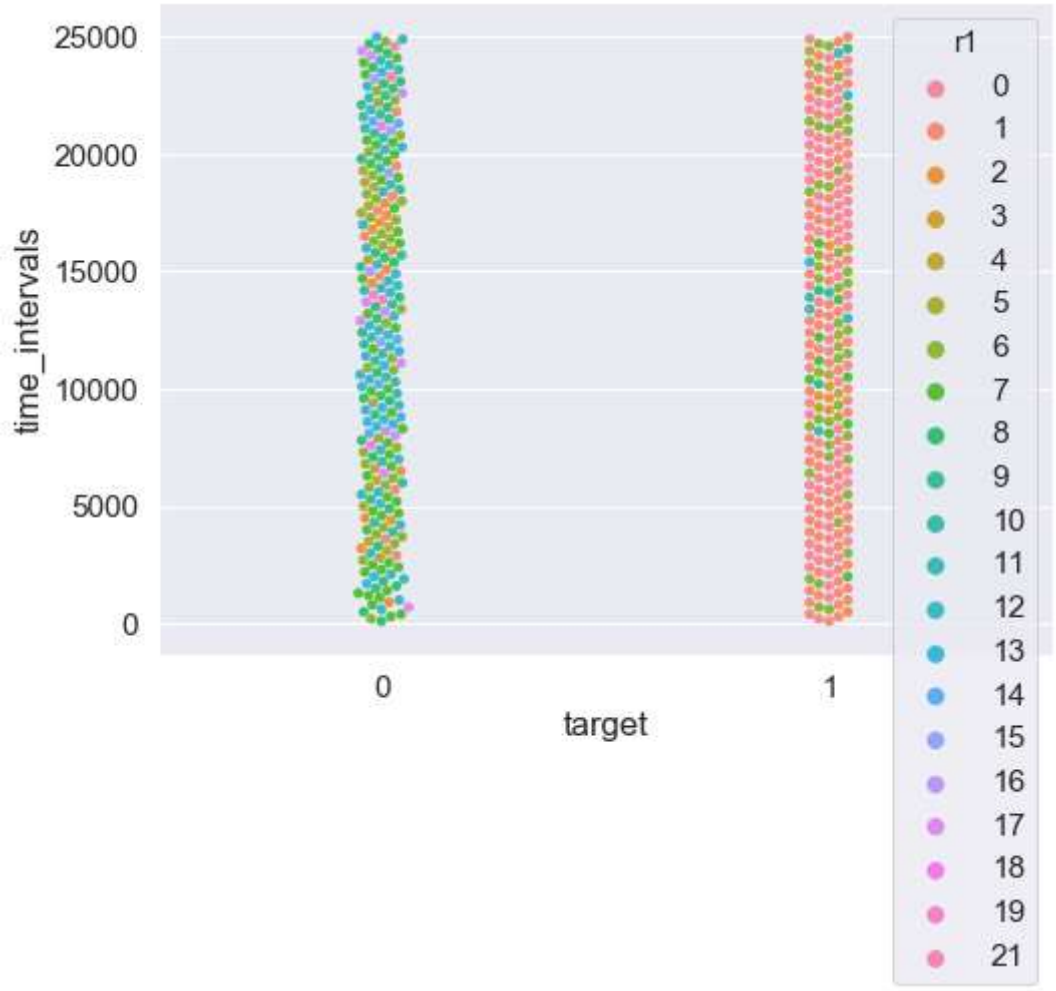
In [29]:

```
plt.figure(figsize=(12,12))
sns.scatterplot(x='time_intervals',y='r1',data=dff, hue='target')
plt.show()
```



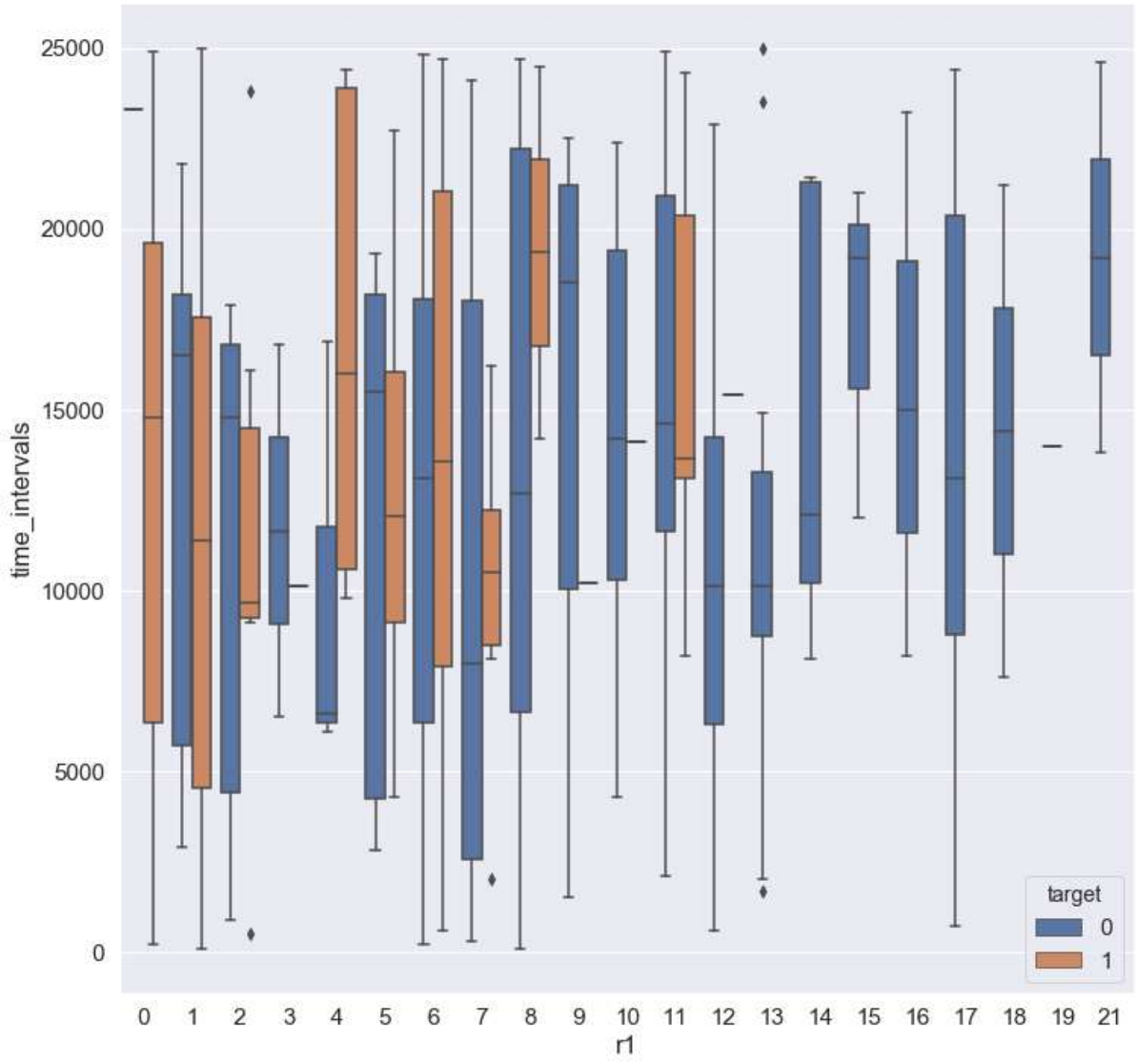
In [30]:

```
plt.figure(figsize=(8,6))
sns.swarmplot(x='target',y='time_intervals',data=dff, hue='r1')
plt.show()
```



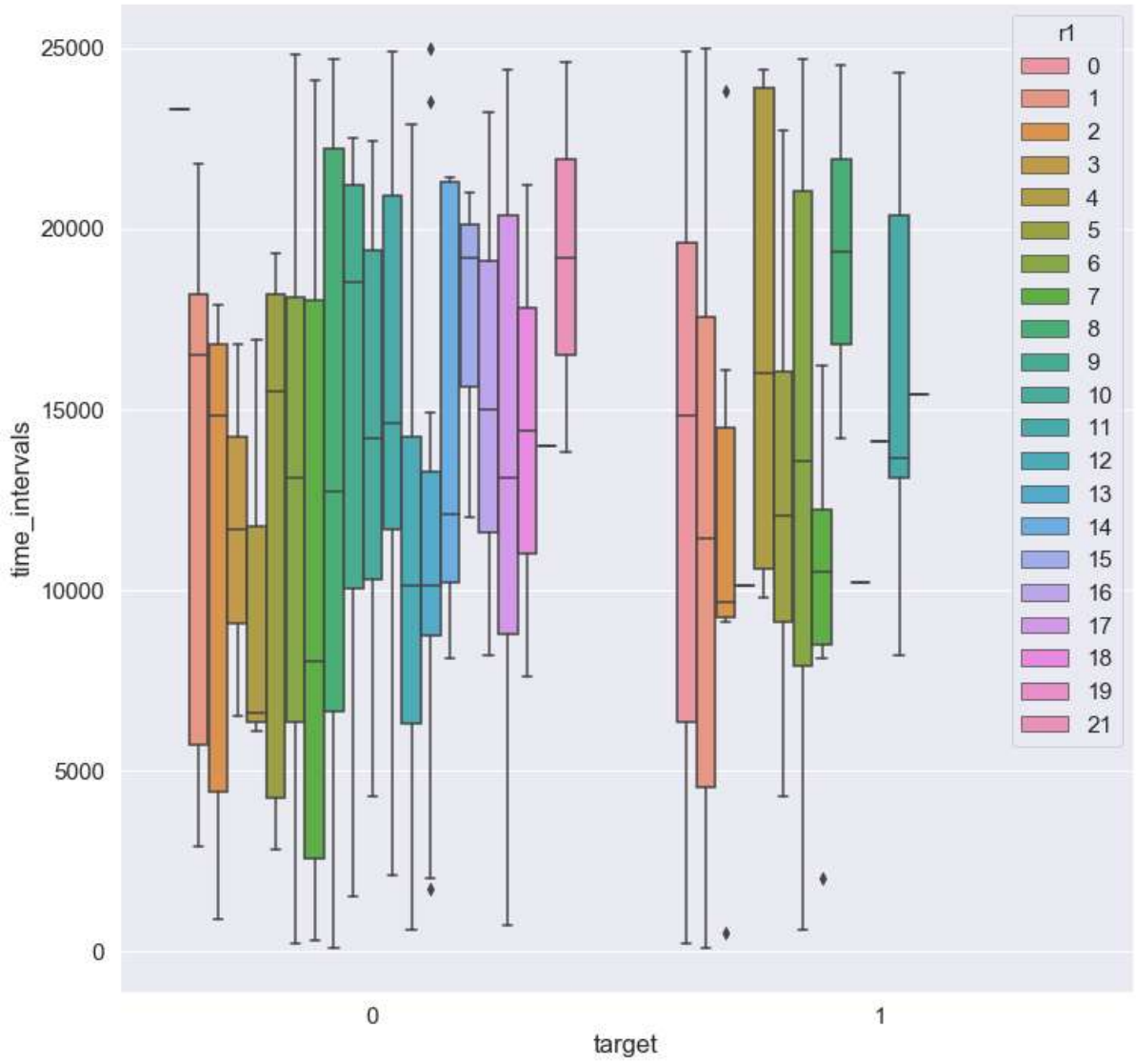
In [31]:

```
plt.figure(figsize=(12,12))
sns.boxplot(x='r1',y='time_intervals',data=dff, hue='target')
plt.show()
```



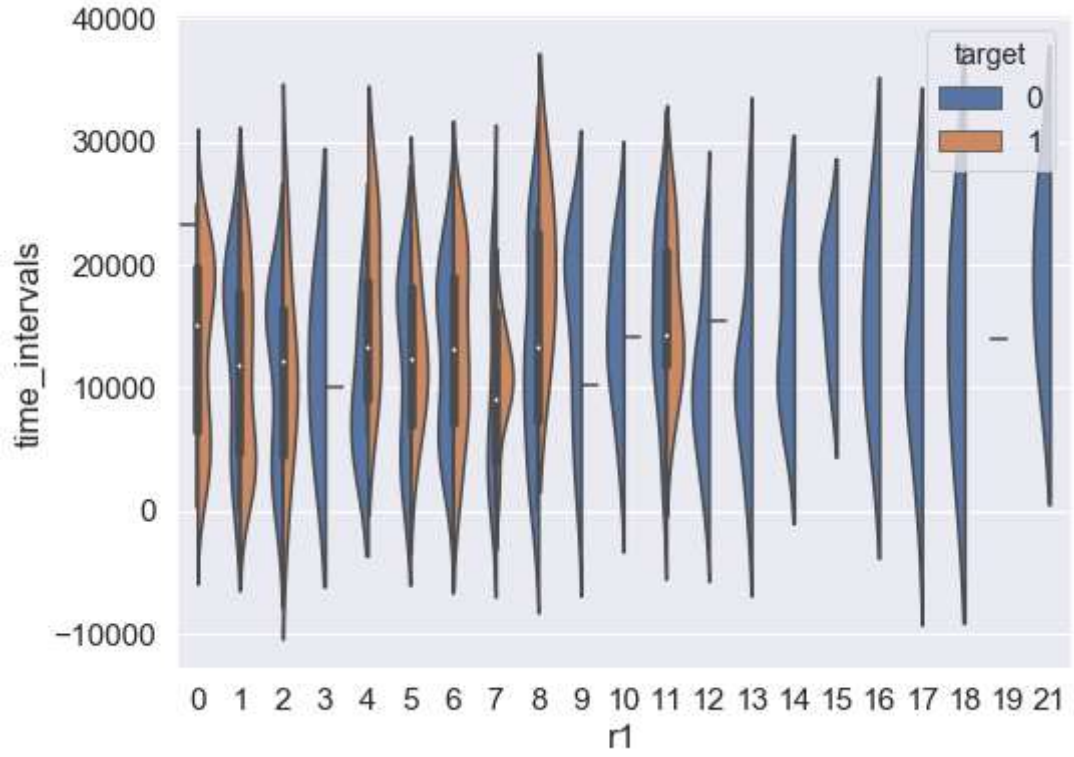
In [32]:

```
plt.figure(figsize=(12,12))
sns.boxplot(x='target',y='time_intervals',data=dff, hue='r1')
plt.show()
```



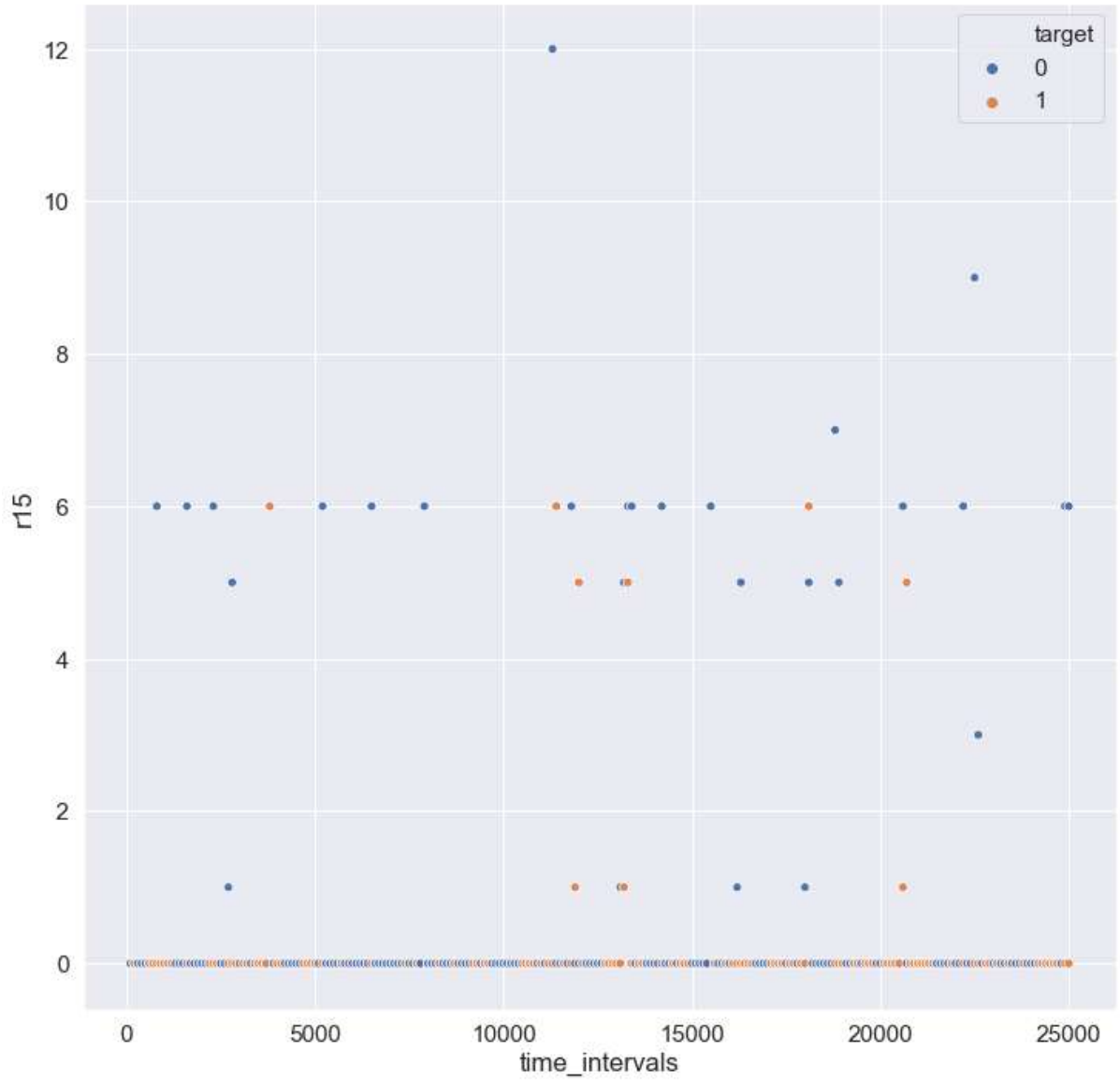
In [33]:

```
plt.figure(figsize=(8,6))
sns.violinplot(x='r1',y='time_intervals',data=dff, hue='target', split=True)
plt.show()
```



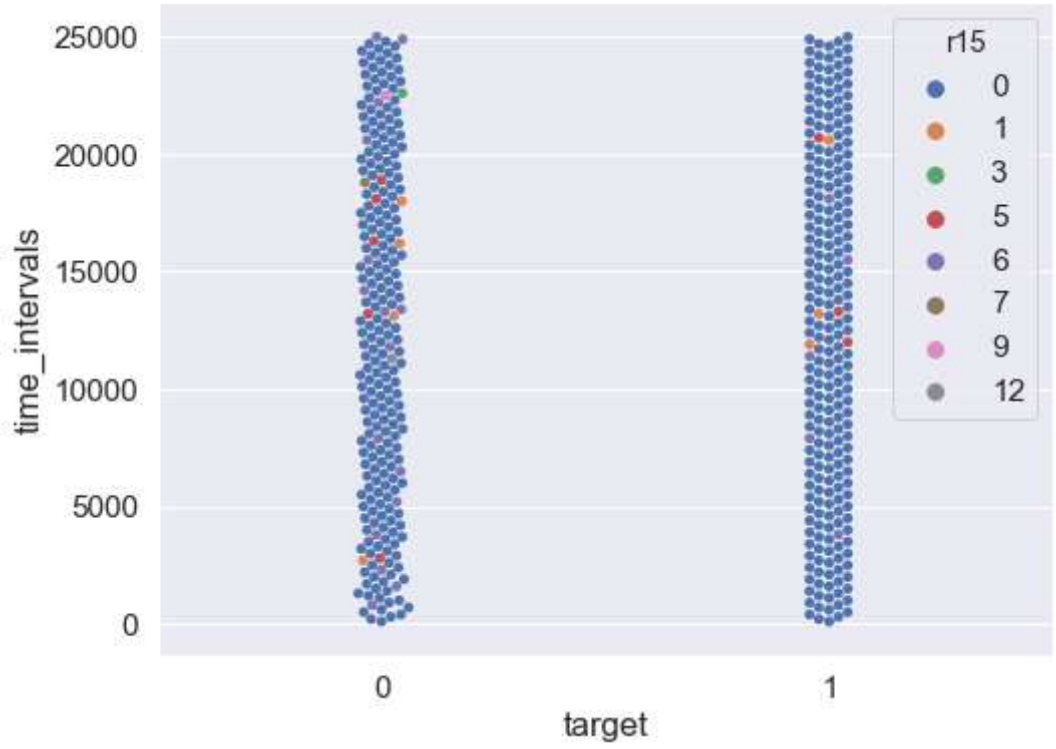
In [34]:

```
plt.figure(figsize=(12,12))
sns.scatterplot(x='time_intervals',y='r15',data=dff, hue='target')
plt.show()
```



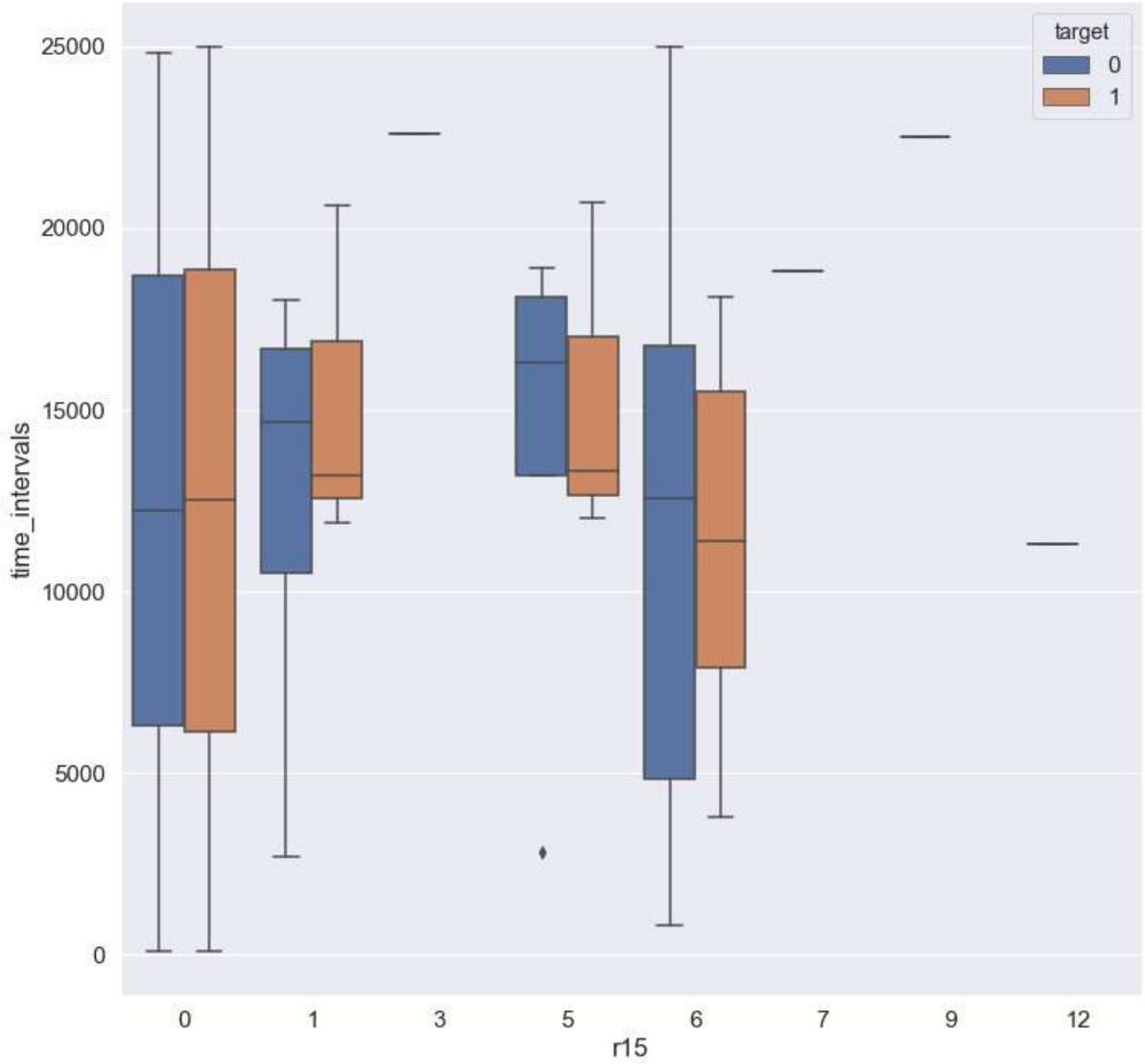
In [35]:

```
plt.figure(figsize=(8,6))
sns.swarmplot(x='target',y='time_intervals',data=dff, hue='r15')
plt.show()
```



In [36]:

```
plt.figure(figsize=(12,12))
sns.boxplot(x='r15',y='time_intervals',data=dff, hue='target')
plt.show()
```


target
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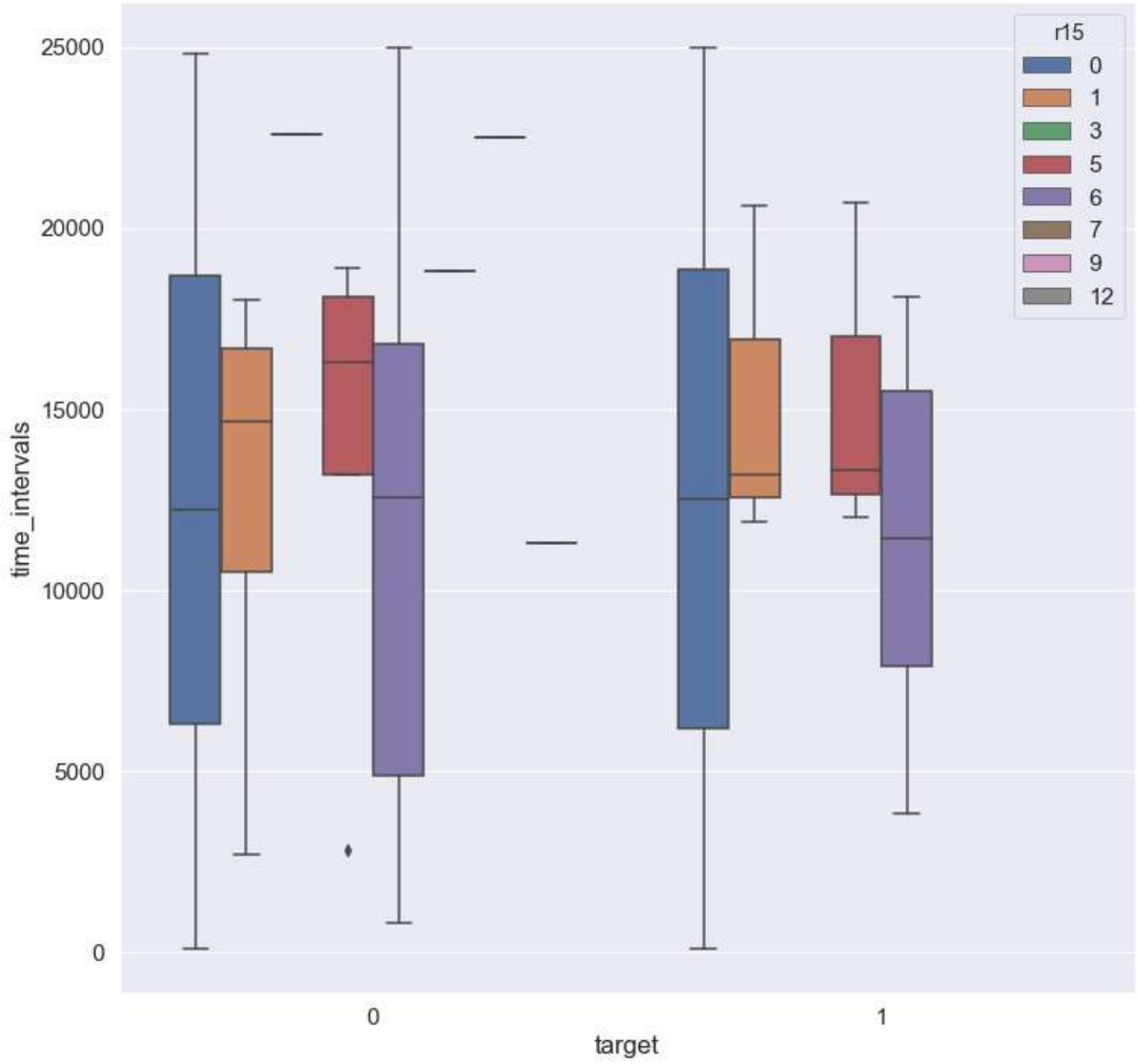
25000
20000
15000
10000
5000
0
time_intervals
0
1
3
5
6
7
9
12
r15

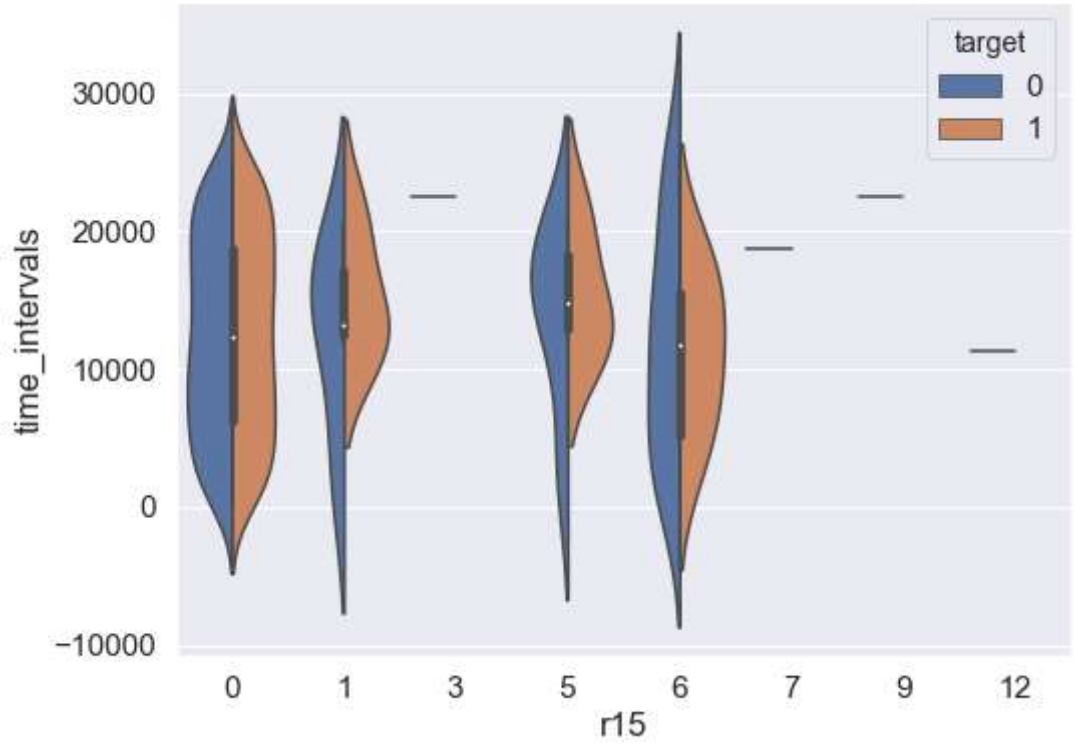
In [37]:

```
plt.figure(figsize=(12,12))
sns.boxplot(x='target',y='time_intervals',data=dff, hue='r15')
plt.show()
```



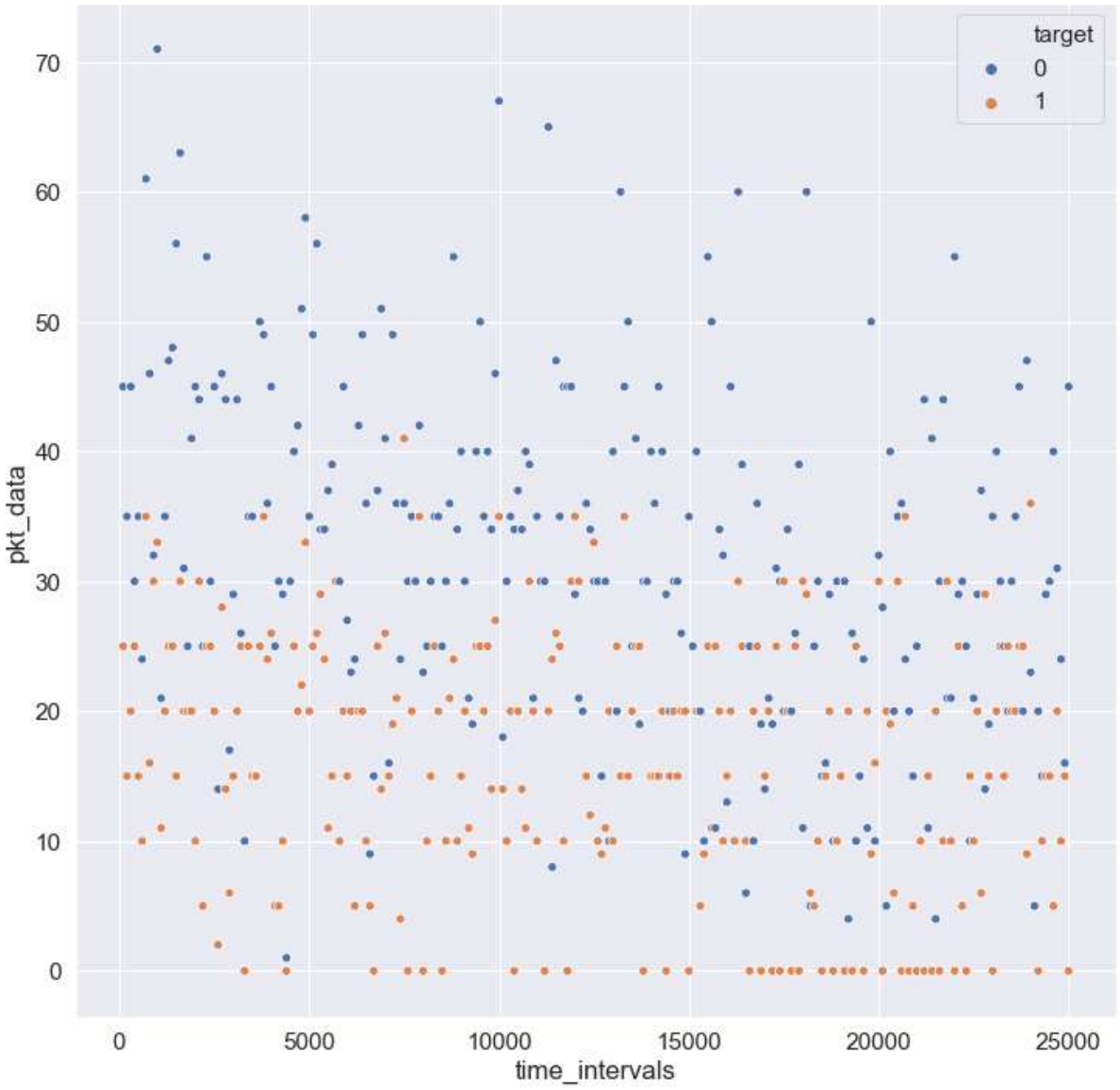
In [38]:

```
plt.figure(figsize=(8,6))
sns.violinplot(x='r15',y='time_intervals',data=dff, hue='target', split=True)
plt.show()
```



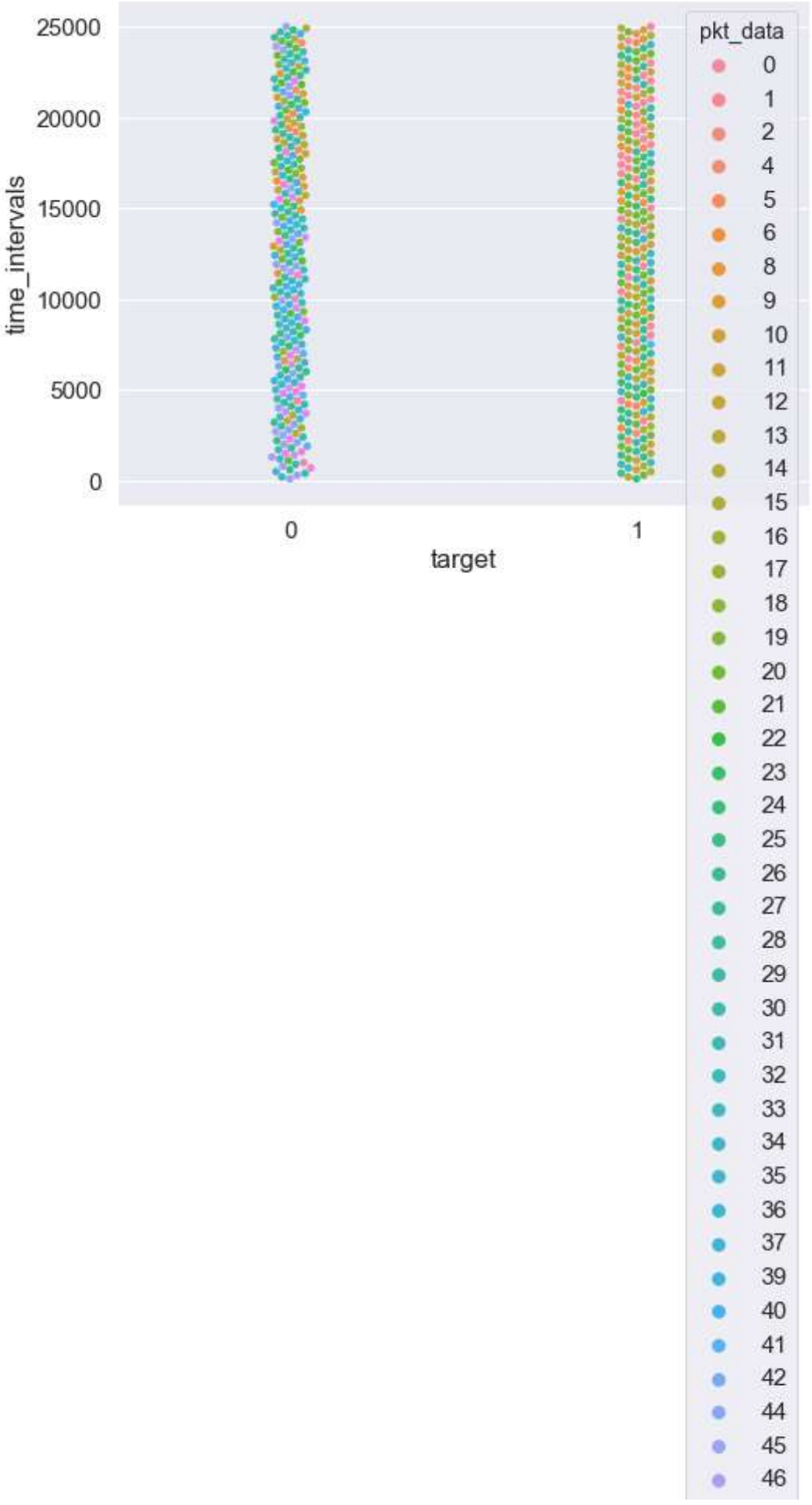
In [39]:

```
plt.figure(figsize=(12,12))
sns.scatterplot(x='time_intervals',y='pkt_data',data=dff, hue='target')
plt.show()
```



In [40]:

```
plt.figure(figsize=(8,6))
sns.swarmplot(x='target',y='time_intervals',data=dff, hue='pkt_data')
plt.show()
```


time_intervals
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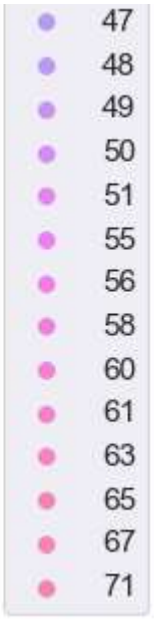
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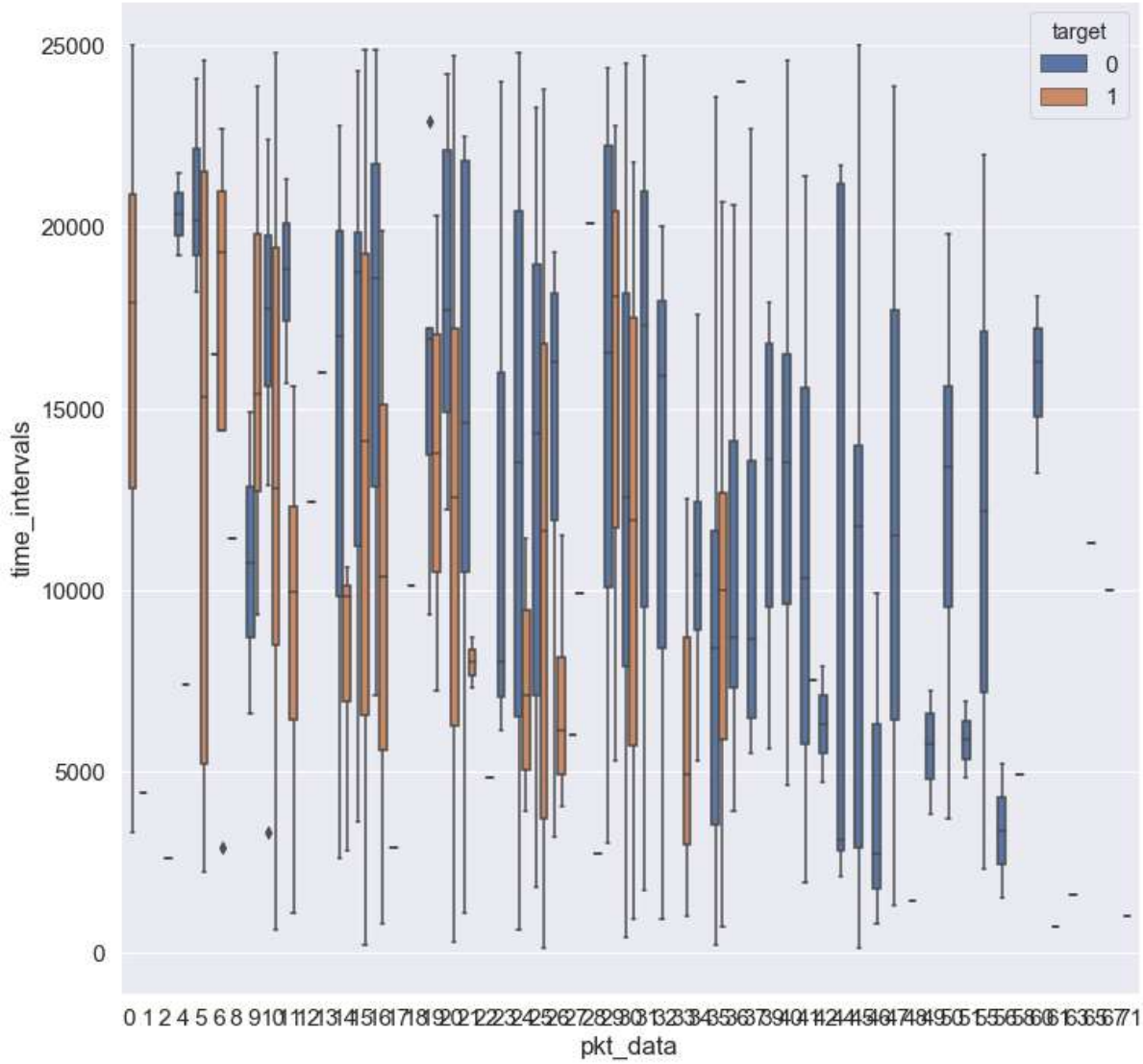
In [41]:

```
plt.figure(figsize=(12,12))
sns.boxplot(x='pkt_data',y='time_intervals',data=dff, hue='target')
plt.show()
```


target
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time_intervals
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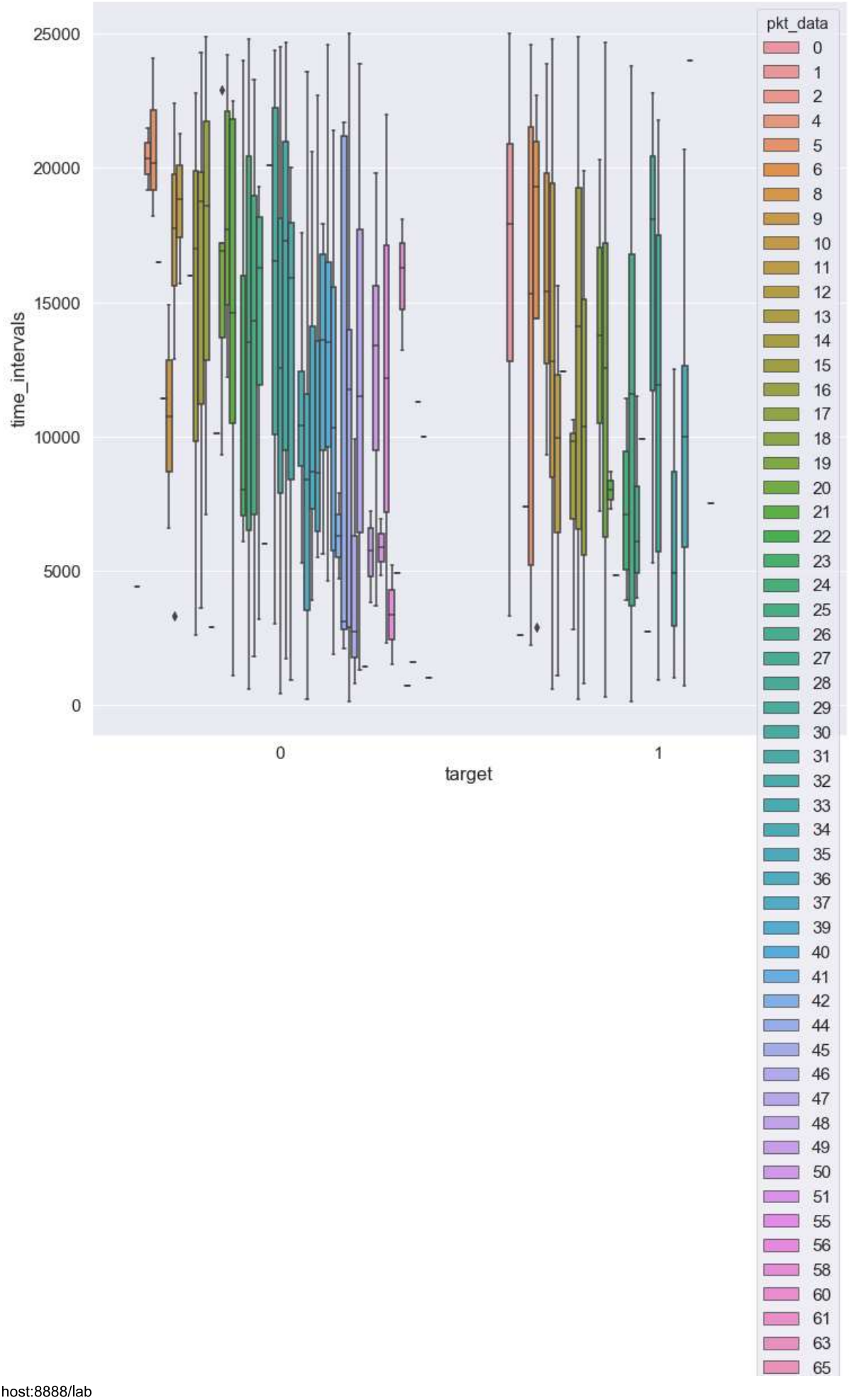
20000
15000
10000
5000
0
pkt_data

In [42]:

```
plt.figure(figsize=(12,12))
sns.boxplot(x='target',y='time_intervals',data=dff, hue='pkt_data')
plt.show()
```


time_intervals
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pkt_data
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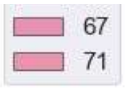
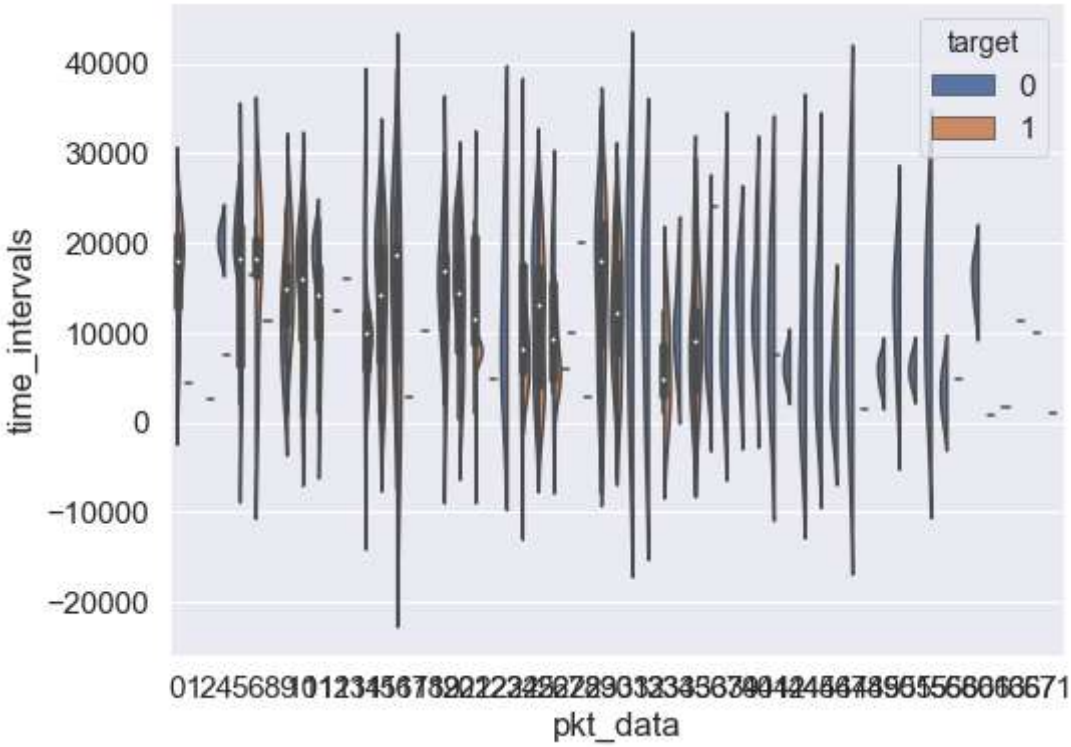


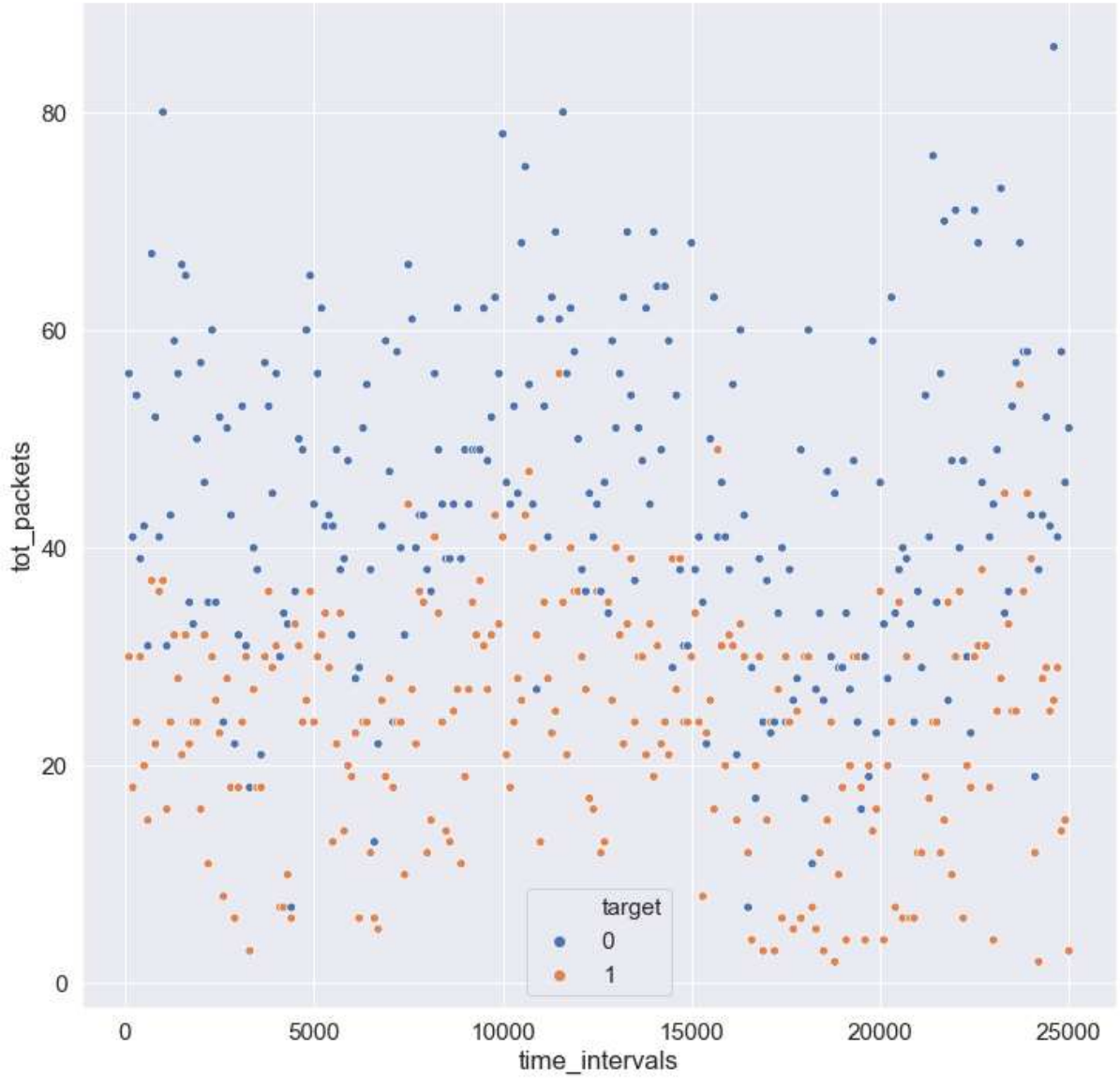

In [43]:

```
plt.figure(figsize=(8,6))
sns.violinplot(x='pkt_data',y='time_intervals',data=dff, hue='target', split=True)
plt.show()
```



In [44]:

```
plt.figure(figsize=(12,12))
sns.scatterplot(x='time_intervals',y='tot_packets',data=dff, hue='target')
plt.show()
```


tot_packets
time_intervals
target
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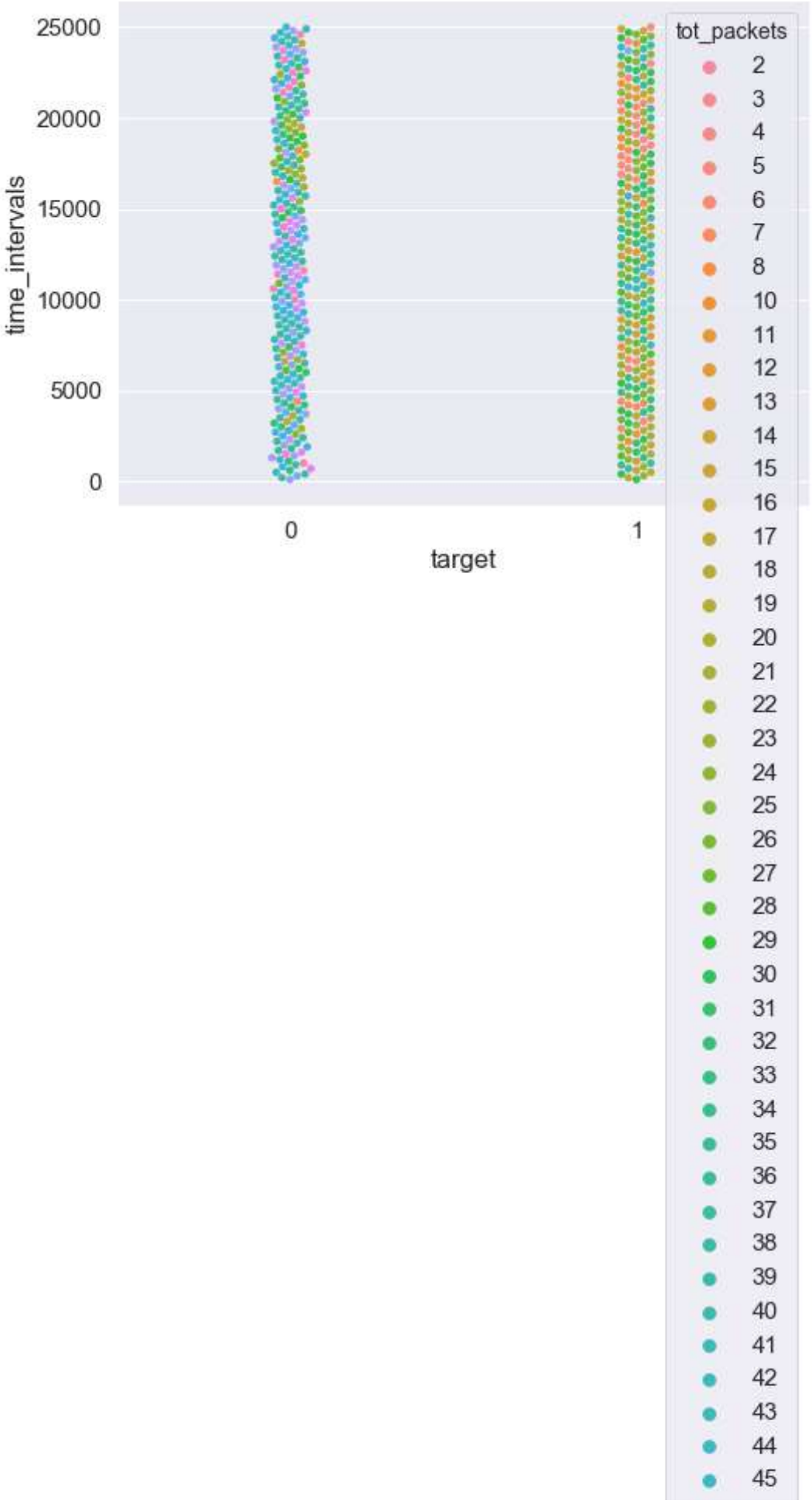
5000
10000
15000
20000
25000

In [45]:

```
plt.figure(figsize=(8,6))
sns.swarmplot(x='target',y='time_intervals',data=dff, hue='tot_packets')
plt.show()
```


time_intervals
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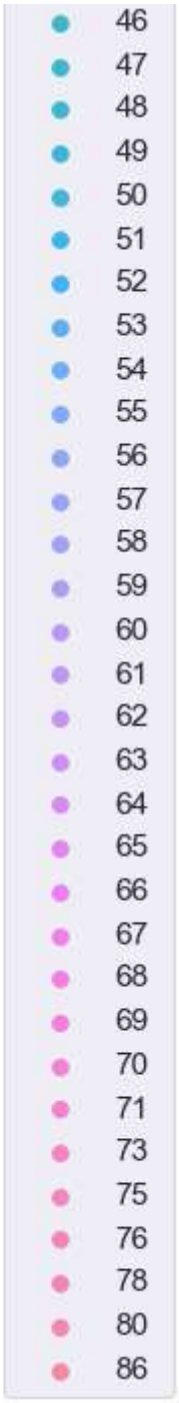
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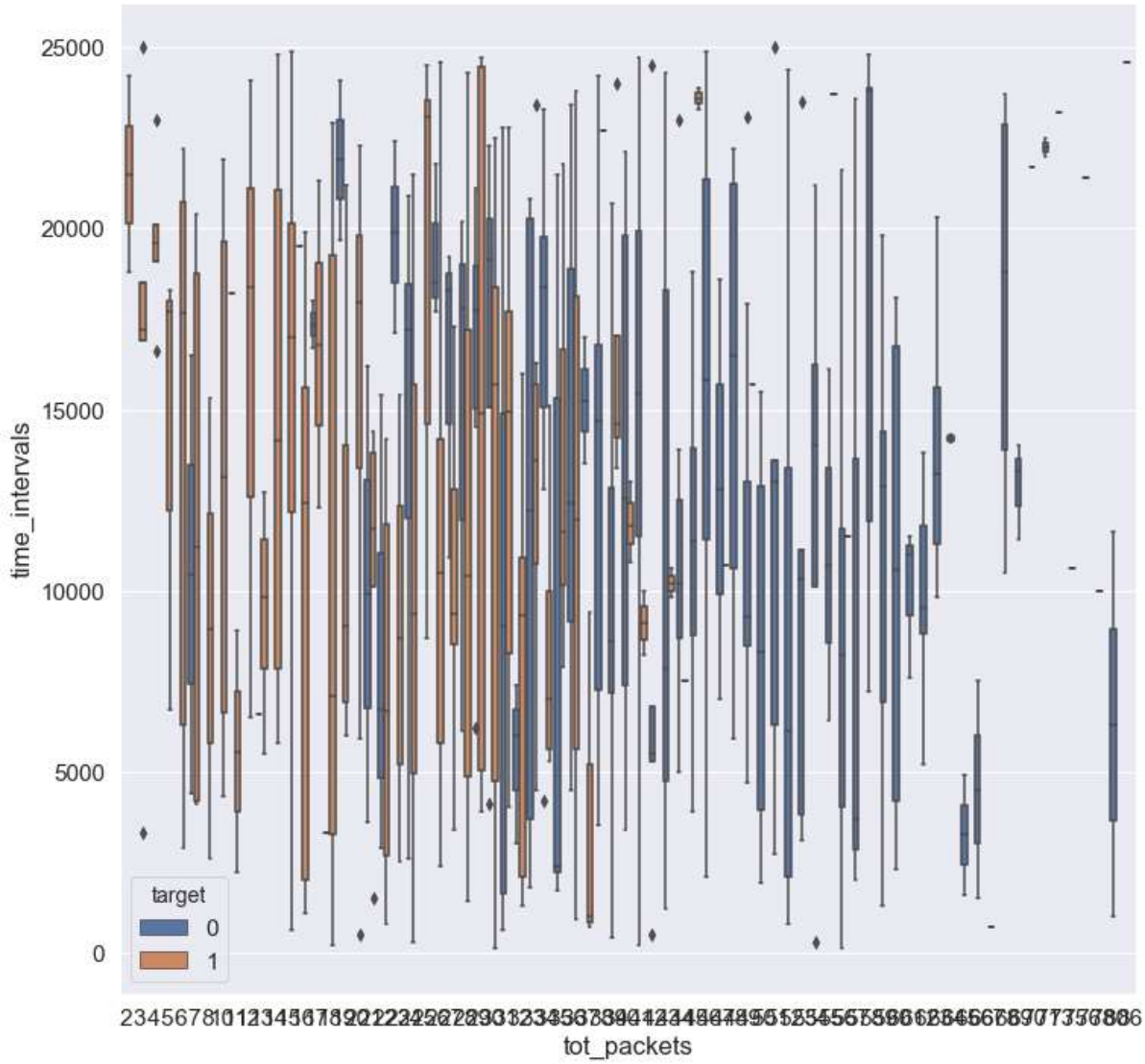
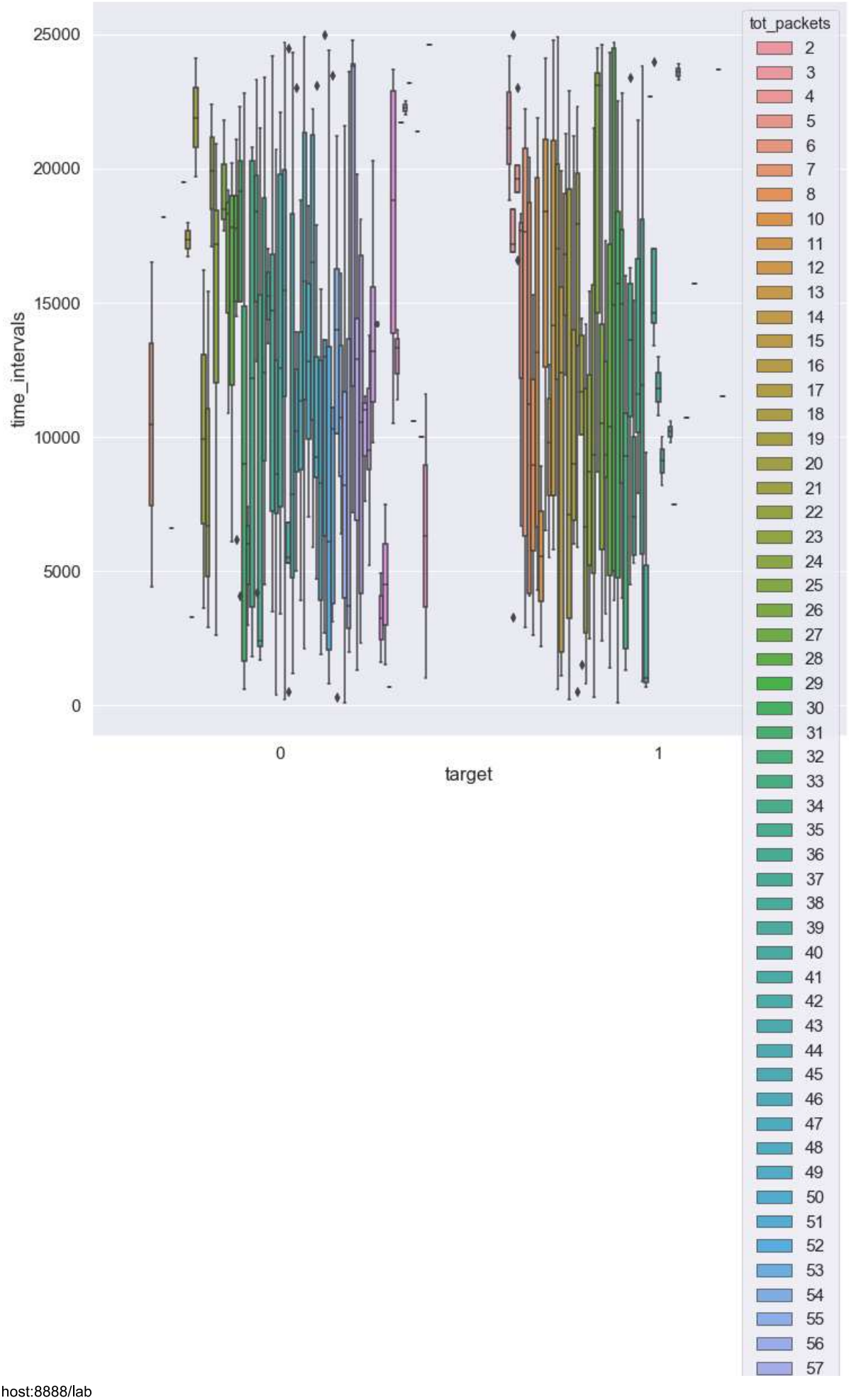
In [46]:

```
plt.figure(figsize=(12,12))
sns.boxplot(x='tot_packets',y='time_intervals',data=dff, hue='target')
plt.show()
```



In [47]:

```
plt.figure(figsize=(12,12))
sns.boxplot(x='target',y='time_intervals',data=dff, hue='tot_packets')
plt.show()
```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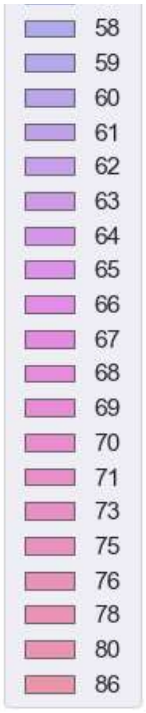
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