Aosta Valley Environmental Protection Agency

# Evaluation of the noise exposure inside and outside late night premises: 2 studies in Aosta Valley

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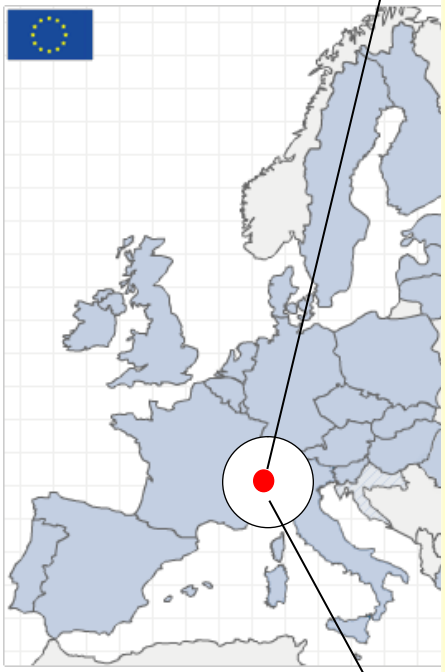
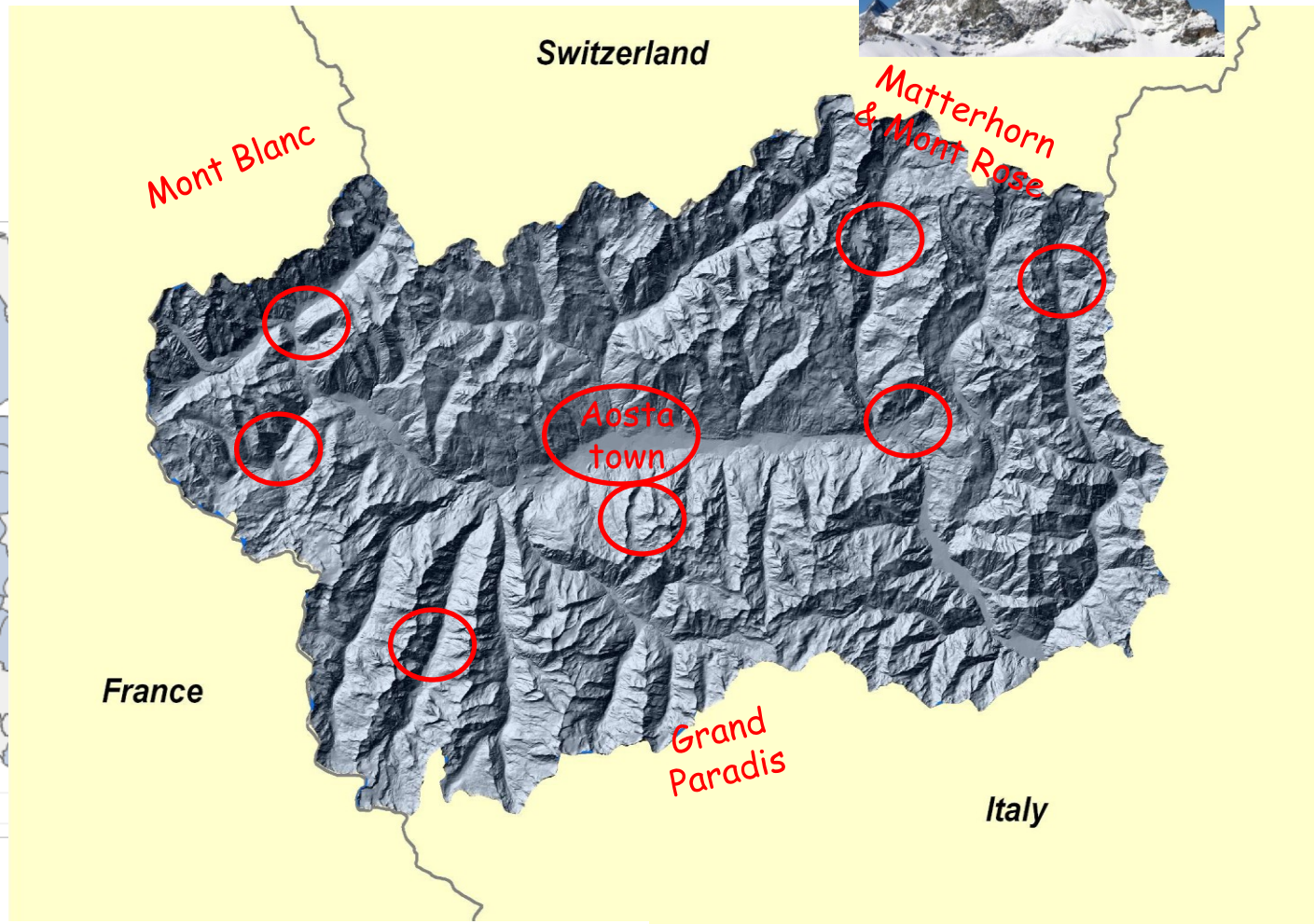
Edinburgh, Scotland
2009 October, 26 - 28

# Territory involved in the studies

The Aosta Valley position in Europe






the smallest Italian region in the middle of the western Alps known by skiing, trekking and climbing lovers

# Aosta Valley region

## features

The proximity of business activities and dwellings is very close

Many premises for dancing and music entertainement are placed in tourist locations

## nocturnal life

Life night start in the evening from about 20.30 until about 05.00

The actractivness of loud sound levels for customers

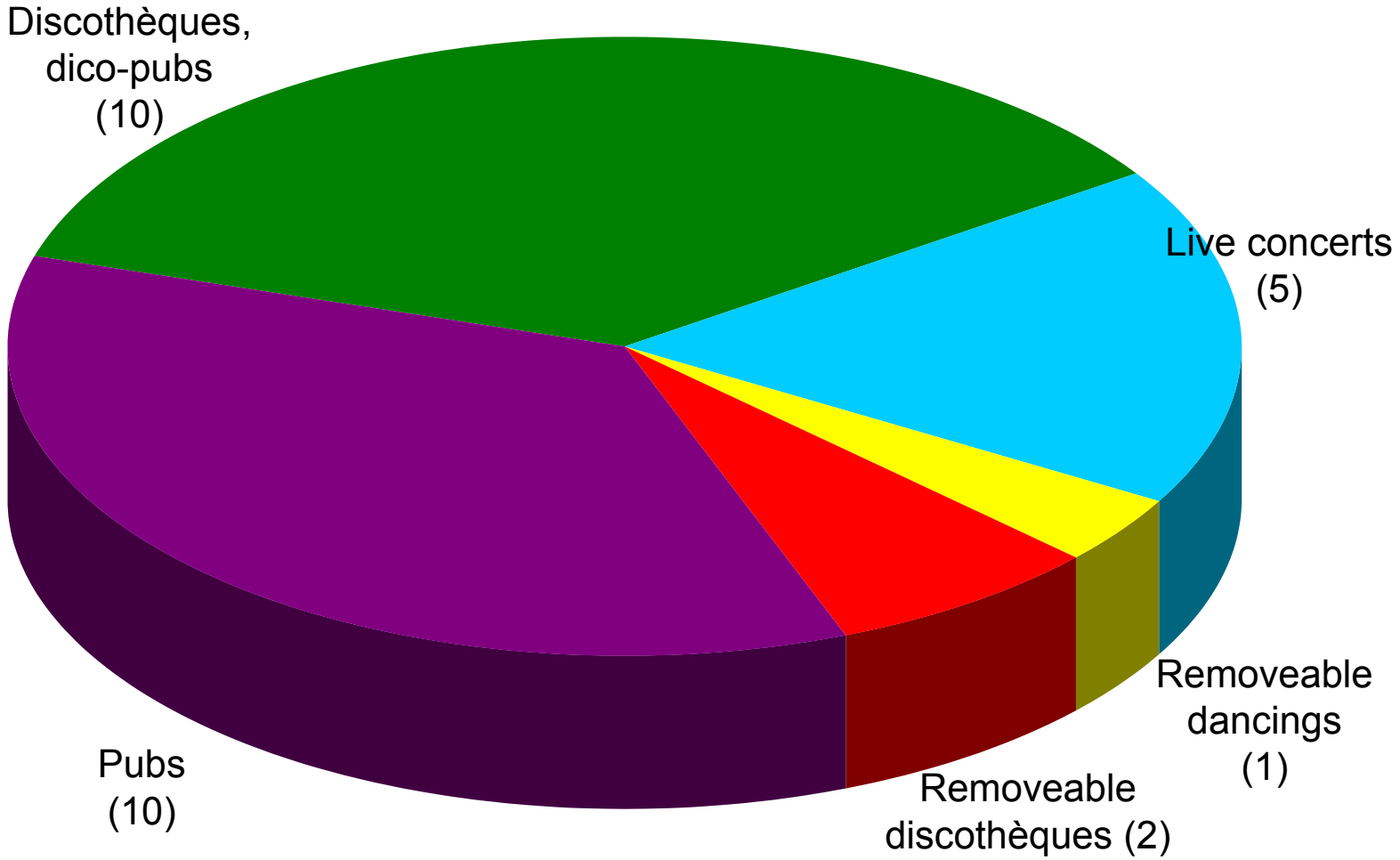
So high sound levels represent leisure and amusement for customers but they are a great nuisance for people living in the surroundings

# Two different studies have been performed

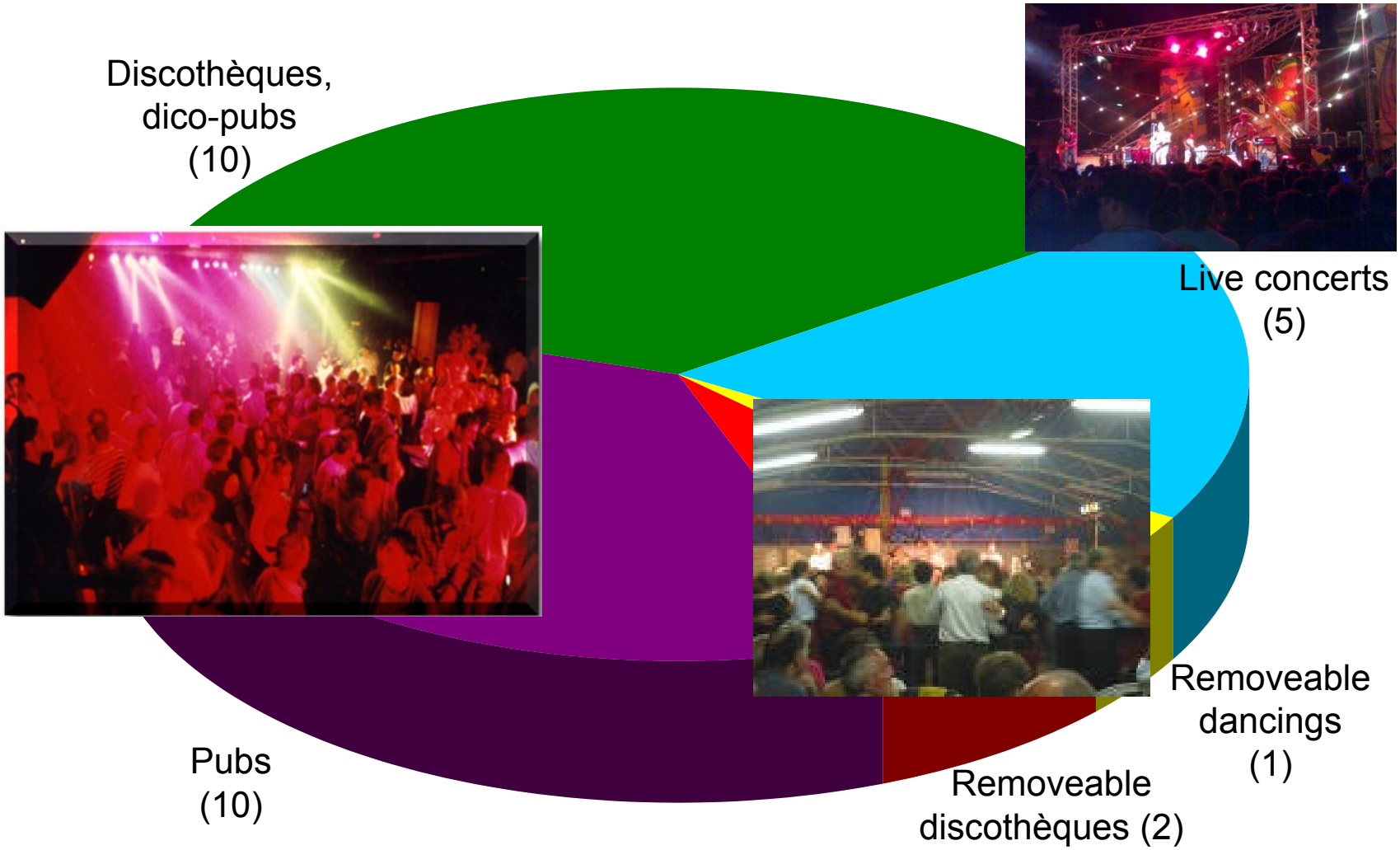
1) A measurements campaign of the sound levels inside nightclubs, supported by Aosta Valley Local Health Service

2) An analysis of the noise complaints that **ARPA** received from people living near the nightime entertainment places of the Aosta Valley

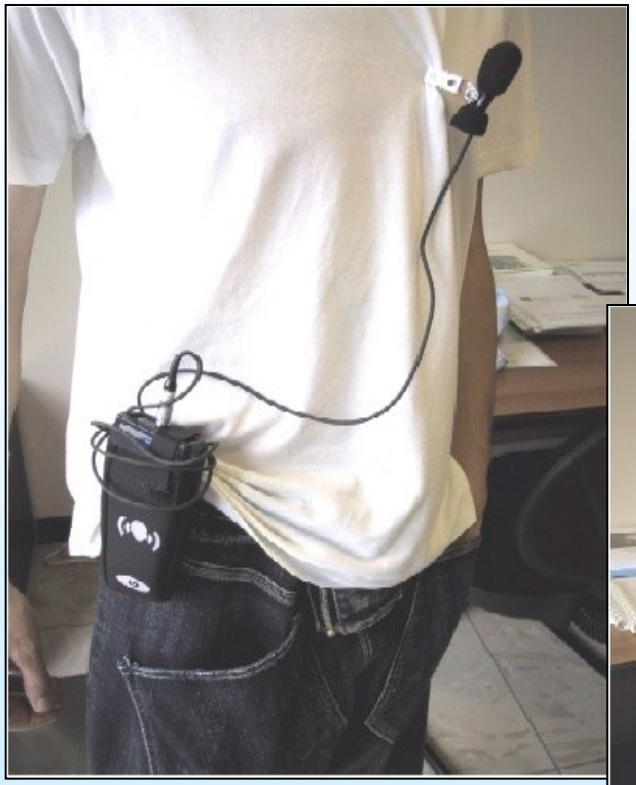
# 1.1) Premises investigated in measurements campaign



# 1.1) Premises investigated in measurements campaign



# 1.2) Measurements method

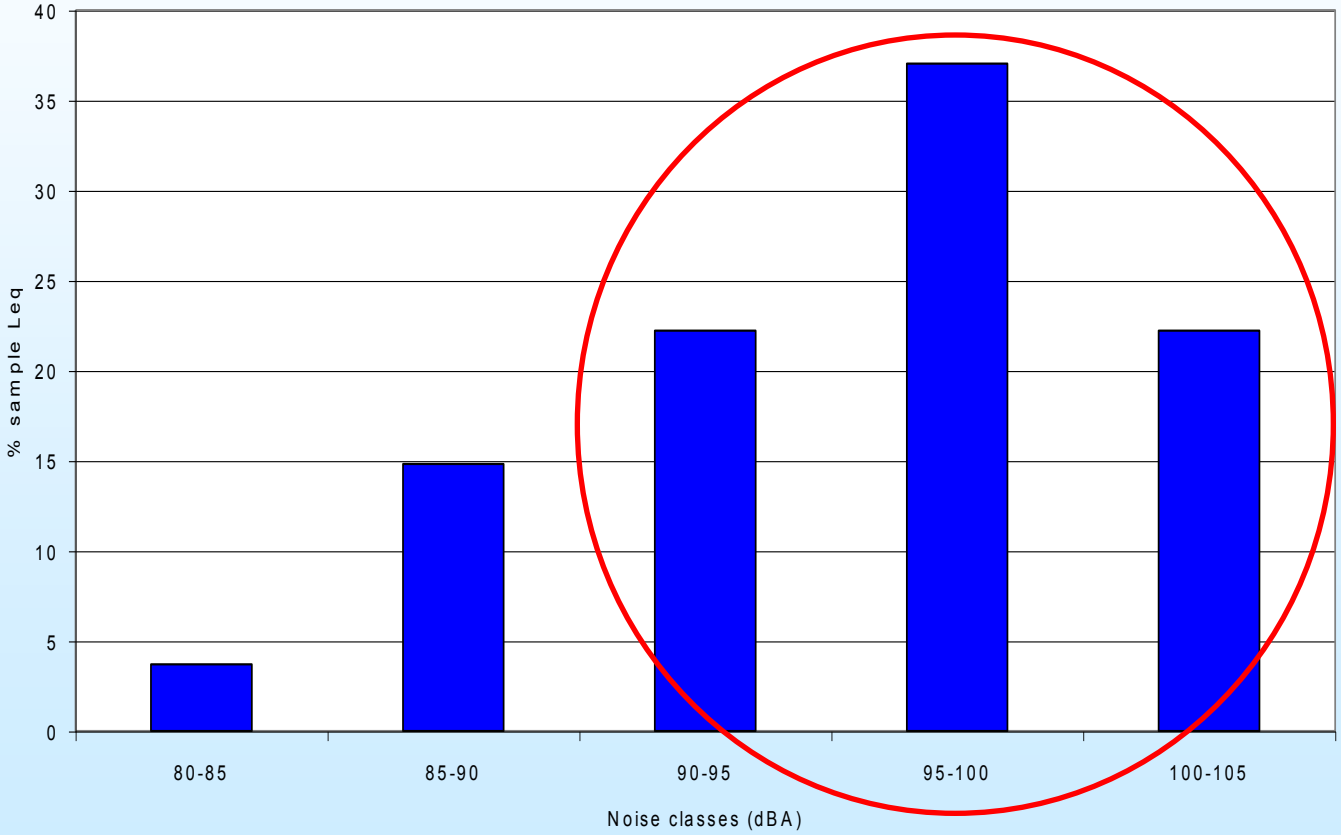


dosimeters used in order to allow the execution of the measurements hidden in order to render the operator undistinguishable from the other customers

This particular metod was choosen because it was effective to estimate the noise exposure of young people inside premises

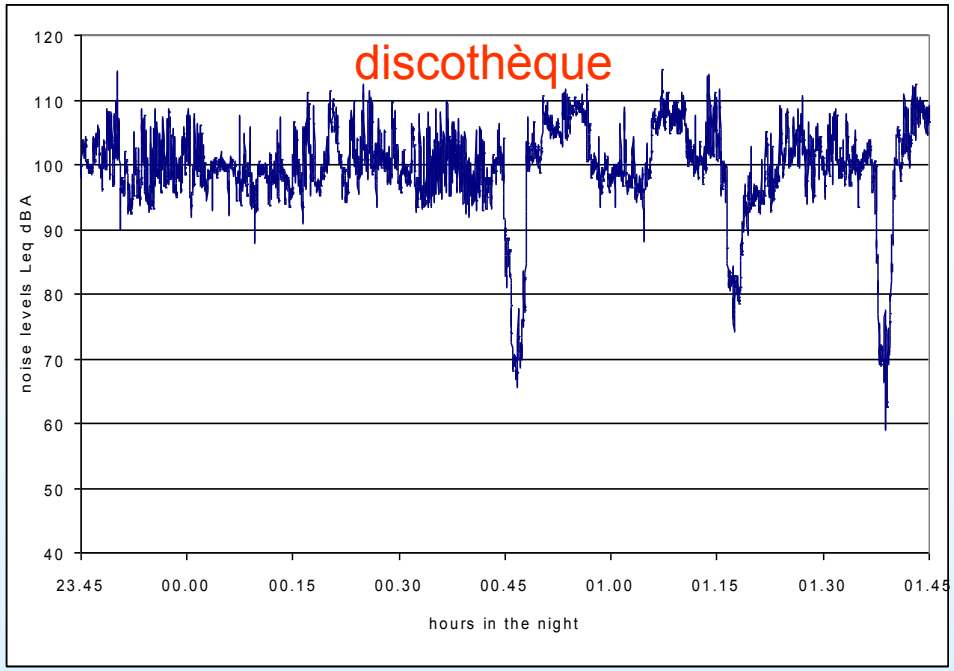
# 1.3) Data analysis and results

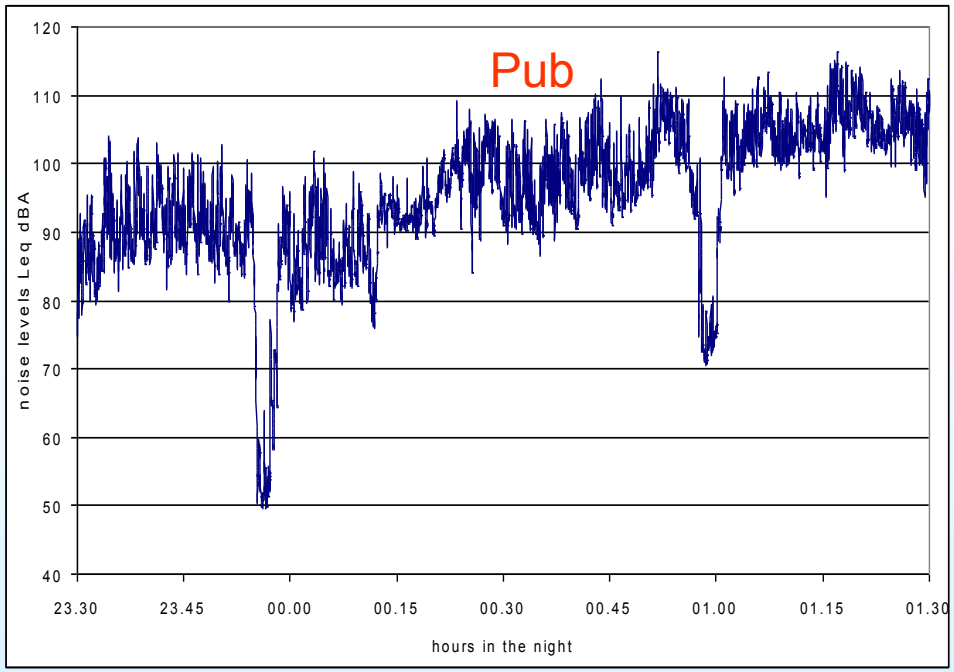
Distribution of measurements data in 5 dB noise classes on the basis of the usual LAeq parameter




The distribution shows high noise levels (about 81% over 90 dBA)

# Sound levels comparison in two different type of premises (TH Leq 1")



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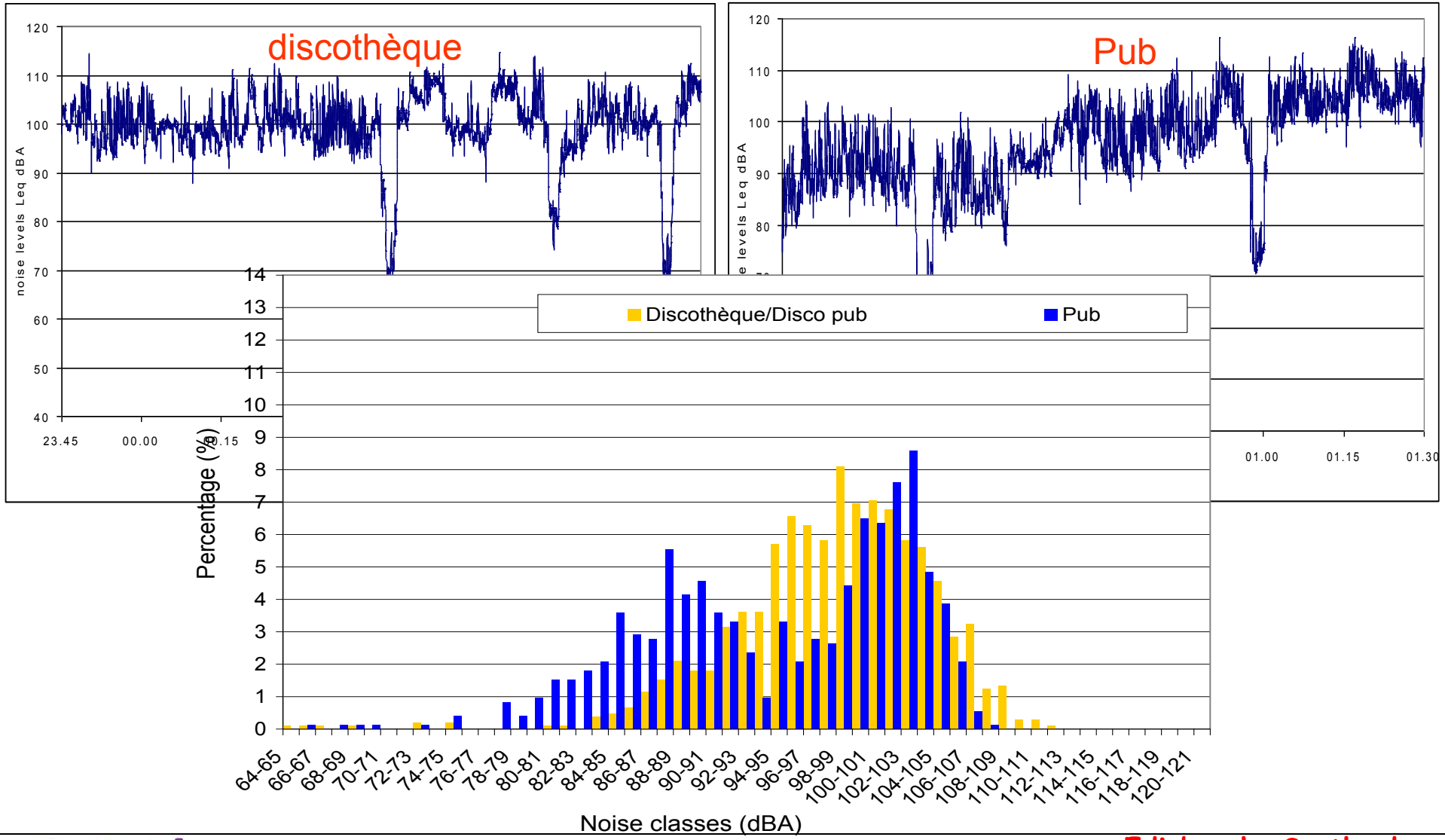


# 1.4) Others analysis applying to the young people exposed to music in night club the parameters introduced by the European directive 2003/10/CE concerning workers noise exposure:

**Daily personal exposure level (LEX,8h)**

$$LEX,8h = L_{AEQ,Te} + 10\,Log_{10}\left(Te/T_0\right) \quad \text{dBA}$$

**Te** (measurement period) is the daily personal exposure period, in our case 3h
**T0** is the normalization period corresponding to the 8 working hours

**Noise Dose, percentage of time during which a person is exposed to a potentially dangerous noise level**

$$DOSE = 100\ Te/T_0 \cdot 10^{\left[\left(L_{AEQ,Te} - Lc\right)/q\right]} \quad \text{dBA}$$

**T0** is the normalization period corresponding to the 8 daily working hours
**Te** is the variable period of a visitor personal exposure
**Lc** is the criterion level or the sound level producing a 100% dose; in the current Italian legislation criterion level is 87 dB(A)
**q** is a the exchange rate constant (=10)

# 1.5) Results of evaluations on the exposure parameters

*Personal daily exposure levels and dose evaluated considering **3 hours time exposure***

| Premise type | Average LAeq dB(A) | Daily LEX,8h dB(A) | Daily Dose Rif. 87 dB(A) |
|---|---|---|---|
| Pubs / Disco-pubs | 98.9 | 94.7 | 588% |
| Discothèques | 98.5 | 94.2 | 530% |
| Removeable discothèques | 101.3 | 97.0 | 1002% |
| Removeable dancings | 94.4 | 90.1 | 206% |
| Live concerts | 96.9 | 92.6 | 366% |

*Personal daily exposure levels and dose evaluated on **imagined scenarios** of nocturnal life by young people*

| *Weekly scenario* | *Weekly LEX,8h (40h)* dB(A) | *Weekly Dose with reference to 87* dB(A) |
|---|---|---|
| 3 hours in pub<br>3 hours in discothèque | 90.5 | 224% |
| 4 hours in pub<br>2 hours of live concerts<br>3 hours in discothèque | 91.9 | 312% |
| 6 hours in pub<br>3 hours in removeable discothèque<br>4 hours in removeable dancing | 93.9 | 490.8% |

# 2) Analysis on noise complaints

## 2.1) Analysis method

All noise complaints data received since 1992 until june 2009 were examined and evaluated by source type

The larger part of this analysis involved music entertainment premises included meeting points such as bar, restaurants….

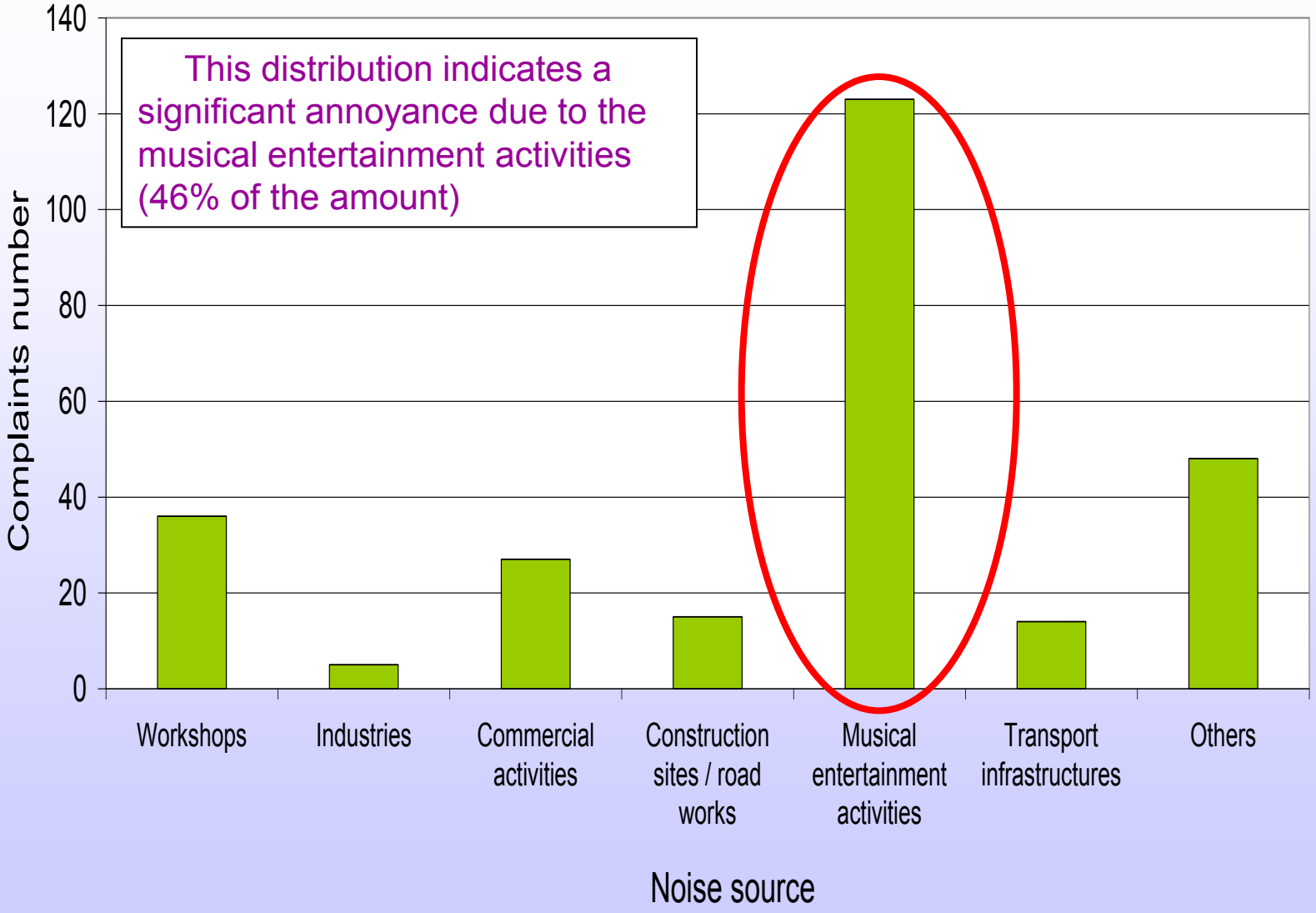
On these last:

- Territorial distribution of complaints was evaluated

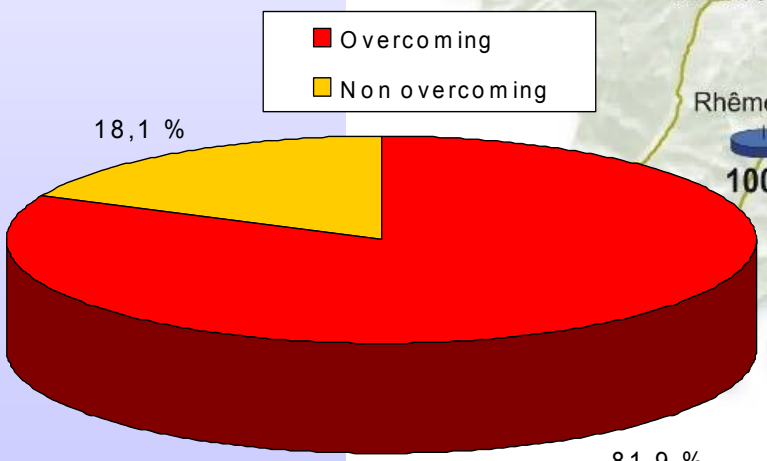
- To evaluate if the seasonal activities were causing the complaints, the musical entertainment complaints were split in the two tourist periods: high season (winter and summer) and low season (spring and autumn)

- Percentage of night clubs overcoming law limits was computed

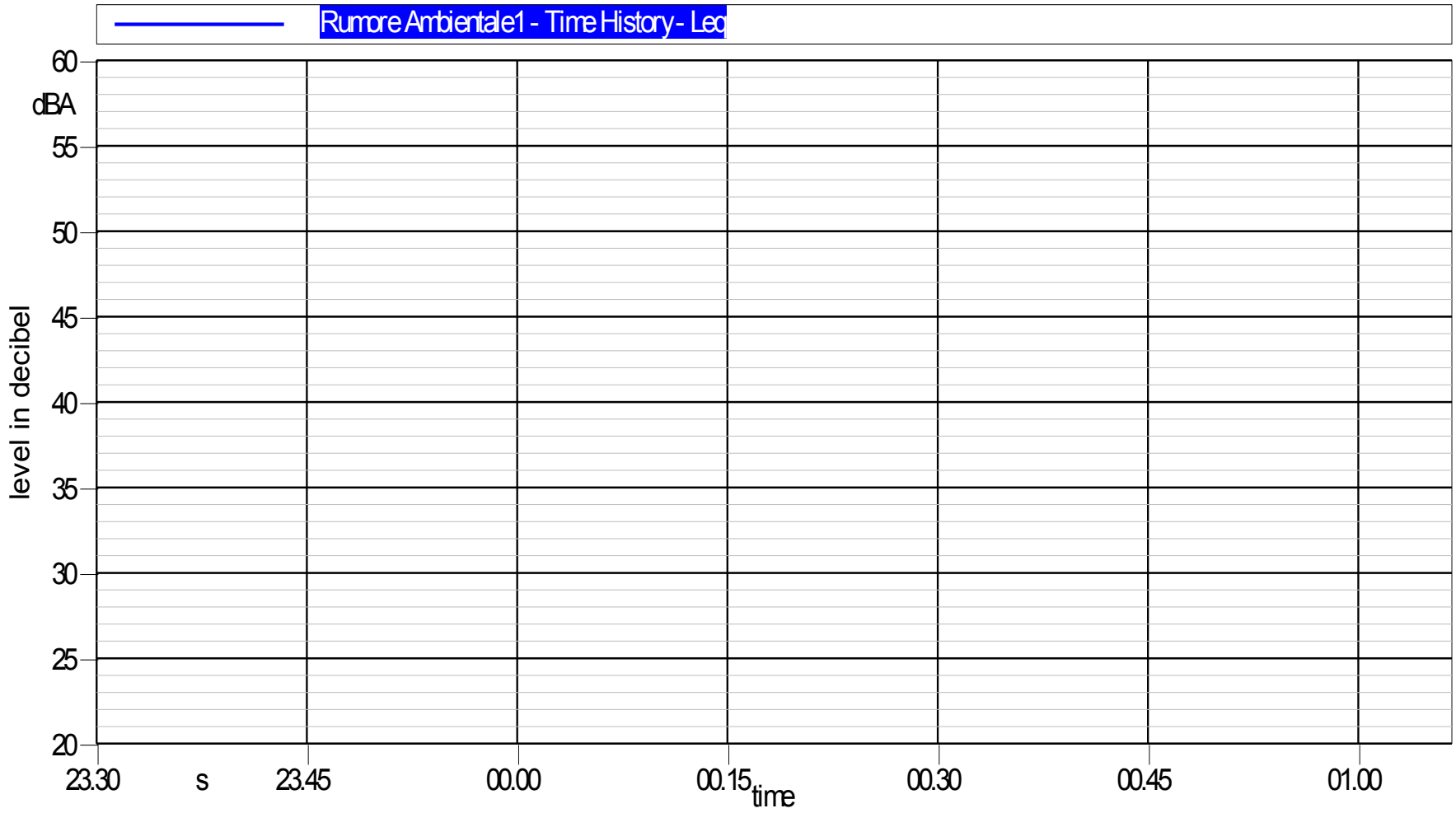
# 2.1) Results of the analysis



# musical entertainment activities: territorial and seasonal noise complaints distribution



# Example of measure made in a dwelling that has caused a surmount of law limits



# Closing considerations

- This study has allowed the collection of first data on noise levels in night club on the specific request by the Aosta Valley Local Health service

- The European legislation that concerns workers protection has already extended its attention to all the music entertainment sector workers

- It would be suitable to expand this attention at the exposure of young people to high music levels in order to gain more information on the risk of relevant damage to hearing

- It's important to reduce the music level in these clubs in order to limit the annoyance towards the people living nearby



# Thank you for your attention!!