

Challenge Proposal:

[Understanding the Douro Region through GeoData]

Context / Description

The Douro region was demarcated in 1756 by Marques de Pombal (former Prime Minister of Portugal), making it the first such designation in Europe and one of the oldest in the world. From that point on, only true "port wine" came from this region, following specific regulations of production.

Economic, Social, and Cultural value of the Demarcated Region of Douro (DRD) and the Porto and Douro wines are the foundations for the progress and international affirmation of a territory considered to be one of the most beautiful vineyard areas in the world having been awarded UNESCO World Heritage Status.

Understanding an area of roughly 242,700 hectares that stretches 100km inland from Porto, along the river Douro, to the Spanish border in an intricate system of deep twisting valleys carved out over time by the River Douro and its tributaries is a huge challenge.

Data and analytics can play an important role in this challenge to drive efficiencies and glean deeper in operational insights using the latest in descriptive, predictive, and prescriptive analysis.

Goals

To tackle 8 challenges, one for each area of expertise part of the DRD supply chain from grape to bottle:

- Grape production
- Production Authorization
- Harvest and Production Declaration
- Wine Management
- Wine Transit
- Certification
- Markets
- Economic Simulator

Challenges/Questions

C1: Predictive model for estimating the grape production potential in DRD.

Q1: What is the expected grape production per parish in the next year?

C2: Model for supporting annual harvest communication and production authorization based on quality and market variables.

Q2: Based on quality and market variables what should be the ranking and overall production allowed next year?

C3: Support model for monitoring, control and validation of the Harvest and Production Declaration.

Q3: How can I monitor and where should I focus my inspection activities?

C4: Information Model to support the traceability of current account assets and decision making at the certification level.

Q4: How can I trace the wine and support the certification process?

C5: Model for generating areas of influence to optimize grapes and wine transport.

Q5: What are the hotspots regarding transit routes of grapes and wine?

C6: Analytical model that can help to: identify relationship between physical and chemical data x quality (perceived) x market x parcels; identify economic agents' profiles; and generate information relevant to the laboratory's operational work (metrics related to quantities and response times)

Q6: Is there any relationship between physical chemical data x quality x market x parcels?

C7: Dynamic descriptive Dashboard oriented to the market.

Q7: What is the best destination for RDD wines next year?

C8: Dynamic Dashboard for assessing and benchmarking vineyard operational costs.

Q8: Comparing to other winegrowers in my parish is my cost per kg of grapes higher?

Outcome

For each challenge answer the questions and identify a methodology or approach to solve the challenge using data provided and/or available.

The questions mentioned are guidelines and examples. We also encourage the formulation and answering different questions related to the challenge.

Data sources

The data sets for each challenge will be presented in depth prior the start of the challenge and comprises the following major topics:

- Vineyard areas data
- Vineyard classification data
- Historical production authorizations data
- Grape production historic data
- Wine production data
- Wine certification data
- Wine market data