

Get on Track - Reducing F1's Carbon Emissions by Race Calendar Optimization

Motivation

- There is a global trend towards sustainable transport, e.g. the adoption of electric vehicles and shared mobility
- Motor sport is constantly pushing towards more sustainable racing as well
- Formula One (F1) as the flagship racing series, also tries to reduce emissions. For example they shifted regulation towards more efficient hybrid engines. They also consider to run race cars with sustainable fuel in the future to make racing free of carbon emissions
- However racing takes place all over the world and requires extensive logistics to ship cars, materials, equipment, and people all over the globe. Little is known about carbon emissions stemming from these logistics
- Currently the race calendar is scheduled mainly based on financial or political considerations. Rescheduling the calendar could reduce logistic efforts and therefore carbon emissions



Sources: Unsplash.com and F1

Research Question

- What are the carbon emissions of F1, and what share do logistics processes between racing events hold?
- Could F1 reduce its carbon emissions significantly by rescheduling their race calendar?

Contact



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Approach

- Gather data on fuel consumption of F1 race cars and necessary logistics efforts to ship cars, materials, equipment, and people between race events.
- Estimate and analyze carbon emissions from race event and F1 logistic processes
- Modelling of F1 transport logistics as optimization problem (e.g., Travelling Salesman Problem)
- Optimize race calendar and analyze carbon emission reduction
- Analyze the economic impact of carbon taxes on inefficient race calendars