

# The Effects of Emissions Labels on Consumer Choice of Lower-Emission Flights

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# Background

	•	Deriin		Mon 27 Jan		<
All filters	Stops - Airlines - Bags	Price -	Times - Emissio	ns 🔹 Connecting airports 👻	Duration	•
	Best			Cheapest from €22		
o flights	price and convenience (j) Prices include require	ed taxes + fees for 1 ac	dult. Optional charges and	bag fees may apply. Passenger assistanc	<u>e</u> info. <b>Sor</b>	tb
0	6:25 - 09:35	2 hrs 10 min	Non-stop	118 kg CO2e	X 622	
Ry	vanair voids as much CO2e as 670 trees absorb in a da	DUB-BER y <sup>(i)</sup>		-9% emissions 🛈	£22	
18 Ry	<b>3:20 – 21:30</b> <sub>vanair</sub>	2 hrs 10 min DUB-BER	Non-stop	118 kg CO2e -9% emissions i	€22	
Ae	<b>6:20 – 09:35</b> er Lingus	2 hrs 15 min DUB-BER	Non-stop	146 kg CO2e +13% emissions ③	€45	

### **Research Questions**

1. Do these labels work?

- 2. Can people use them as intended?
- 3. Do people understand them?



# **Experimental Design**

Pre-registered online experiment

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Nationally representative sample, N = 1,000
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Four conditions (three labels + control)

Study of "online shopping" began with clothes, then holidays

Three stages:

- 1) Choose flights, accommodation and activities for a holiday
- 2) Choose the lowest emission flight for someone else ("buyer's agent" paradigm)
- 3) Incentivised multiple-choice questions on comprehension

Prices as in market, July 2024,

Open Science Framework page (<u>https://osf.io/8sn5h/</u>)





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	Holiday Shop							
		Outbound Flights	Return Flights	Accomodation	Activity			
	Accomodation	ı			CART			
		Salles Hotel Mál	aga	Very Good 8.4				
		Malaga Centro, Málaga – 400m from centro Beach Nearby – 1.4km from beach	2	Standard Double Room 1 queen bed				
	Salles Hotel Málaga	Centro €1551		Add	T-110-1-1-0-1-1-1-04000			
		Hotel Valeria		Wonderful 9.0 3,317 reviews	Total Price: Budget: €1800 Checkout	rcart		
		Malaga Centro, Málaga– 400m from centro Beach Nearby – 750m from beach		Economy Double Room 1 double bed				
	Hotel Valeria €180	8		Add				
		Ilunion Málaga		Very Good 8.5 8,264 reviews.				
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#### CONTROL CONDITION

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	Holida	ay Shop	)						
		Outboun	nd Flights	Return Flights	Accomodation	Activity			
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	11	<b>12:00-14:05</b> Eurowings	3hrs 5mins	€162 Add					
	V	<b>23:50-01:55</b> Vueling	3hrs 5mins	€159 Add					
	1	<b>06:20-08:25</b> Ryanair	3hrs 5mins	€236 Add		Fotal Price: Budget: €2100 heckout	) rt		

#### "ABSOLUTE" CONDITION

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		12:20-23:50 United Airlines	6hrs 30mins	355 kg CO2e	€263	Add							
	ĸĿw	<b>09:15-20:55</b> KLM	6hrs 40mins	409 kg CO2e	€276	Add							
	1	<b>21:35-09:15<sup>+1</sup></b> American Airlines	6hrs 40mins	347 kg CO2e	€267	Add		Total Pr Checkout	rice: Budget:€	3200 Clear cart			
		<b>16:55-04:25<sup>+1</sup></b> Delta	6hrs 30mins	321 kg CO2e	€280	Add							
		21:05-08:50 <sup>+1</sup>											
		21-05-08:50 <sup>+1</sup>											

#### "RELATIVE" CONDITION

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		Out	oound Flights		Return	Flights	Accomoda	ation	Activity				
	Retur	n Flights	5						CART				
	S	<b>20:05-22:45</b> Lufthansa	4hrs 40mins	249 kg CO2e	€300	Add							
	•	<b>21:40-00:15<sup>+1</sup></b> Aegean	4hrs 35mins	237 kg CO2e -21% emissions ①	€286	Add							
	Wijizz	<b>10:25-13:05</b> Wizz Air	4hrs 40mins	240 kg CO2e -20% emissions ①	€317	Add		Total Pr	ice: Budget:€	1600 Clear cart			
	1	<b>17:20-20:00</b> Ryanair	4hrs 40mins	250 kg CO2e -17% emissions ①	€282	Add							
	<u></u>	06:20-09:05		252 kg CO2e									
	-	06-20-00-05		252 kg CO2e		_							

#### **"TREES" CONDITION**

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00													All Bookmarks
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		(	Outbound Fligh	nts	Return Flights			Accomodati	on	Activity			
	Outbo	ound Flig	ghts							CART			
	I	<b>06:15-12:35</b> Lufthansa	4hrs 20mins	232 kg CO2e -26% emissions ① Avoids as much CO2e as 4,932 tre	ees absorb in a day	€133	Add						
	Wijizz	<b>14:15-20:45</b> Wizz Air	4hrs 30mins	262 kg CO2e -16% emissions ①		€118	Add						
	*	<b>21:30-03:50<sup>+1</sup></b> Aer Lingus	4hrs 20mins	243 kg CO2e -22% emissions ①		€129	Add		Tota	l Price: Budget:	€2000 Clear cart		
	*	<b>12:10-18:45</b> Aegean	4hrs 35mins	252 kg CO2e -19% emissions ①		€119	Add						
	Ŵ	<b>10:30-16:50</b> <sub>Ryanair</sub>	4hrs 20mins	249 kg CO2e -20% emissions ①		€118	Add						

# Stage 1 Results

	(1)	.35						
	Emissions Rank of Chosen Flight				Control		Absolute La	bels
Label Condition (Ref: No Labels)		.30	T	-	Relative	Labels	Trees labels	
Absolute Labels	0.01		т			Laboto		<i>.</i>
	[-0.13 - 0.15]	> .25		-				
	p = .871	oilit	II -					
Relative Labels	-0.17*	pal 20						
	[-0.310.03]	Pro						
	p = .016	р 9.15				- 	<b>T</b>	
Trees Labels	-0.31***	dict						
	[-0.450.17]	e ط. 10						
	<i>p</i> < .001							
Flight Characteristic Controls <sup>a</sup>	Yes	.05						
Participant Characteristic Controls <sup>b</sup>	Yes							
Constant	-	.00						
	-		1	2	3	4	5	6
	-			Fr	nissions Ran	k of Chos	sen Flight	
Observations	6,000			(1-	6: Lowest to	Highest F	missions)	
Note: 95% Confidence intervals in square br	rackets			(1)	0, 2011001 10			

<sup>a</sup>Controlling for price, airline, destination and direction (outbound or return).

<sup>b</sup> Controlling for age, gender, degree, household income, region, urban/rural, own flying activity and previous use of online flight booking sites.

#### Stage 2: Book "the most environmentally friendly holiday possible" (incentivized)

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		Trave	Agency Istanbul O	/ utbound	Istanbul Return Lisbon	Outbound List	oon Return	Tokyo Outbound	Tokyo Return			🗅 All Bookm
		Lisbo	n Outbo	ound					CART			
		TP	<b>17:30-20:20</b> Tap Air Portugal	2hrs 50mins	136 kg CO2e Avg. emissions ①	€94	Add					
		ensylet	<b>13:45-16:30</b> easyJet	2hrs 45mins	145 kg CO2e +9% emissions ⊕	€9	Add					
		WIPZ	<b>20:25-23:15</b> Wizz Air	2hrs 50mins	112 kg CO2e -16% emissions ⊕	€174	Add	Total Pi	ice: Credit:€5000	_		
		1	<b>18:20-21:15</b> Ryanair	2hrs 55mins	108 kg CO2e -19% emissions ① Avoids as much CO2e as 1,520 trees absorb in a day	€9	Add	Checkout	Clear car			
		TP	<b>10:35-13:20</b> Tap Air Portugal	2hrs 45mins	178 kg CO2e +34% emissions ①	€310	Add					
		-	<b>18:10-20:55</b> British Airways	2hrs 45mins	<b>134 kg CO2e</b> Avg. emissions ⊕	€23	Add					
			British Alexays	SUILOF SUIZ	Aug. emissions ()	(52)						

# Stage 2 Results

	(2)					
	Correct Choice	0.6 –				
Label Condition ( <i>Ref:</i> No Labels)						
Absolute Labels	5.27***	0.5		0.426		
	[3.29 - 7.26]	0.5 —		<u>т</u>		0.424 $_{ackslash$ T
	<i>p</i> < .001	ity			0 350	
Relative Labels	4.94***				т	
	[2.95 - 6.92]	qo				
	<i>p</i> < .001	P				
Trees Labels	5.27***	<u>0</u> 0.3 –				
	[3.29 - 7.25]	lict				
	p < .001	Lec				
Flight Characteristic Controls <sup>a</sup>	NA	<u> </u>				
Participant Characteristic Controls <sup>b</sup>	Yes					
Constant	-6.21***	0 1 —				
	[-8.294.14]	0.1	0.004			
	p < .001		0.004			
Observations	1,000	0.0 -	<u></u>			
Note: 95% Confidence intervals in square brackets			Control	Absolute Lab	els Relative Label	s Trees Labels

*Note*: 95% Confidence intervals in square brackets

<sup>a</sup> Controlling for price, airline, destination and direction (outbound or return).

<sup>b</sup>Controlling for age, gender, degree, household income, region, urban/rural, own flying activity and previous use of online flight booking sites.

### Stage 2 Results cont...



### Stage 3 Results

Q. This flight has 23% less emissions than...



### Factors people think are in the calculation





### Conclusions

- Absolute emissions don't confuse, but may not be used
- Salient Relative and Trees labels can encourage lower-emission choices, but effect is small
- Consumers misinterpret relative labels, so may be nudged to higher-emission flights to more distant destinations
- Consumers do not understand labels