

Whisk(e)y & Food Pairing Recommender



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Title Lorem Ipsum

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WHISKY
RECOMMENDER

FOOD
RECOMMENDER

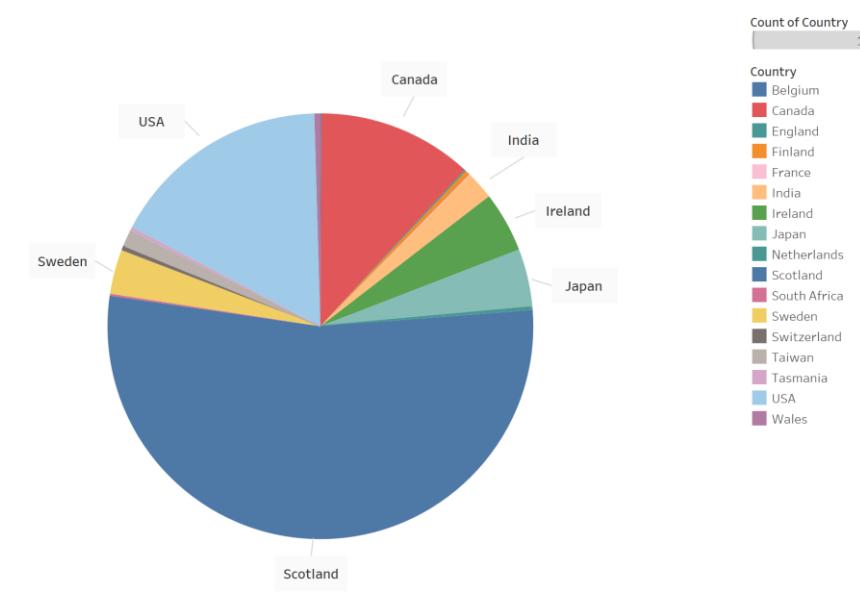
INTRODUCTION

- ❖ Have you ever wanted to try whisky but don't know where to begin?
- ❖ The only whiskies you know are “Johnny Walker”, “Chivas”, and “Jack Daniel’s”?
- ❖ Tried a whisky that you liked...forgot its name but remember what it tasted like?
- ❖ You're hungry but don't know what to munch on while enjoying your whisky?

What is Whisk(e)y?

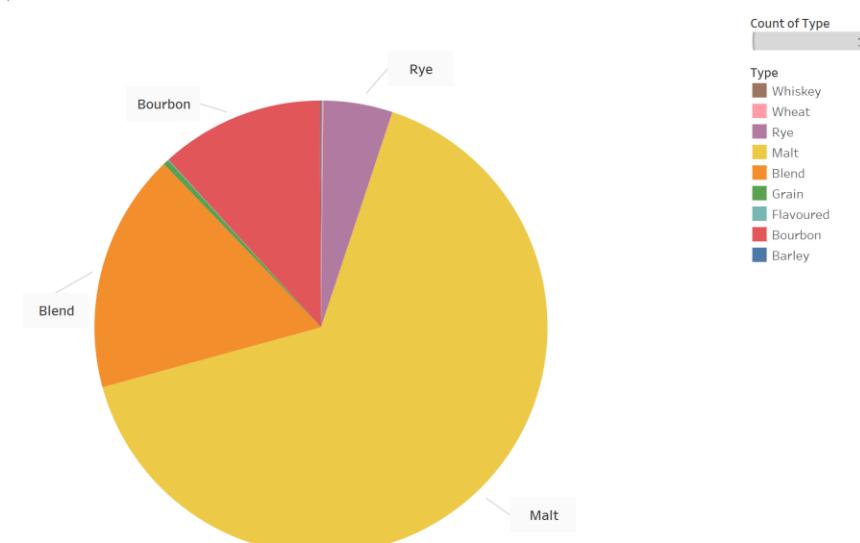
- ❖ Originally from the Gaelic ‘usquebaugh’, meaning ‘water of life’.
- ❖ Min. 40% Alcohol by Volume (ABV).
- ❖ Japanese whisky is bottled in Japan, but it isn’t necessarily distilled or aged there.

Countries



Country (colour) and count of Country (size).

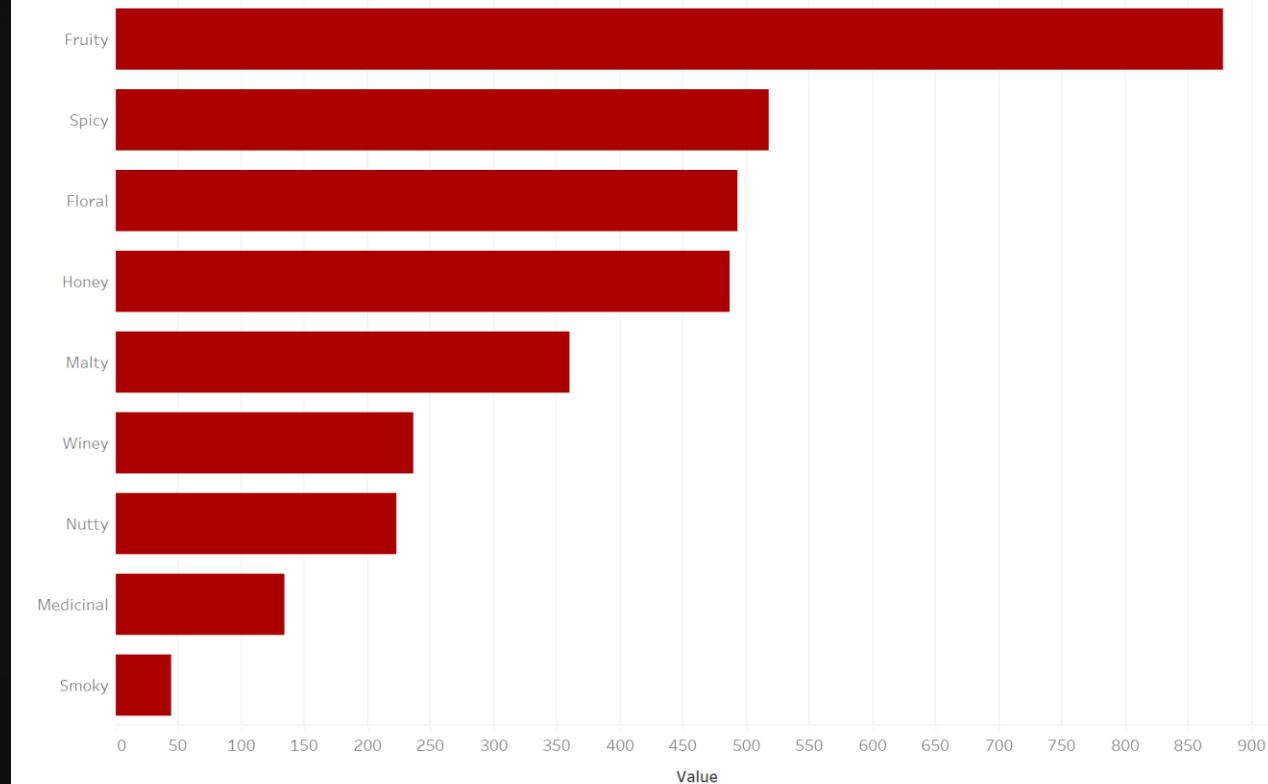
Whisky Types



Type (colour) and count of Type (size).

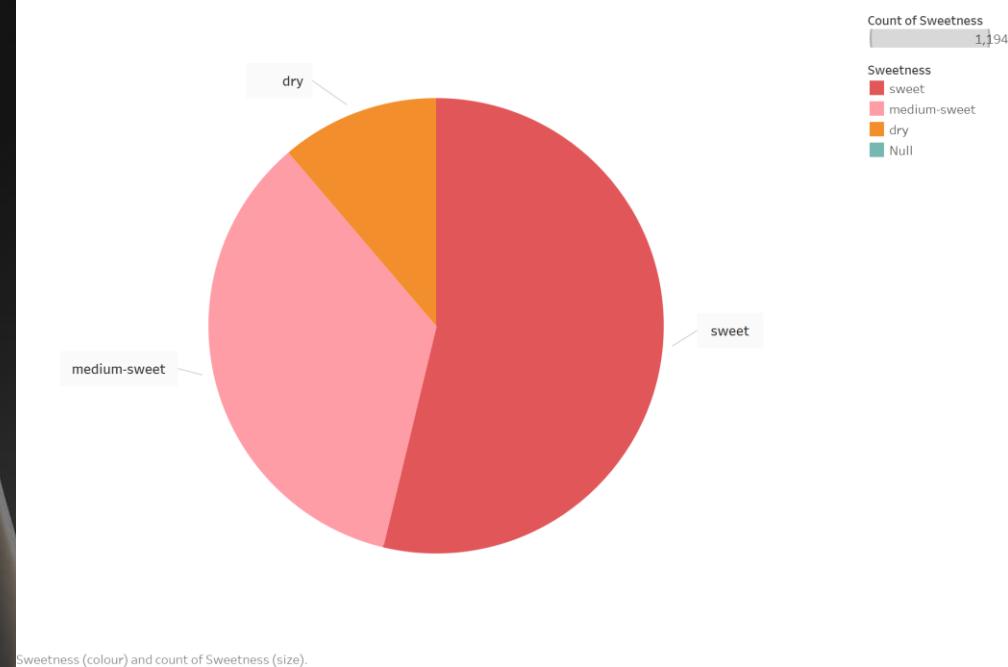
What Does it Taste Like?

Flavour Notes

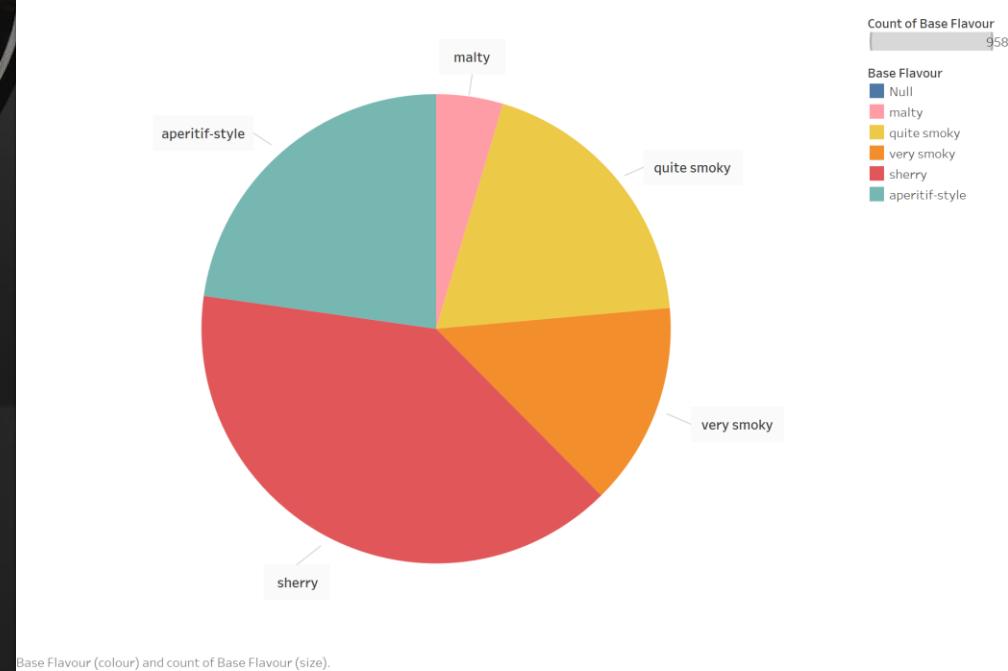


Fruity, Spicy, Floral, Honey, Malty, Winey, Nutty, Medicinal and Smoky.

Sweetness



Base Flavours

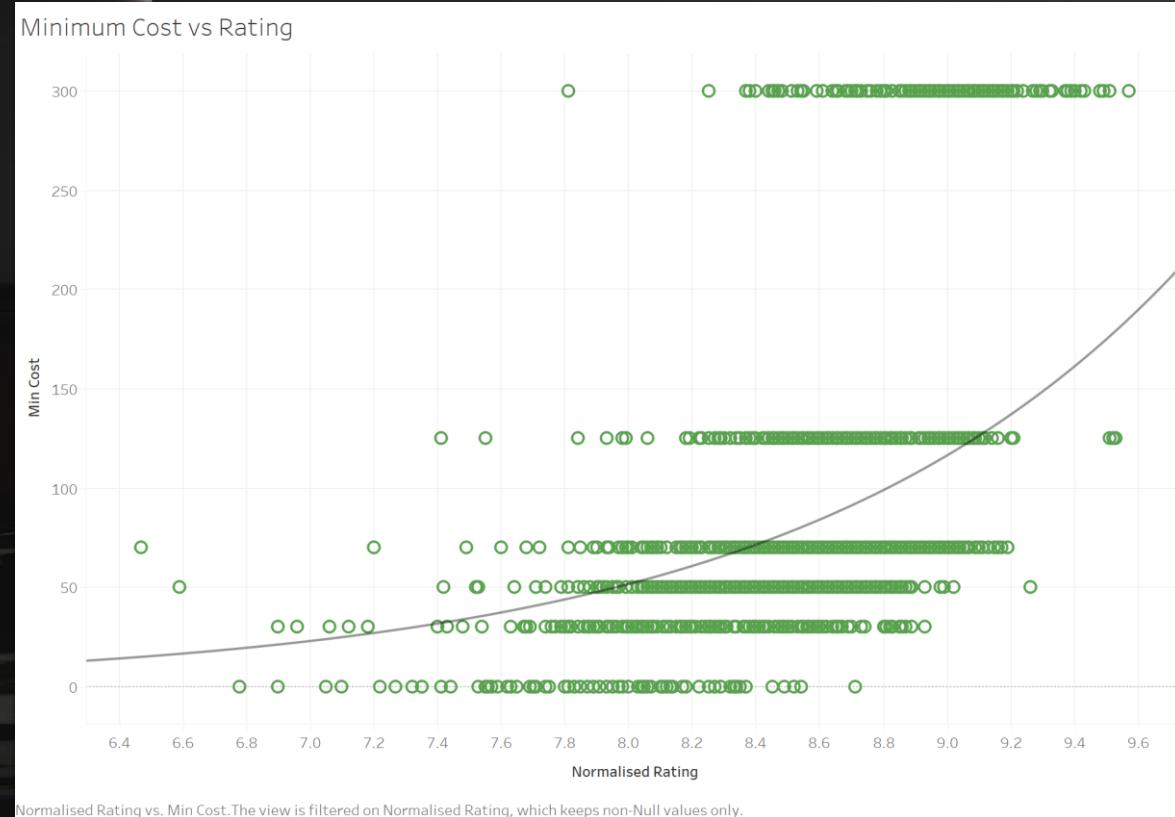


Isn't Whisk(e)y Expensive?

❖ Price Categories:

- ❖ < \$30
- ❖ \$30 - \$50
- ❖ \$50 - \$70
- ❖ \$70 - \$125
- ❖ \$125 - \$300
- ❖ > \$300

- ❖ Cheaper doesn't mean lower rated.
- ❖ Whisky prices are also determined by scarcity of supply.
- ❖ Not all "vintage" bottles are expensive due to their quality and taste.



Whisk(e)y Flavour Clusters

❖ Single Malt and Blended Whiskies:

- ❖ A - Full-bodied, sweet, pronounced sherry – with fruity, honey and spicy notes
- ❖ B - Full-bodied, sweet, pronounced sherry – with fruity, floral and malty notes, some honey and spicy notes
- ❖ C - Full-bodied, sweet, pronounced sherry – with fruity, floral, nutty, and spicy notes, some smoky notes

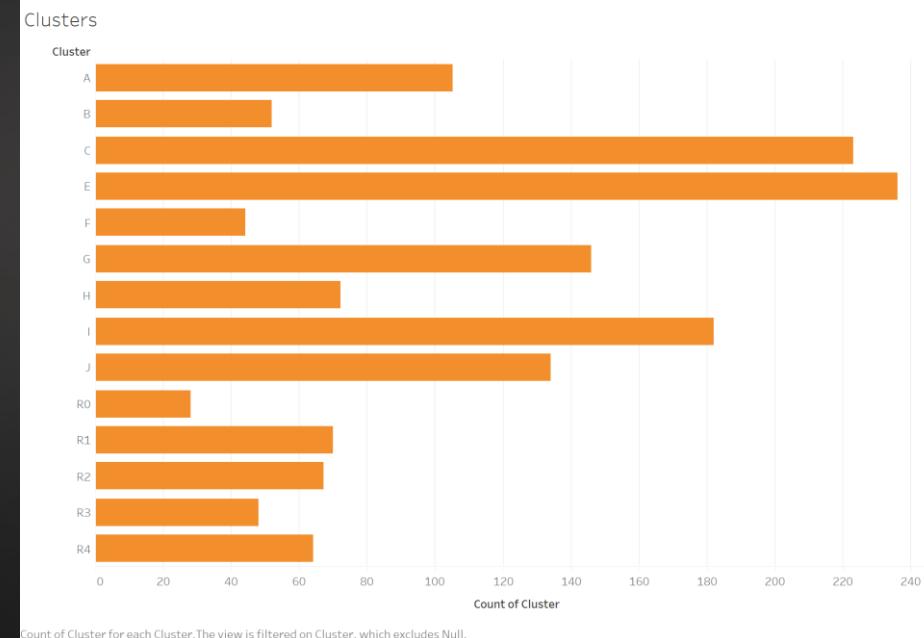
- ❖ E - Medium-bodied, medium-sweet – with fruity, honey, malty and winey notes, some smoky and spicy notes
- ❖ F - Full-bodied, sweet and malty – with fruity, spicy, and smoky notes

- ❖ G - Light-bodied, sweet, apéritif-style – with honey, floral, fruity and spicy notes, but rarely any smoky notes
- ❖ H - Very light-bodied, sweet, apéritif-style – with malty, fruity and floral notes

- ❖ I - Medium-bodied, medium-sweet, quite smoky – with some medicinal notes and spicy, fruity and nutty notes
- ❖ J - Full-bodied, dry, very smoky, pungent – with medicinal notes and some spicy, malty and fruity notes

❖ Bourbons and American Whiskies:

- ❖ R0 - "No Rye" whisky with 0 rye gain (pure corn whiskies and "wheaters")
- ❖ R1 - "Low Rye" whisky of 10% or less rye grain
- ❖ R2 - "Standard Rye" whisky of 10-15% rye grain (classic bourbons)
- ❖ R3 - "High Rye" whisky of more 15% rye
- ❖ R4 - "Rye" whisky of more than 51% rye (straight rye whiskies)



Data Collection & Cleaning

- ❖ Whisky
 - ❖ Obtained Whisky dataset csv file from WhiskyAnalysis
 - ❖ Filled up empty cells for Cluster, Type of Whisky
 - ❖ Dummified columns for Flavour Notes

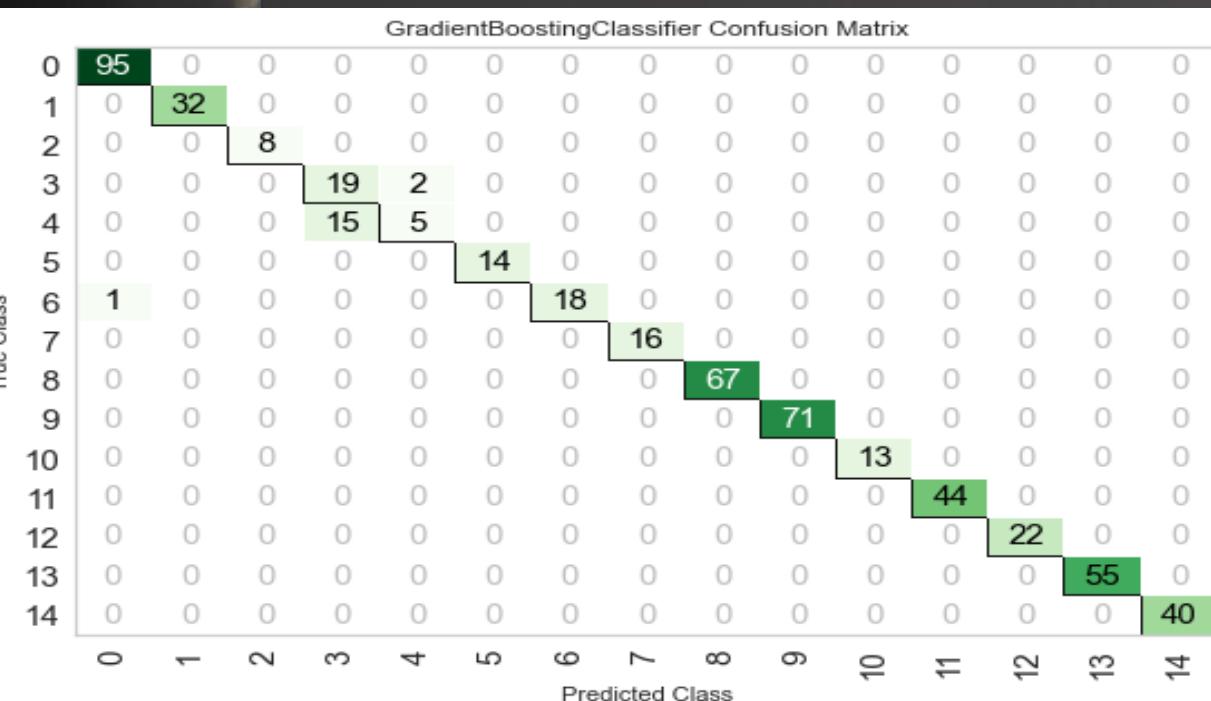
- ❖ Food
 - ❖ Created a dataset of food based on culinary and alcohol-tasting websites
 - ❖ Matched food data to different whisky flavour clusters based on research

	Model	Accuracy	AUC	Recall	Prec.	F1	Kappa	MCC
0	Gradient Boosting Classifier	0.9665	0.9987	0.9401	0.9703	0.9626	0.9628	0.9634

Modelling

- ❖ Gradient Boosting Classifier
 - ❖ Highest train scores across the board except for AUC
 - ❖ Test scores outperformed train scores
 - ❖ Logistic Regression
 - ❖ Highest AUC
 - ❖ Multi-class Classification
 - ❖ AUC vs F1 Score?
 - ❖ F1 Score
 - ❖ Minimises both false positives and false negatives

Model		Accuracy	AUC	Recall	Prec.	F1	Kappa	MCC	TT (Sec)
gbm	Gradient Boosting Classifier	0.9664	0.9983	0.9384	0.9682	0.9619	0.9627	0.9634	20.2610
ridge	Ridge Classifier	0.9616	0.0000	0.9341	0.9632	0.9579	0.9574	0.9581	0.0760
rf	Random Forest Classifier	0.9592	0.9978	0.9284	0.9621	0.9574	0.9547	0.9550	0.3690
dt	Decision Tree Classifier	0.9560	0.9769	0.9227	0.9579	0.9535	0.9512	0.9516	0.0590
lr	Logistic Regression	0.9552	0.9984	0.9224	0.9561	0.9531	0.9503	0.9506	1.4640
et	Extra Trees Classifier	0.9552	0.9981	0.9201	0.9572	0.9529	0.9503	0.9507	0.4560
nn	K Neighbors Classifier	0.9544	0.9956	0.9141	0.9553	0.9521	0.9494	0.9499	0.4520
lightgbm	Light Gradient Boosting Machine	0.9528	0.9978	0.9174	0.9529	0.9514	0.9476	0.9479	0.9140
svm	SVM - Linear Kernel	0.9520	0.0000	0.9208	0.9466	0.9456	0.9468	0.9478	0.1700
nb	Naive Bayes	0.8696	0.9507	0.8824	0.9059	0.8627	0.8573	0.8662	0.0880
lda	Linear Discriminant Analysis	0.7504	0.8870	0.6471	0.6994	0.7159	0.7330	0.7371	1.1220
ada	Ada Boost Classifier	0.6984	0.9256	0.5396	0.6237	0.6385	0.6613	0.6943	0.4230
qda	Quadratic Discriminant Analysis	0.2704	0.5958	0.1789	0.2594	0.2406	0.1832	0.1946	0.1830



Whisk(e)y & Food Recommendation

```
1 recommended_whiskies_a = whisky_recommender('Amrut Spectrum (Batch 1)')
```

```
1 recommended_whiskies_a.sample(5)
```

	whisky	price_category	cluster	winey	fruity	floral	honey	malty	nutty	spicy	...	country_usa	country_wales	type_barley	type_blend	type_bou
20	Compass Box Last Vatted Malt	5	3	0.0	1.0	1.0	0.0	0.0	1.0	1.0	...	0	0	0	0	0
174	Highland Park 15yo Fire	6	3	0.0	1.0	1.0	0.0	0.0	1.0	1.0	...	0	0	0	0	0
221	Sullivans Cove French Oak	6	3	0.0	1.0	1.0	0.0	0.0	1.0	1.0	...	0	0	0	0	0
257	Bowmore 12yo Enigma	2	3	0.0	1.0	1.0	0.0	0.0	1.0	1.0	...	0	0	0	0	0
375	Jura Turas Mara	2	3	0.0	1.0	1.0	0.0	0.0	1.0	1.0	...	0	0	0	0	0

```
1 recommended_whiskies_b = flavour_recommender(9)
```

```
1 recommended_whiskies_b.sample(5)
```

	whisky	price_category	cluster	winey	fruity	floral	honey	malty	nutty	spicy	...	type_barley	type_blend	type_bourbon	type_grain	type_r
1187	Milstone Peated	3	9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	...	0	0	0	0	0
1126	Laphroaig Caerdeas 2018 Fino	4	9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	...	0	0	0	0	0
1164	Laphroaig Caerdeas 2017	4	9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	...	0	0	0	0	0
1079	Bruichladdich Octomore 10.2	5	9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	...	0	0	0	0	0
1102	Smogen Single Cask 4yo 7/2011	5	9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	...	0	0	0	0	0

```
1 food_recommender(1)
```

1	salty cheddar cheese
8	all crumbles
9	chocolate pies, brownies, crumbles
10	dark chocolate
11	dark orange flavoured chocolate
17	bitter nuts

Whisk(e)y & Food Recommender

Find me a whisk(e)y similar to:

Balvenie Doublewood 12yo



Recommended whiskies based on your input:

1. Macallan 10 yo
2. Yamazaki Sherry Cask
3. Bruichladdich 21yo
4. Bunnahabhain 14yo 2003 Pedro Ximinez Finish
5. Glenmorangie Milsean



Please select an option.

Recommended food to pair with your whisky:

1. Salty Cheddar Cheese Platter
2. Apple Crumble
3. Chocolate Pie
4. Orange Flavoured Dark Chocolate
5. Roasted Almonds

Please select an option.

Find me a whisk(e)y with this flavour profile:

- A - Full-bodied, sweet, pronounced sherry – with fruity, honey and spicy notes
- B - Full-bodied, sweet, pronounced sherry – with fruity, floral and malty notes, some honey and spicy notes
- C - Full-bodied, sweet, pronounced sherry – with fruity, floral, nutty, and spicy notes, some smoky notes
- E - Medium-bodied, medium-sweet – with fruity, honey, malty and winey notes, some smoky and spicy notes
- F - Full-bodied, sweet and malty – with fruity, spicy, and smoky notes
- G - Light-bodied, sweet, apéritif-style – with honey, floral, fruity and spicy notes, but rarely any smoky notes
- H - Very light-bodied, sweet, apéritif-style – with malty, fruity and floral notes
- I - Medium-bodied, medium-sweet, quite smoky – with some medicinal notes and spicy, fruity and nutty notes
- J - Full-bodied, dry, very smoky, pungent – with medicinal notes and some spicy, malty and fruity notes





THANK YOU
&
ALL THE BEST !!!