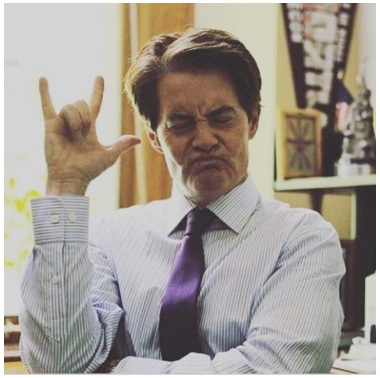
What made the Pacific Northwest move during the July 4th weekend?



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Prepared for Mr. Mayor of Portlandia and Oregon Department of Tourism

Introduction

The COVID-19 pandemic has devastated the tourism industry

Good news, is 2021 saw an uptick in domestic travel[2]

In 2020 there was a 35% reduction in domestic travel, resulting in a loss of over 300 Billion dollars[1].

Potential Driving factors:

- ✓ ***Vaccinations***
- ✓ ***Restriction*** *easement*
- ✓ ***Politics***
- ✓ ***New COVID-19 cases***
- ✓ ***Employment***
- ✓ ***Covid fatigue***
- ✓ *Population density*

Research Question

What factors contributed to the decision of embarking on a long road trip (between 100 and 500 miles) during the July 4th, 2021 weekend travel window by the people in Pacific Northwest (WA, OR, ID)?

Data Description

Constraints:

- *Focus on Pacific Northwest (OR, WA, ID)*
- *July 4th weekend, as US holiday shared across region*
- *Statistics take at county level*

Estimator: ***Mobility** - Trips taken between 100 - 500 miles*

Potential Driving factors:

- ✓ ***Vaccinations** - vaccination rate per person*
- ✓ ***Restriction** easement - Indicator variable for active restrictions on businesses*
- ✓ ***Politics** - Trump votes in 2020 presidential race, proxy for conservative views on pandemic*
- ✓ ***New cases** - New cases per 10K people in a 10 day window prior to holiday weekend*
- ✓ ***Employment** - employment rate for June 2021*
- ✓ ***Covid fatigue** - Not operationalized - no survey - omitted variable*
- ✓ *Population density - people from mobility database per square mile of land - Explanatory variable*

Models and Regression

1. Density + one variable directly related to COVID
2. Density + two variables directly related to COVID
3. Density + 'Kitchen Sink':
   - Insight into stability of models 1 and 2
   - Find more significant drivers

	Dependent variable:		
	ln_trips_100_500_per_pop.21		
	(1)	(2)	(3)
ln_pop_density	-0.099**	-0.113***	-0.099**
	(0.031)	(0.030)	(0.038)
ln_vaccinated_first_per_pop	-1.374*	-1.293*	-1.512
	(0.641)	(0.619)	(0.820)
ln_pcases_per_100kpop.21		0.073*	0.071
		(0.035)	(0.056)
ln_employment_rate			10.985*
			(5.296)
rstr_businesses_active			0.331*
			(0.163)
ln_trump_votes_per_pop			0.610
			(0.928)
Constant	-0.442*	-0.699**	-0.522
	(0.201)	(0.221)	(0.551)
Standard Error Type	Robust	Classical	Robust
Observations	119	119	119
Adjusted R^2	0.198	0.220	0.248
Note:	*p<0.05; **p<0.01; ***p<0.001		

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Model Assumptions

- IID is suspect - regional clustering
- None of the model covariates are perfectly collinear
- Linear conditional expectation are met
- Homoscedasticity assumption met only for Model 2
- All 3 models show normally distributed errors

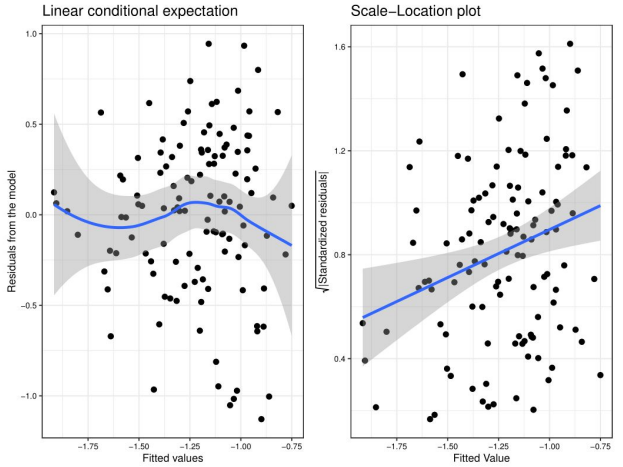

Figure 3: Linear conditional expectation and Homoskedasticity

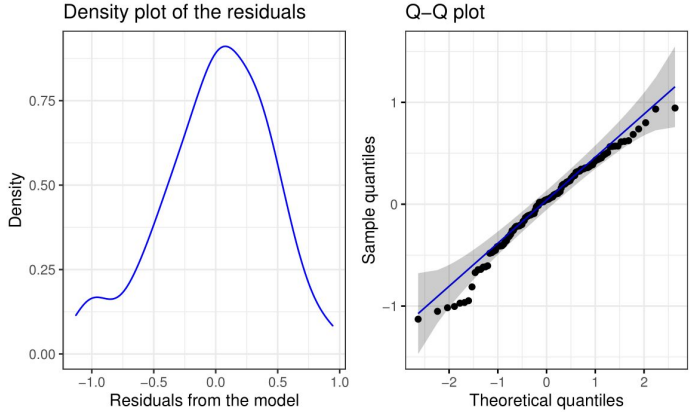

Figure 4: Normally distributed errors

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Conclusions

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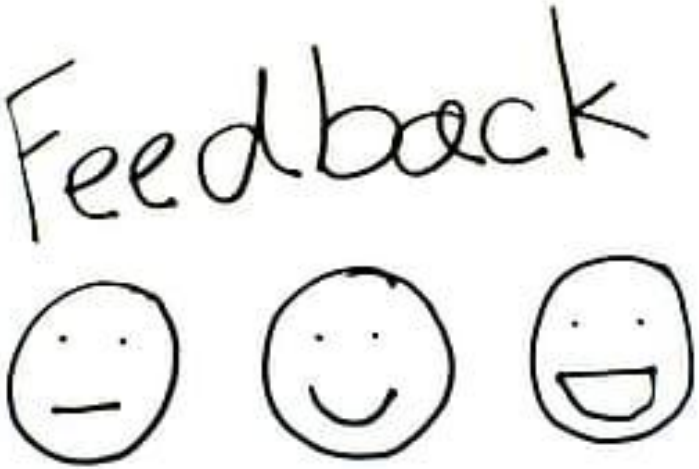
Feedback

EDA Data Pipeline

Initial Cleaning	"The Big Join"	Combined Dataframe
• Standardized variable naming • Calculate trips between 100 and 500 miles • Calculate votes data • Calculate binary restrictions flag • Calculate population • Save interim CSVs	• Join interim CSVs • Bulk calculation of normalizations and transforms	• Search for and resolve by-row anomalies • San Juan County

EDA

- Histograms guided normalization and transformation systems
- Pearson's correlation coefficients guided initial variable selection in model development