Public Storage

By Team: ***Eager To Learn***

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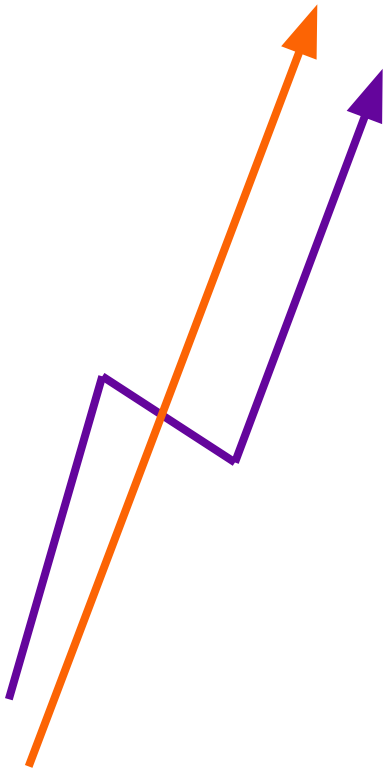

Agenda

1. Introduction
2. Problem Statement
3. Exploratory Data Analysis
4. Linear Regression
5. Dashboard: Financial modeling
6. Recommendations
7. Limitations and Further Analysis

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Introduction

Public Storage is an American international self storage company headquartered in Glendale, California.

In 2021, Public Storage ranks 762 in the Fortune 500. Its current financial status is as follows:

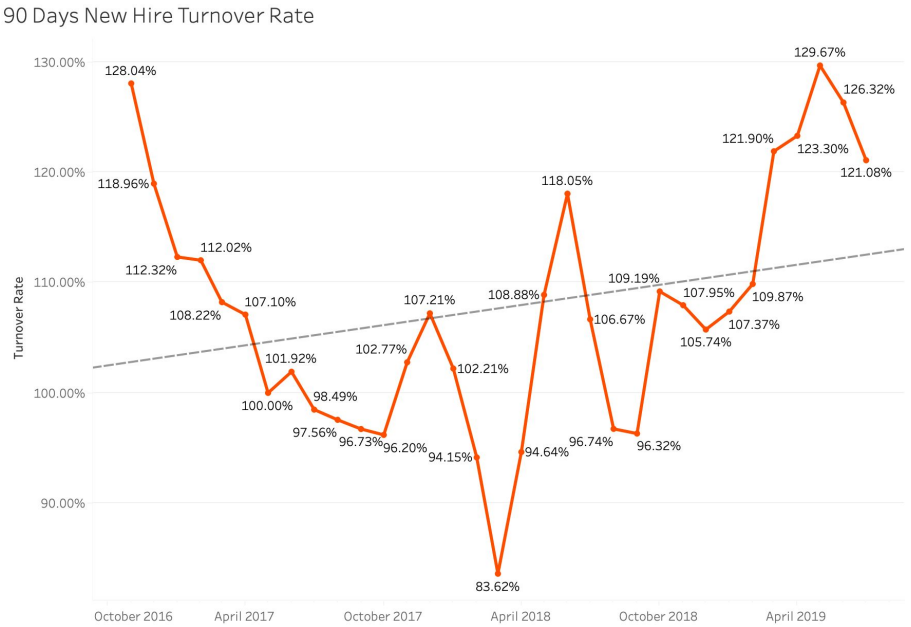
- Revenues ($M): $2,915.1
- Profits ($M): $1,357.2
- Market Value ($M): $43,131.1
- Employees: 5,400

Public Storage was founded in 1972. It has become the largest owner and operator of self-storage facilities in the world.
It has thousands of locations across the U.S. and Europe, and more than 170 million net rentable square feet of real estate.

Public Storage's Main Competitors

	Public Storage	Extra Space Storage	U-Haul	Life Storage
Climate controlled units	✅	✅	✅	✅
Alarm-protected units	🚫	✅	✅	✅
Vehicle storage	✅	✅	✅	✅
Business storage	✅	✅	✅	✅
Perks	global presence; different unit sizes	partnered with Budget for truck discount	24 hours access to storage units	month-to-month rentals; different unit sizes

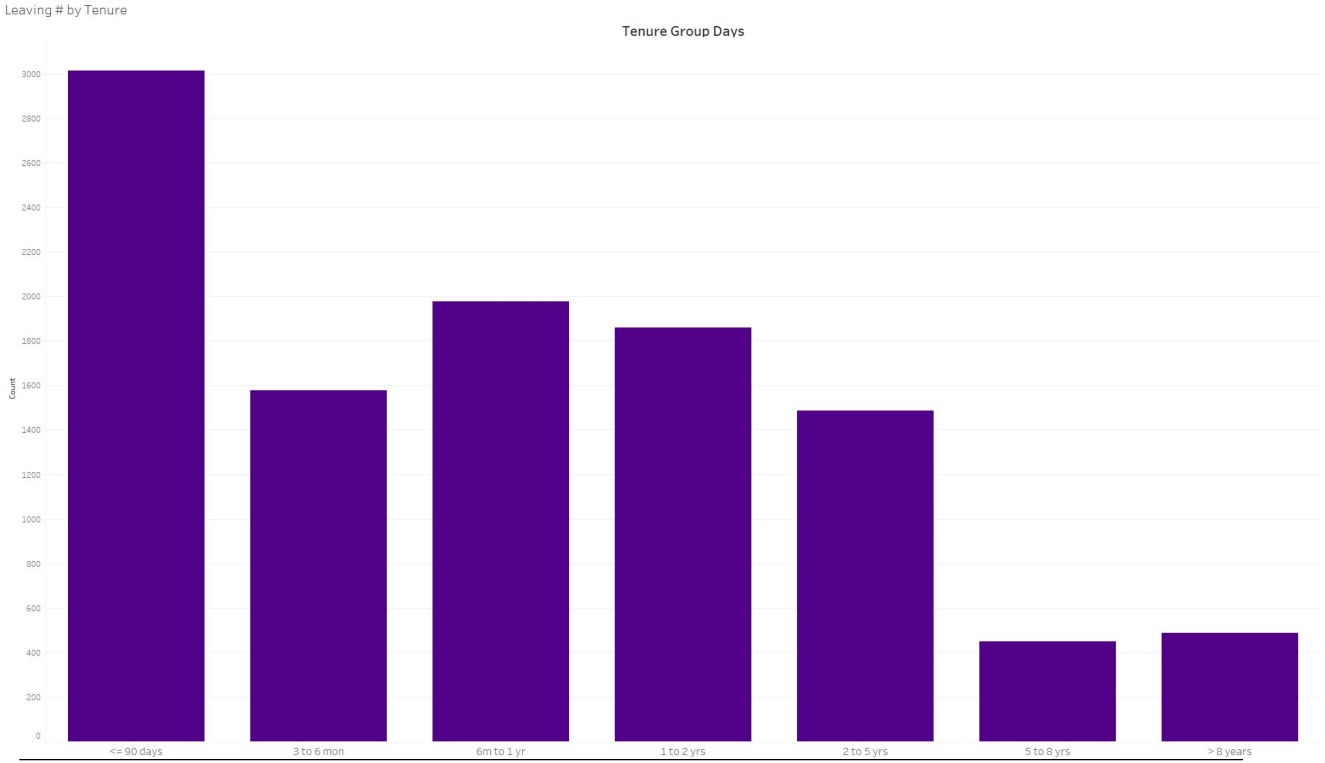
Problem Statement: Why the turnover rate is so high? And how to reduce the turnover rate?



107.6%

Average Annualized Turnover Rate for New Hires

of Leaved Employees by Tenure



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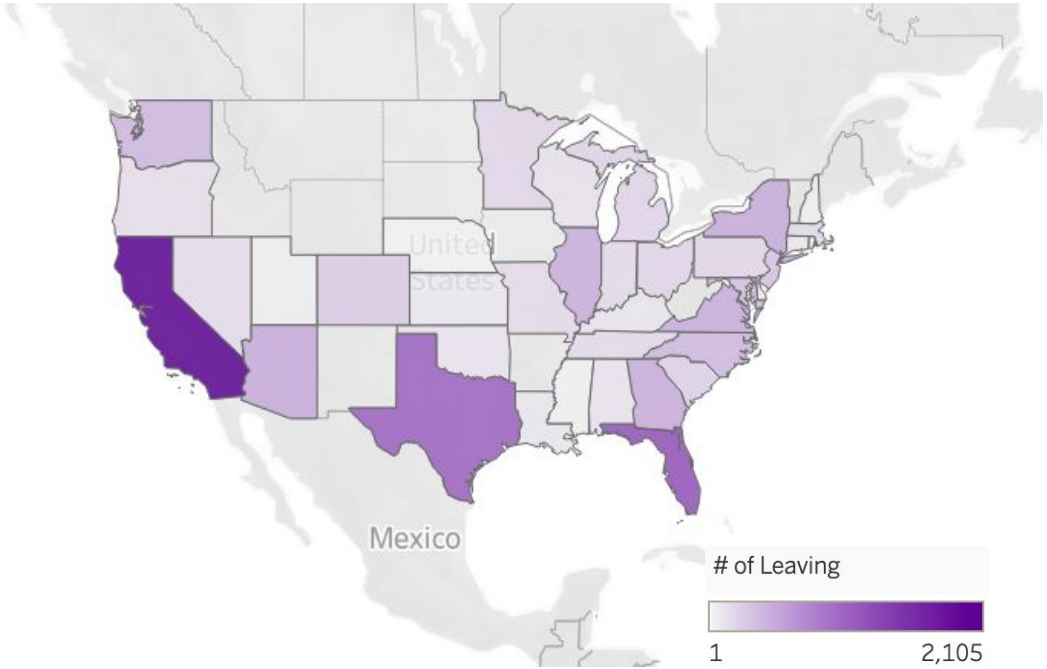
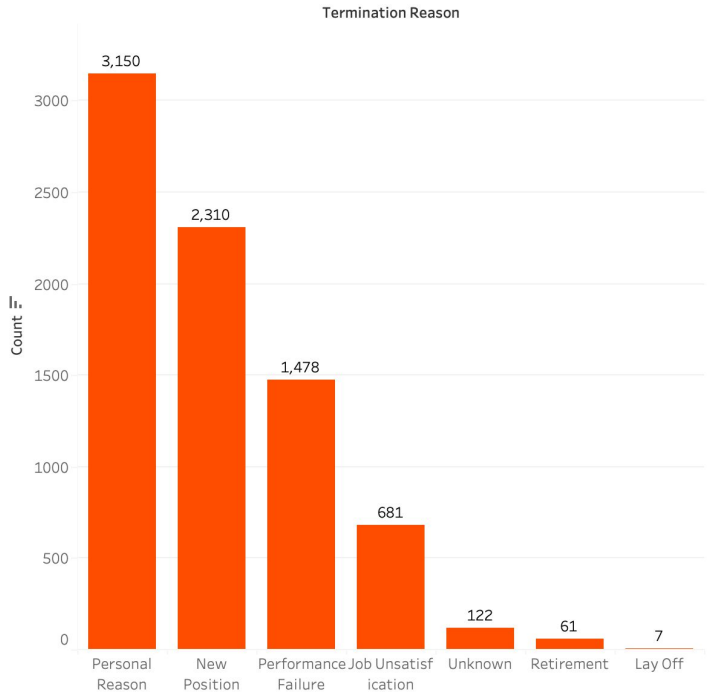
of Leaved Employees by State

1. California
2. Texas
3. Florida



Top Reasons for Employees Leaving

Leaving # by Reason



With Pareto Analysis, we mapping the reasons of employees' leaving:

Personal Reason

New Position

Performance Failure

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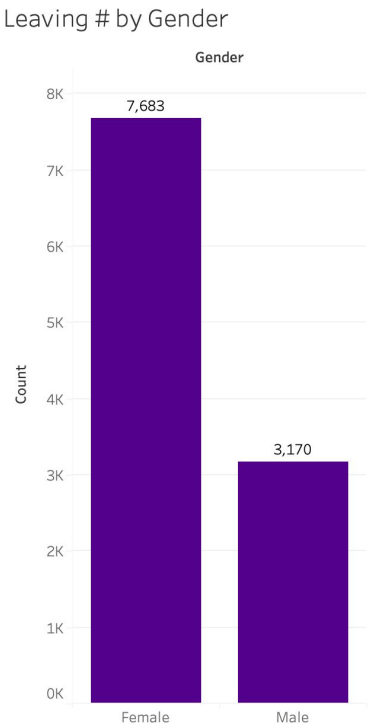
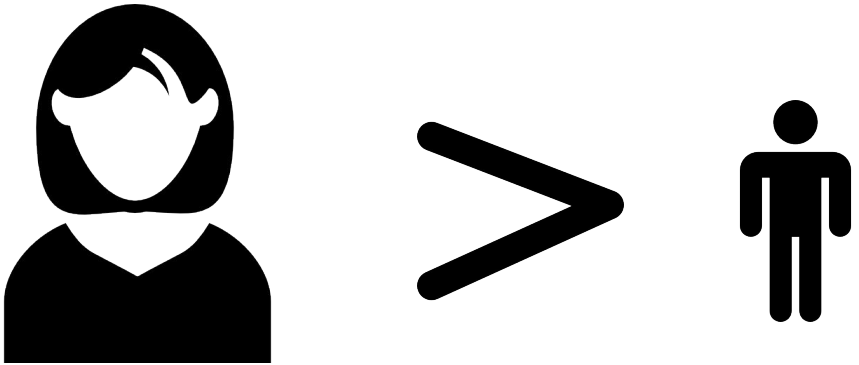
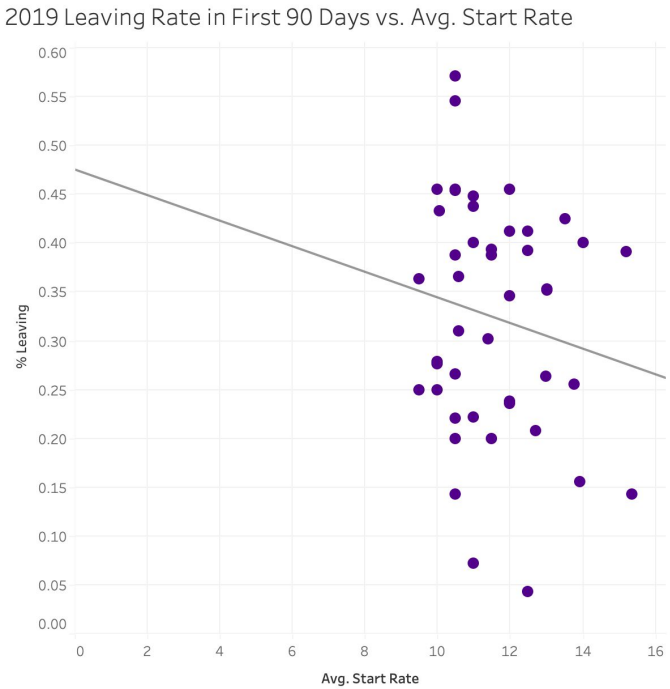
of Leaved Employees by Gender





2019 % Leaving Rate in first 90 Days



-0.16

Correlation

The higher the average start rate, the lower the % leaving in first 90 days.

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Tenured Days Prediction - Linear Regression

Summary of Fit

RSquare	0.314113
RSquare Adj	0.313609
Root Mean Square Error	905.4986
Mean of Response	635.2579
Observations (or Sum Wgts)	9528

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Ratio
Model	7	3574759923	510679989	622.8353
Error	9520	7805712254	819927.76	Prob > F
C. Total	9527	1.138e+10		<.0001*

Parameter Estimates

Term	Estimate	Std Error	t Ratio	Prob>|t|	VIF
Intercept	-1240.628	71.82709	-17.27	<.0001*	.
Business Unit[CALL]	-840.5999	55.4907	-15.15	<.0001*	6.2668915
Business Unit[CORP]	82.193223	74.85711	1.10	0.2722	6.7709524
Business Unit[FMGT]	1027.2953	61.74196	16.64	<.0001*	5.9939639
Resident[Non-resident]	-657.3624	16.49886	-39.84	<.0001*	1.0487643
Hourly Rate	124.43218	4.483488	27.75	<.0001*	1.7561458
Age	27.28	0.782385	34.87	<.0001*	1.0299992
Annual	0.0150784	0.000665	22.69	<.0001*	1.9762598

1. Hourly Rate, Age, and Annual Income have a positive correlation with the Tenure Days
2. Business unit = MINI and Residents = Residents are the baselines in the regression
3. Employees in FMGT business unit would likely stay longer with the Public Storage, whereas employees in the business unit of CALL would tend to have the shortest tenure
4. If on-site housing are provided for property-level employees, this could be a great incentive for them to stay.

jmp Statistical Discovery™ From SAS.

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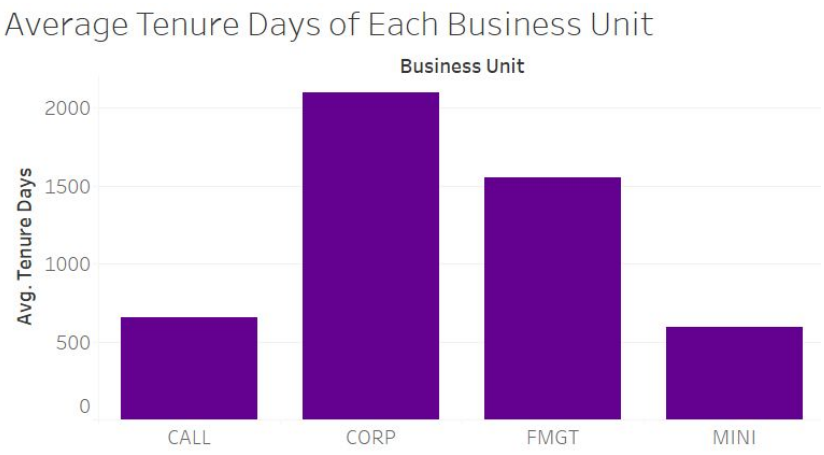
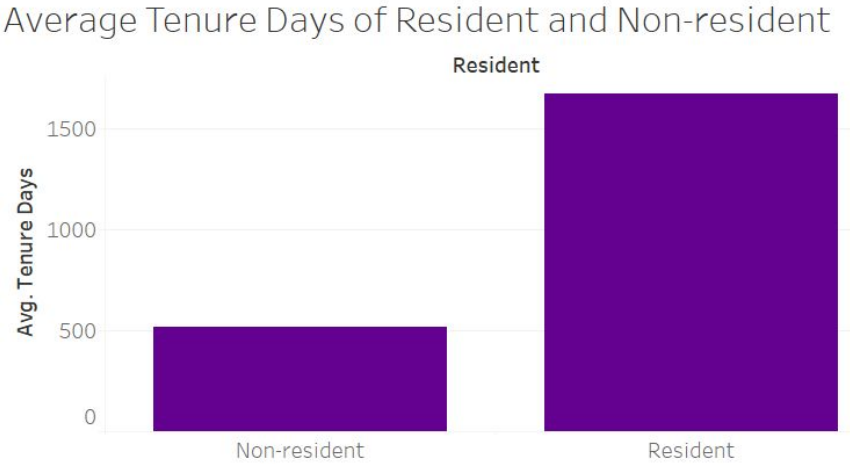
Further Visualizations of significant predictors





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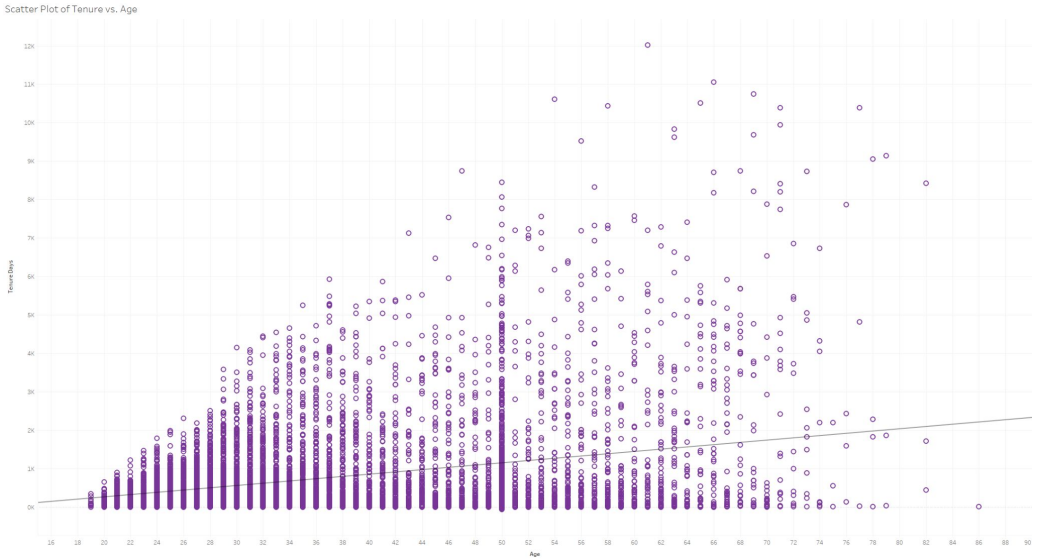

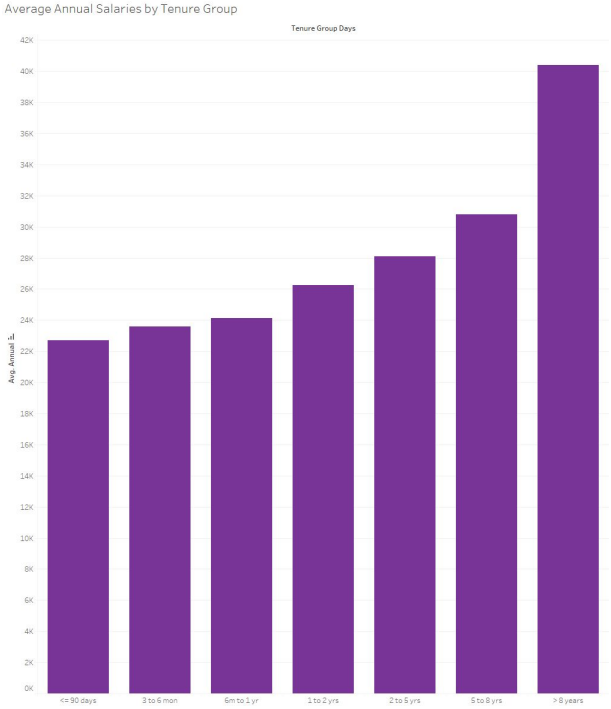

Tenured Days Prediction - Example

Name: **Jerry**
Business Unit: **FMGT**
Residents: **No**
Hourly Rate: **0.00**
Age: **31**
Annual: **85,000**

Predicted Tenure:

Intercept: **-1240.628**

Business Unit [FMGT]: **1027.2953 * 1**

Residents: **-657.3624 * 1**

Residents: **124.43218 * 1**

Age: **27.28 * 31**

Annual: **0.0150784 * 85000**

= 1256 days ≈ 3 years, 5 months, 1 week

jmp Statistical Discovery™ From SAS.

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Dashboard: Financial Modeling

Tableau:
https://public.tableau.com/app/profile/zijing.wu/viz/DSO599FinalProject_PublicStorage/Story1?publish=yes

Recommendations

Reduce Turnover:

1. Offer on-site housing for property level employees as it reduces turnover rate drastically.
2. Offer competitive pay packages that are comparable to or better than market average.
3. Ideal candidate profile: older male who lives on site.

Other Opportunities:

1. Use automation to replace property level employees. This will significantly decrease the total cost of workforce.
2. Provide differentiated service such as climate controlled storage unit for special items or vehicle storage unit with maintenance services. This will give Public Storage a competitive advantage over its competitors.

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Limitations and Further Analysis

1. Collect more data.
    a. Our current dataset has enough rows (more than 10,000 terminated employees). However, it is lacking meaningful attributes such as performance rating, work life balance, distance from home, relationship with manager.
    b. If we could get those data, we would get more insights on the main drivers of attrition and build better models to predict employee tenure.
2. Get data from current employees.
    a. Our current dataset does not have any information about current employees who are still at the company. Without comparison, it is hard to know what is the main drivers of attrition/retention.
    b. If we could get those data, we could train a binary classification model to predict whether an employee will leave the company or not.
3. Additional Analysis:
    a. If we had more time and resources. We would do an segmentation analysis to segment our employees into different groups and use different strategies to target each group to increase retention.

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Thank You!

Reference:

Mueller, Laura. “The 6 Largest Self Storage Companies.” *Moving.com*, Moving.com, 28 Mar. 2019, https://www.moving.com/tips/the-6-largest-self-storage-companies/.

“Public Storage - Self-Storage Units & Spaces at a Facility near You.” *Public Storage - Self-Storage Units/Spaces At Thousands of Facilities*, https://www.publicstorage.com/.

Staff, Fortune. “Public Storage: 2021 Fortune 500.” *Fortune*, Fortune, 27 May 2021, https://fortune.com/company/public-storage/fortune500/.

Appendix

Response Tenure Days

Effect Summary

Source	LogWorth	PValue
Resident	320.479	0.00000
Age	250.067	0.00000
Hourly Rate	162.361	0.00000
Annual	110.276	0.00000
Business Unit	70.681	0.00000

Lack Of Fit

Source	DF	Sum of Squares	Mean Square	F Ratio
Lack Of Fit	2689	6862369444	2552015	18.4798
Pure Error	6831	943342811	138097	**Prob > F**
Total Error	9520	7805712254		<.0001*
				Max RSq
				0.9171

Summary of Fit

RSquare	0.314113
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Response Tenure Days

Effect Tests

Source	Nparm	DF	Sum of Squares	F Ratio	Prob > F
Business Unit	3	3	276028896	112.2168	<.0001*
Hourly Rate	1	1	631551877	770.2531	<.0001*
Annual	1	1	421950326	514.6189	<.0001*
Age	1	1	996836212	1215.761	<.0001*
Resident	1	1	1301600035	1587.457	<.0001*

Effect Details

Business Unit

Least Squares Means Table

Level	Least Sq Mean	Std Error	Mean
CALL	587.6671	52.90846	655.04
CORP	1510.4603	105.30706	2097.51
FMGT	2455.5623	84.14298	1554.47
MINI	1159.3784	16.50843	591.29

Hourly Rate

Annual

Age

Resident

Least Squares Means Table

Level	Least Sq Mean	Std Error	Mean
Non-resident	770.9047	38.865634	532.55
Resident	2085.6294	50.696032	1658.68