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## April 12th, 2021 3:30pm

### Communication

Renpin - I suggest Renpin leading all email communications with Sam

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### HD Leadership

- Michael Carpenter Director Finance
- Jordan Stauss - Sam's Boss Data Science Manager
- Tiffany Washington - Coordinator
- Samuel Thomas (Sam) - Project Lead and will be our point of contact

### Discussion Topics

- Next meeting 4/13 10am (Milan added Krish to the invite)
- Discuss topics of interests to explore and finalize topic by 4/20
- Areas of interests for HD? What is on your mind given the two options?

### Decisions / Motions

- Students have full range to explore anything and everything (from Michael Carpenter ~ we have full HD Support)

### Action Items

- NDA Completed
- Data from Sam (TBD)



## Asks for Tuesday with Sam 4/13

Wish list projects?

- Sam, what are your wish list projects?
- What do stores currently complain about, any low hanging fruit?
- What are Michael's shrink priorities for 2021?

Current Reporting HD is Using

- Can we have copies of your current shrink reports? PDF's and live excel reporting?
- Questions about dataset: how big is the dataset? Feature categories? Scope of the dataset (years, locations)? How clean is the dataset? Is there any geographical and socioeconomic data available?
- Any models or systems that are currently using by HD to do the work (ie: any IoT implementations?). Problems with the current using models?
- Can we attend the next regional or national Shrink meeting, can we also interview one of your shrink Directors?

Current Challenges HD is Facing

- What are your highest shrink departments? Theft, Administrative, Damage, Employee Theft?
- How is replenishment handled if something is stolen, how soon will it be replenished?
- Why is inventory only done 1x per year (aside from the cost of 30-50k)

Randoms

- Was the last project with NU & HD added value? Did you put those recommendations into action? Anything you would have like that the team would have done differently? Communication, reporting, etc....

## Shrink Forecast Data

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### Data Provided

- Store level data
- Annual inventory shrink and sales
- Select weekly main shrink indicator
  - Various net and negative on-hand adjustments
  - Empty packages
- Alternative option – send the whole basket

### Details

- **X stores**
  - 2018 – X
  - 2019 – X
  - 2020 – X
  - 2021 – X (may consider as holdout sample)
- **Shrink rate cutoffs**
  - 1% to 6%
- **Weeks on inventory**
  - X min
  - X max
- **Must have X inventories present**
- **Volume representation**



Current model:

Rolling data of 52 weeks and take a regression - Lasso (variable selection)

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FEATURES & INFO SHORTCUT HIDE PREVIEW FEATURES

Explorer + ADD DATA

Type to search

Viewing pinned projects.

- SHRINK\_MODELS\_CLASS
- SHRINK\_OPS\_SUBCLASS\_MODEL
- SHRINK\_OPS\_SUBCLASS\_MODEL...
- SHRINK\_PRACTICUM
  - INIT\_FCST\_STR\_INV\_CNTS
  - INIT\_FCST\_STR\_INV\_DATA
  - INIT\_FCST\_STR\_MSI\_DATA
- SHRINK\_RAW
- SHRINK\_RAW\_DEV
- SHRINK\_RAW\_PILOT
- SHRINK\_RAW\_TABLES\_BACKUP
- SHRINK\_RAW\_TABLES\_BACKUP\_B...
- SHRINK\_RAW\_TEST
- SHRINK\_REG

\*UNSAVE... 2 \*UNSAVE... 3 COMPOSE NEW QUERY

RUN MORE SAVE SCHEDULE This query will process 93.5 GiB when run.

```
1 SELECT * FROM `analytics-fin-reporting-thd.SHRINK_PRACTICUM.INIT_FCST_STR_INV_CNTS` LIMIT 1000
2
```

Query results SAVE RESULTS EXPLORE DATA

Query complete (4.8 sec elapsed, 93.5 GB processed)

Job information Results JSON Execution details

Row	INV_CNT	STR_CNT	avg_CL	min_CL	max_CL	avg_SR	min_SR	max_SR
1	1	121	85.96694214876034	40	110	0.01587921562120573	0.010290899149213164	0.03029702641072654
2	2	764	55.16428084526244	40	108	0.020970284172242445	0.010022503393347865	0.053032870660025995
3	3	747	54.06074766355139	40	107	0.02334665885493465	0.010034800631432288	0.059361010806714694
4	4	200	52.18193717277489	40	79	0.024479354674822578	0.010019067206562829	0.05959681902511772
5	5	2	51.6	50	52	0.03239201498569936	0.015372019397901839	0.04614766566394488

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- SHRINK\_RAW\_TABLES\_BACKUP\_B...
- SHRINK\_RAW\_TEST
- SHRINK\_REG

\*UNSAVE... 2 INIT\_FCS... \*UNSAVE... 3 COMPOSE NEW QUERY

RUN SAVE SCHEDULE MORE This query will process 93.6 GiB when run.

```
1 SELECT * FROM `analytics-fin-reporting-thd.SHRINK_PRACTICUM.INIT_FCST_STR_MSI_DATA` LIMIT 1000
```

Query results SAVE RESULTS EXPLORE DATA

Query complete (0.0 sec elapsed, cached)

Job information Results JSON

etl_amt	net_adj_freq	net_oh_unt_qty	neg_oh_ret_amt	neg_adj_freq	neg_oh_unt_qty	emp_pkg_ret_amt	emp_pkg_unt_qty
99999999978	468.0	-380.17	-25417.499999999993	199.0	-3152.17	589.0200000000006	66.0
90000000002	388.0	41.84000000000002	-16767.269999999993	170.0	-1215.6599999999999	1597.1100000000013	98.0
-8657.16	358.0	-762.3299999999999	-17299.279999999998	214.0	-1462.0	1851.0200000000011	205.0
-14232.24	399.0	-3583.66	-26571.929999999997	206.0	-4602.58	1288.3800000000001	101.0
99999999987	337.0	-1063.66	-17480.739999999994	204.0	-2590.66	1189.1800000000003	76.0
59999999998	309.0	-1161.08	-25561.139999999999	184.0	-2008.3300000000002	1470.5400000000009	106.0
.61000000002	442.0	-1498.5100000000002	-29769.349999999998	283.0	-2410.51	1330.8500000000008	93.0
140000000004	274.0	-2166.27	-21199.019999999982	139.0	-3535.11	828.7800000000007	71.0
-16767.66	442.0	-1616.58	-26898.260000000002	284.0	-3080.66	798.1200000000005	62.0

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