How Important is Data Quality for Data Engineer?

(づ｡◕‿‿◕｡)づ

@manelbutterfly

Who Am I ?

- Data Engineer at Secret Sauce Partners Inc.
- Mozilla Representative
- Enthusiast about new Data technologies

"The only way to do great work is to love the work you do"
Steve Jobs

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What We Do?

secret sauce

PARTNERS

Transforming apparel & footwear shopping through data.

DXL MENS APPAREL

BARNEYS NEW YORK

Saks Fifth Avenue OFF 5TH

Google shopping

@manelbutterfly

NORDSTROM rack | HAUTELOOK

What We Do?

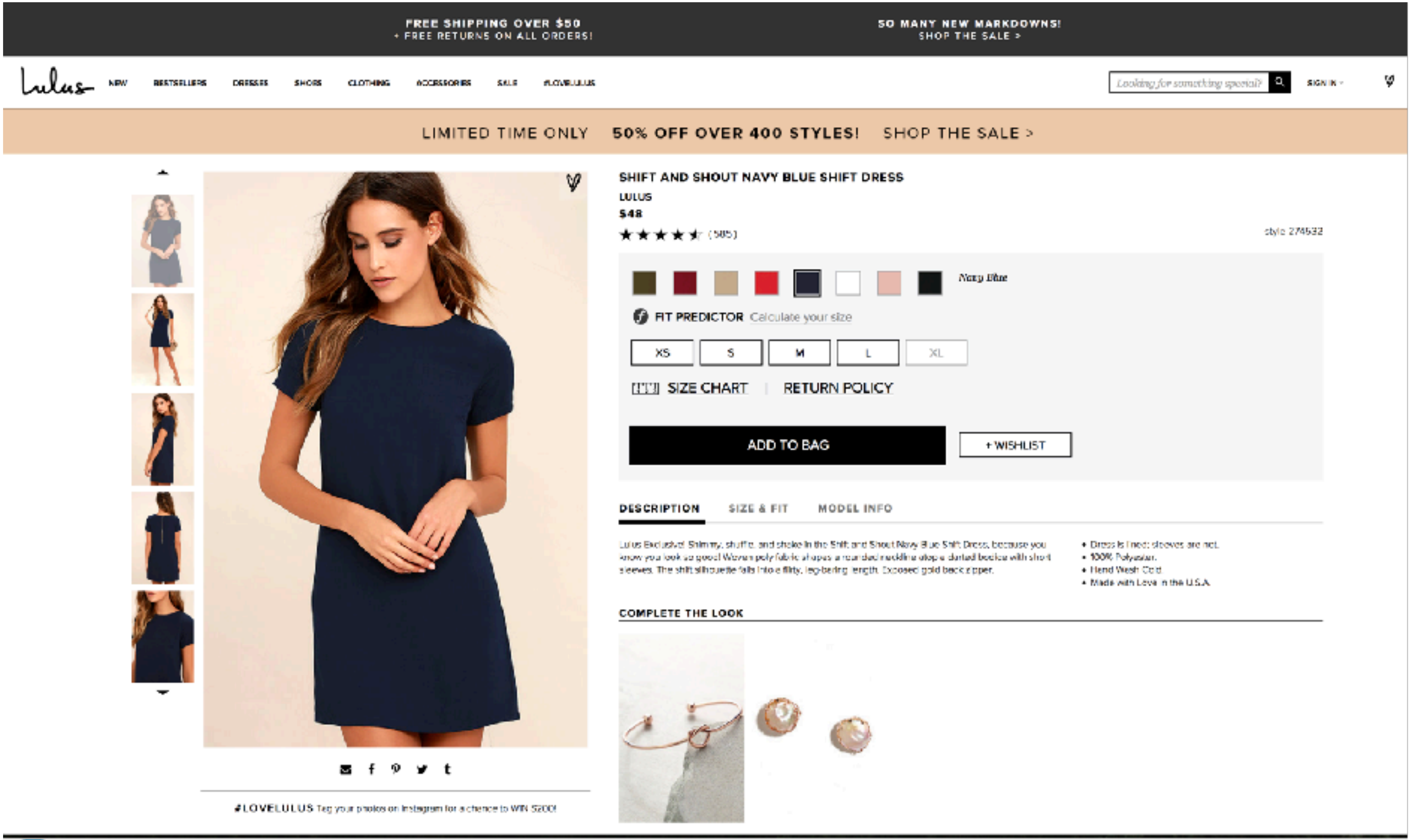
secret sauce

PARTNERS

Company's service

FIT PREDICTOR

What We Do?



FREE SHIPPING OVER $50
+ FREE RETURNS ON ALL ORDERS!

SO MANY NEW MARKDOWNS!
SHOP THE SALE >

LIMITED TIME ONLY **50% OFF OVER 400 STYLES!** SHOP THE SALE >

SHIFT AND SHOUT NAVY BLUE SHIFT DRESS
LULUS
$48
★★★★★ (505)
style 274532

Navy Blue

FIT PREDICTOR Calculate your size

XS S M L XL

SIZE CHART | RETURN POLICY

ADD TO BAG
+ WISHLIST

DESCRIPTION SIZE & FIT MODEL INFO

Lulus Exclusive! Shimmy, shuffle, and shake in the Shift and Shout Navy Blue Shift Dress, because you know you look so good! Woven poly fabric shapes a rounded neckline atop a darted bodice with short sleeves. The shift silhouette falls into a flirty, leg-baring length. Exposed gold back zipper.

- Dress is lined; sleeves are not.
- 100% Polyester.
- Hand Wash Cold.
- Made with Love in the U.S.A.

COMPLETE THE LOOK

#LOVELULUS Tag your photos on Instagram for a chance to WIN $200!

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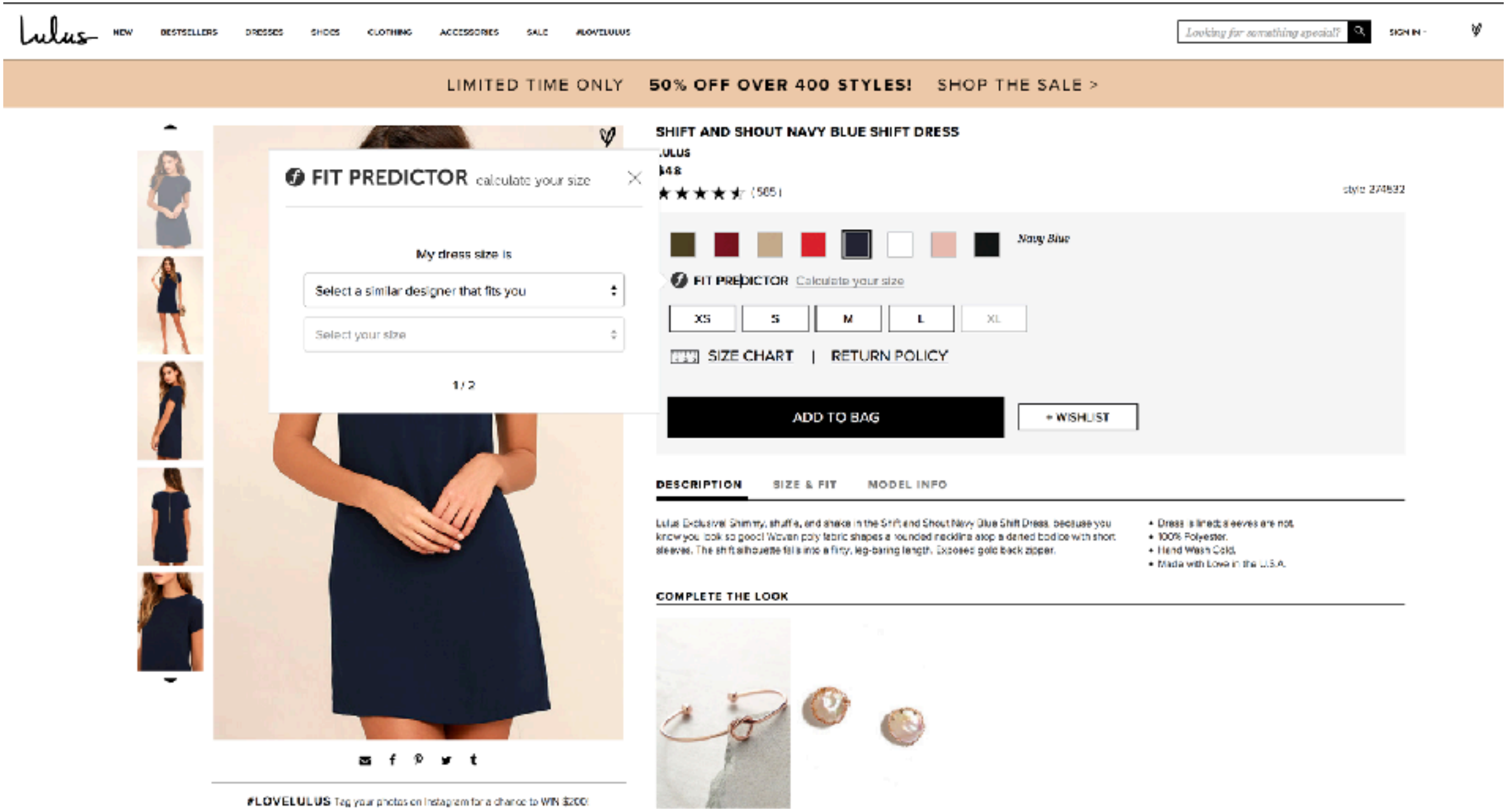
What We Do?



LIMITED TIME ONLY 50% OFF OVER 400 STYLES! SHOP THE SALE >

FIT PREDICTOR calculate your size

My dress size is

Select a similar designer that fits you

Select your size

1 / 2

SHIFT AND SHOUT NAVY BLUE SHIFT DRESS

LULUS

$48

★★★★½ (585)

style 274832

Navy Blue

FIT PREDICTOR Calculate your size

XS | S | M | L | XL

SIZE CHART | RETURN POLICY

ADD TO BAG

+ WISHLIST

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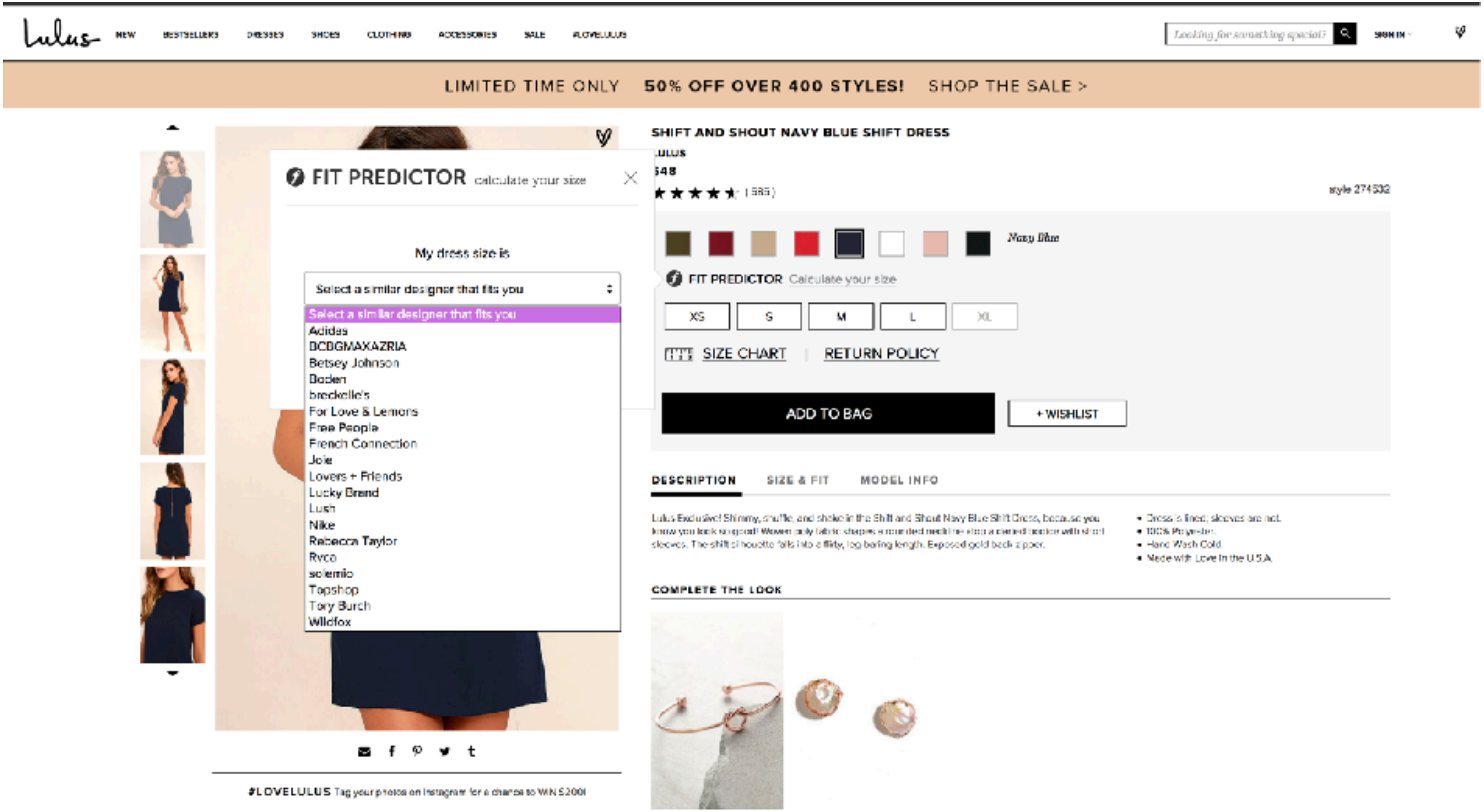

LIMITED TIME ONLY 50% OFF OVER 400 STYLES! SHOP THE SALE >

FIT PREDICTOR calculate your size

My dress size is

Select a similar designer that fits you

- Select a similar designer that fits you
- Adidas
- BCBGMAXAZRIA
- Betsey Johnson
- Boden
- brackelle's
- For Love & Lemons
- Free People
- French Connection
- Joie
- Lovers + Friends
- Lucky Brand
- Lush
- Nike
- Rebecca Taylor
- Rvca
- solemio
- Topshop
- Tory Burch
- Wildfox

SHIFT AND SHOUT NAVY BLUE SHIFT DRESS

LULUS

$48

★★★★★ (585)

style 274532

Navy Blue

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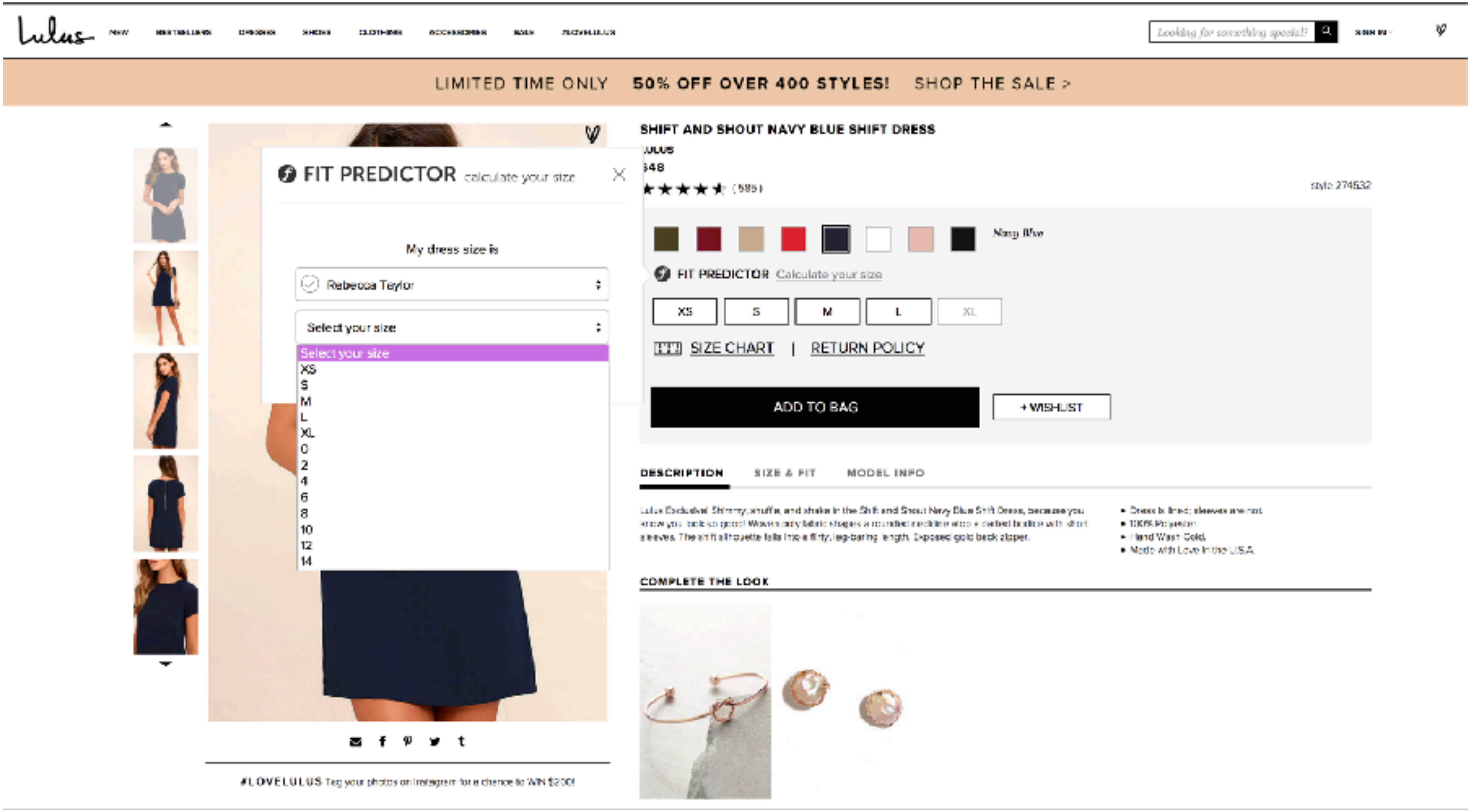

Lulus NEW BESTSELLERS DRESSES SHOES CLOTHING ACCESSORIES SALE #LOVELULUS

Looking for something special?

SIGN IN

LIMITED TIME ONLY **50% OFF OVER 400 STYLES!** SHOP THE SALE >

FIT PREDICTOR calculate your size

My dress size is

Rebecca Taylor

Select your size

- Select your size
- XS
- S
- M
- L
- XL
- 0
- 2
- 4
- 6
- 8
- 10
- 12
- 14

SHIFT AND SHOUT NAVY BLUE SHIFT DRESS

LULUS

$48

★★★★★ (585)

style 274532

Navy Blue

FIT PREDICTOR Calculate your size

XS S M L XL

SIZE CHART | RETURN POLICY

ADD TO BAG

+ WISHLIST

DESCRIPTION SIZE & FIT MODEL INFO

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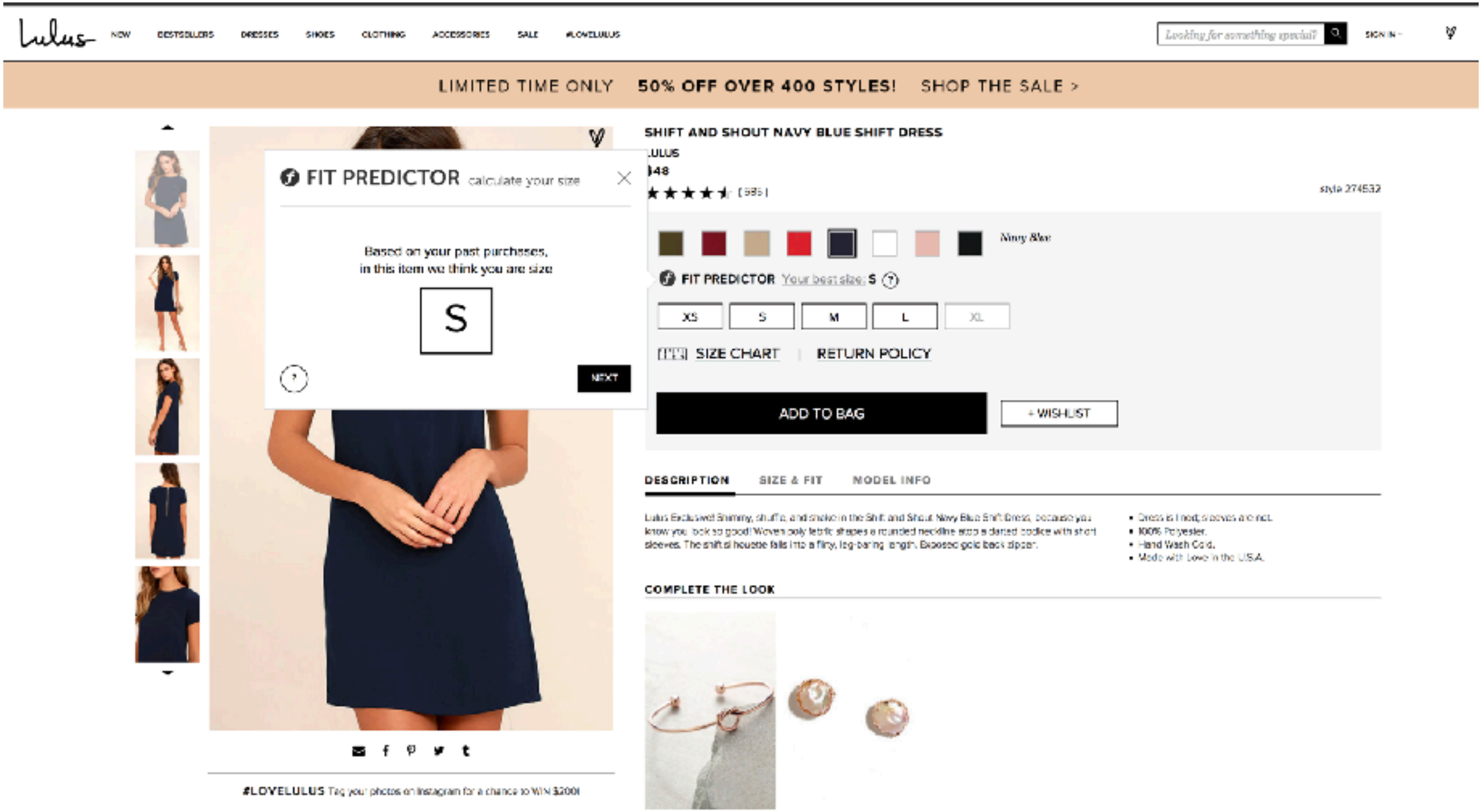
What We Do?



LIMITED TIME ONLY **50% OFF OVER 400 STYLES!** SHOP THE SALE >

FIT PREDICTOR calculate your size

Based on your past purchases,
in this item we think you are size

S

SHIFT AND SHOUT NAVY BLUE SHIFT DRESS

LULUS

$48

★★★★½ (595)

style 274532

Navy Blue

FIT PREDICTOR Your best size: **S**

XS S M L XL

SIZE CHART | RETURN POLICY

DESCRIPTION SIZE & FIT MODEL INFO

Lulus Exclusive! Shimmy, shuffle, and shake in the Shift and Shout Navy Blue Shift Dress, because you know you look so good! Woven poly fabric shapes a rounded neckline atop a darted bodice with short sleeves. The shift silhouette falls into a flirty, leg-baring length. Exposed gold back zipper.

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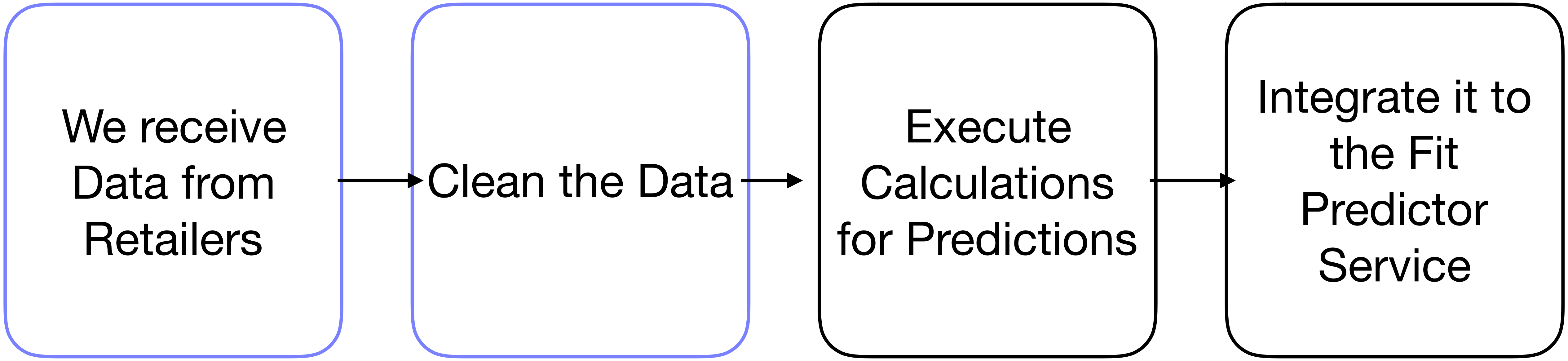
What We Do?



We receive Data from Retailers

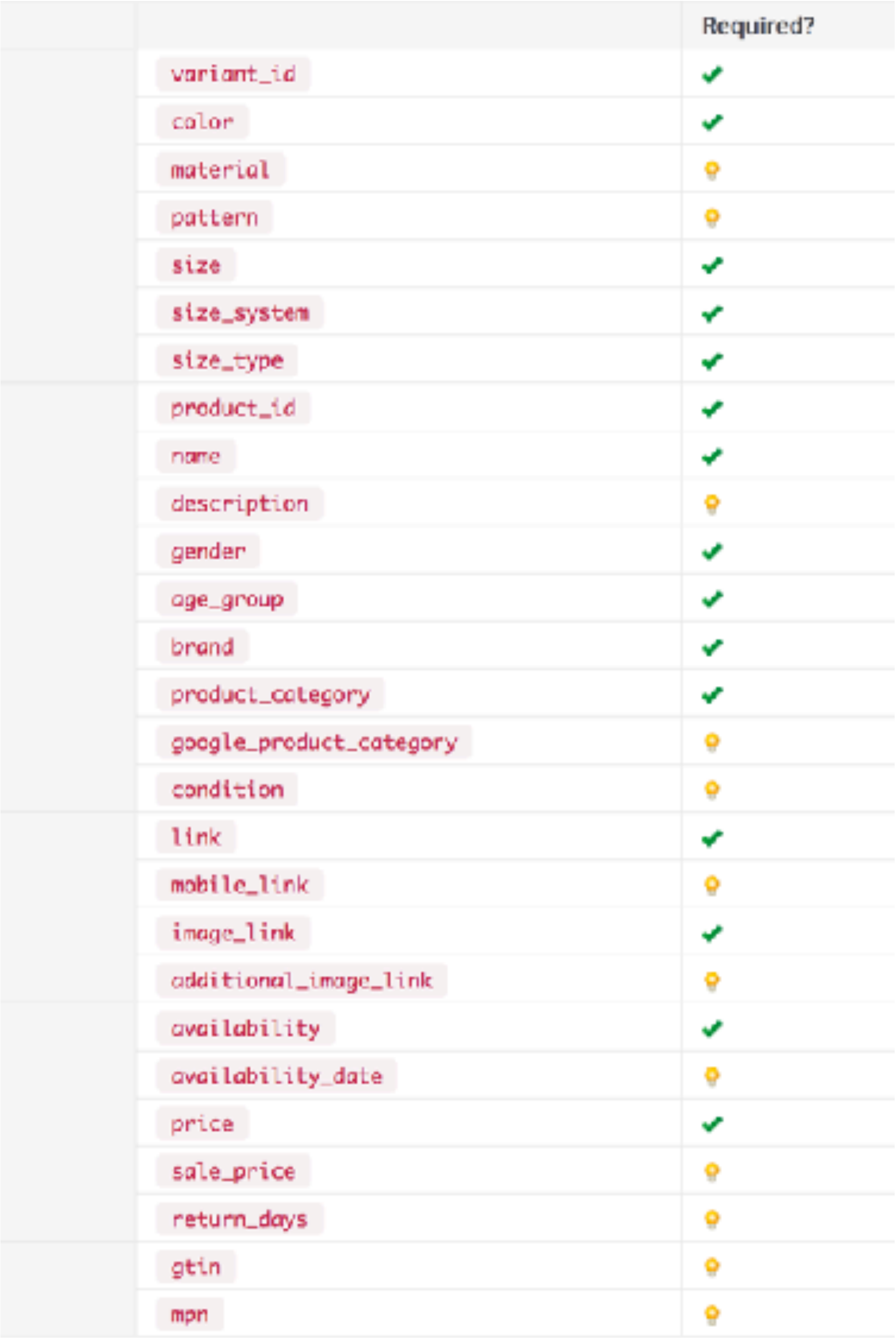
Clean the Data

Execute Calculations for Predictions

Integrate it to the Fit Predictor Service

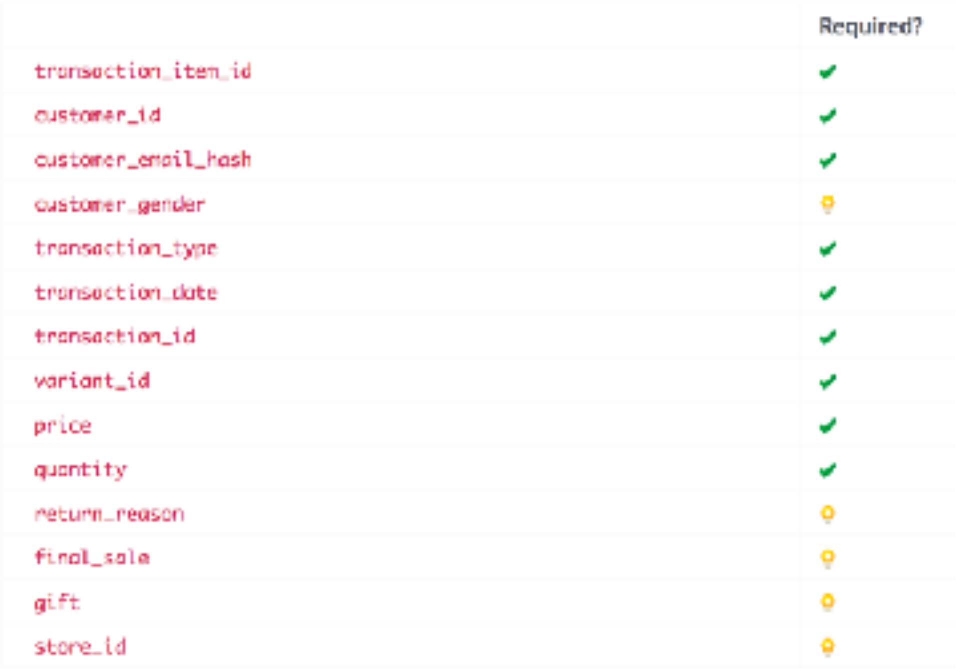
What We Do?

Product's Specification Requirements



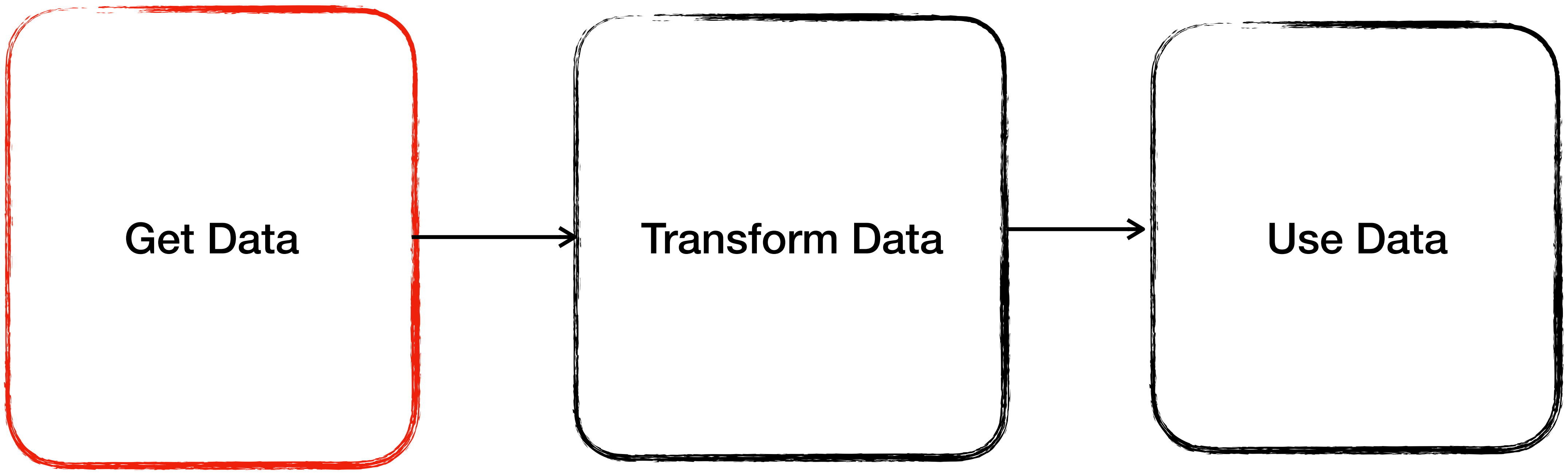
	Required?
variant_id	✓
color	✓
material	💡
pattern	💡
size	✓
size_system	✓
size_type	✓
product_id	✓
name	✓
description	💡
gender	✓
age_group	✓
brand	✓
product_category	✓
google_product_category	💡
condition	💡
link	✓
mobile_link	💡
image_link	✓
additional_image_link	💡
availability	✓
availability_date	💡
price	✓
sale_price	💡
return_days	💡
gtin	💡
mpn	💡

Transaction's Specification Requirements



	Required?
transaction_item_id	✓
customer_id	✓
customer_email_hash	✓
customer_gender	💡
transaction_type	✓
transaction_date	✓
transaction_id	✓
variant_id	✓
price	✓
quantity	✓
return_reason	💡
final_sale	💡
gift	💡
store_id	💡

Where is Data Quality?



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Where is Data Quality?

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First Impression

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"Data don't make any sense,
we will have to resort to statistics."

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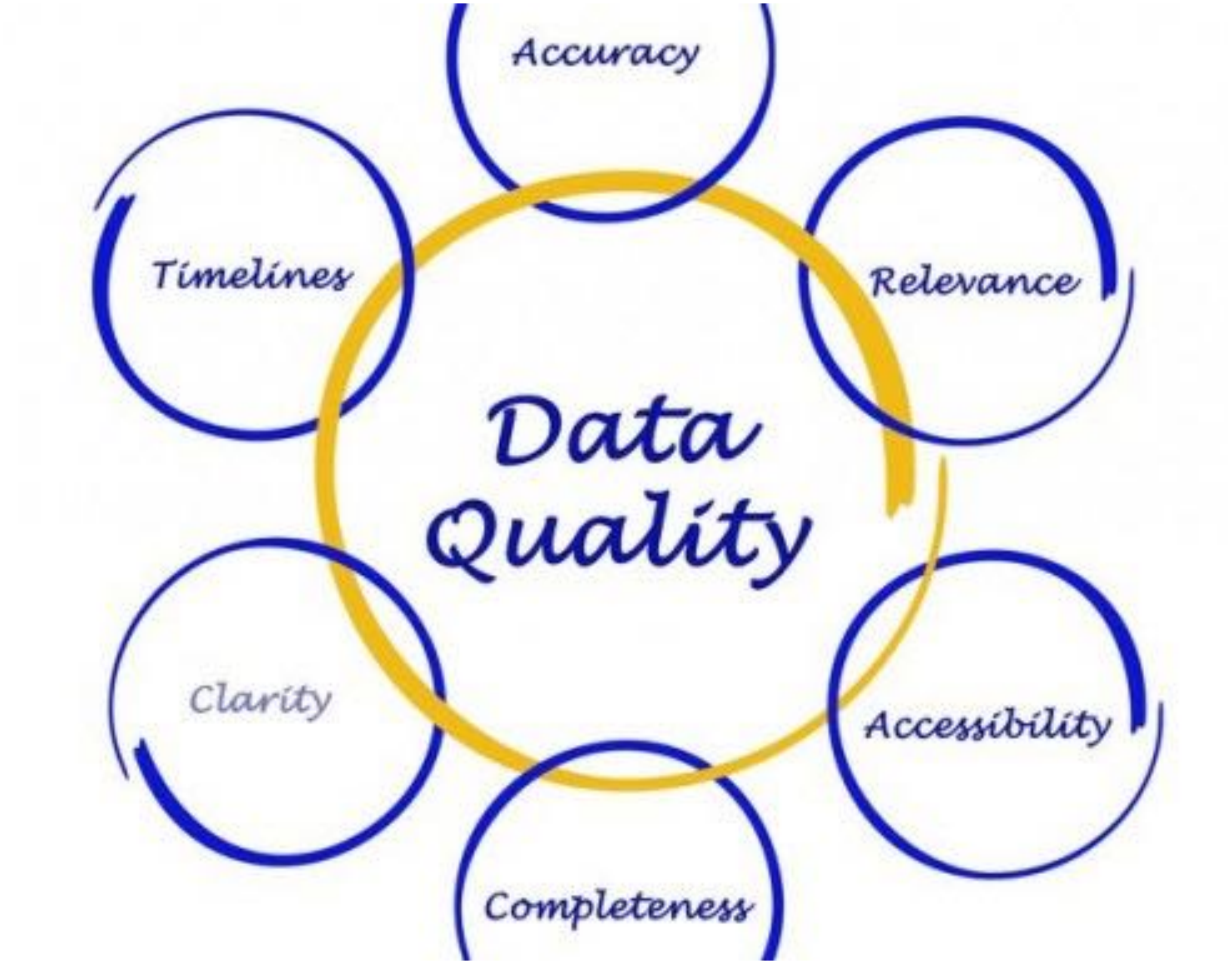
How Should I qualify this Data? ⊂•⊃_⊂•⊃



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But How I can ensure all of this?

¯_(ツ)_/¯

Profiling ✌.ʕʘ‿ʘʔ.✌

- ✦ Anomalies ?
- ✦ Content? Structure? Relation?
- ✦ Can this apply to our Business Logic?
- ✦ Missing values ?
- ✦ Distribution of required information

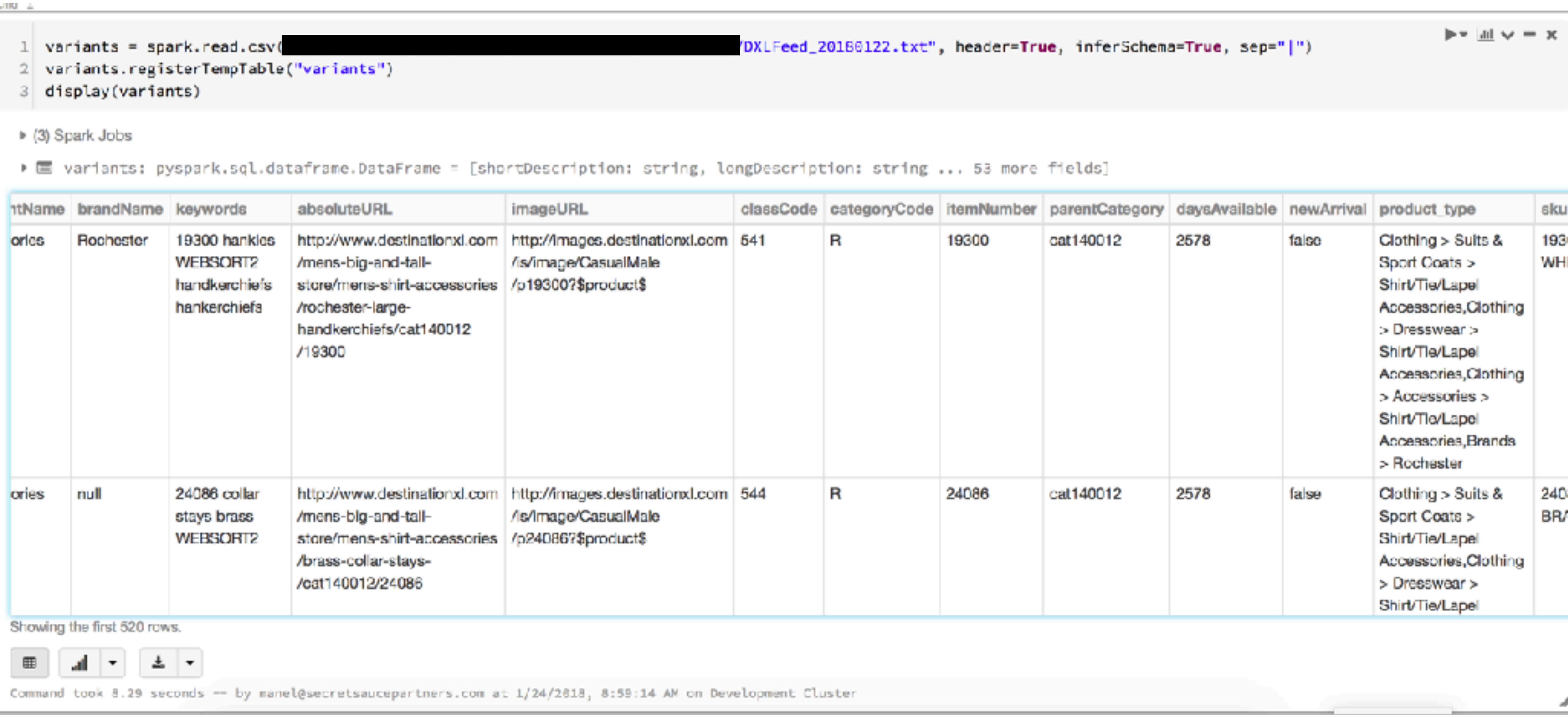
Profiling ✌.ʕʘ‿ʘʔ.✌

Spark profiling module

Simple query

Simple Statistics

Profiling ✌.ʕʘ‿ʘʔ.✌



```
variants = spark.read.csv([redacted]/DXLFeed_20180122.txt", header=True, inferSchema=True, sep="|")
variants.registerTempTable("variants")
display(variants)
```

▸ (3) Spark Jobs

▸ variants: pyspark.sql.dataframe.DataFrame = [shortDescription: string, longDescription: string ... 53 more fields]

ntName	brandName	keywords	absoluteURL	imageURL	classCode	categoryCode	itemNumber	parentCategory	daysAvailable	newArrival	product_type	sku
orics	Rochester	19300 hankies WEBSORT2 handkerchiefs hankerchiefs	http://www.destinationxl.com/mens-big-and-tall-store/mens-shirt-accessories/rochester-large-handkerchiefs/cat140012/19300	http://images.destinationxl.com/is/image/CasualMale/p19300?$product$	541	R	19300	cat140012	2578	false	Clothing > Suits & Sport Coats > Shirt/Tie/Lapel Accessories,Clothing > Dresswear > Shirt/Tie/Lapel Accessories,Clothing > Accessories > Shirt/Tie/Lapel Accessories,Brands > Rochester	193 WH
ories	null	24086 collar stays brass WEBSORT2	http://www.destinationxl.com/mens-big-and-tall-store/mens-shirt-accessories/brass-collar-stays-/cat140012/24086	http://images.destinationxl.com/is/image/CasualMale/p24086?$product$	544	R	24086	cat140012	2578	false	Clothing > Suits & Sport Coats > Shirt/Tie/Lapel Accessories,Clothing > Dresswear > Shirt/Tie/Lapel	240 BR

Showing the first 520 rows.

```
Command took 8.29 seconds -- by manel@secretsaucepartners.com at 1/24/2018, 8:59:14 AM on Development Cluster
```

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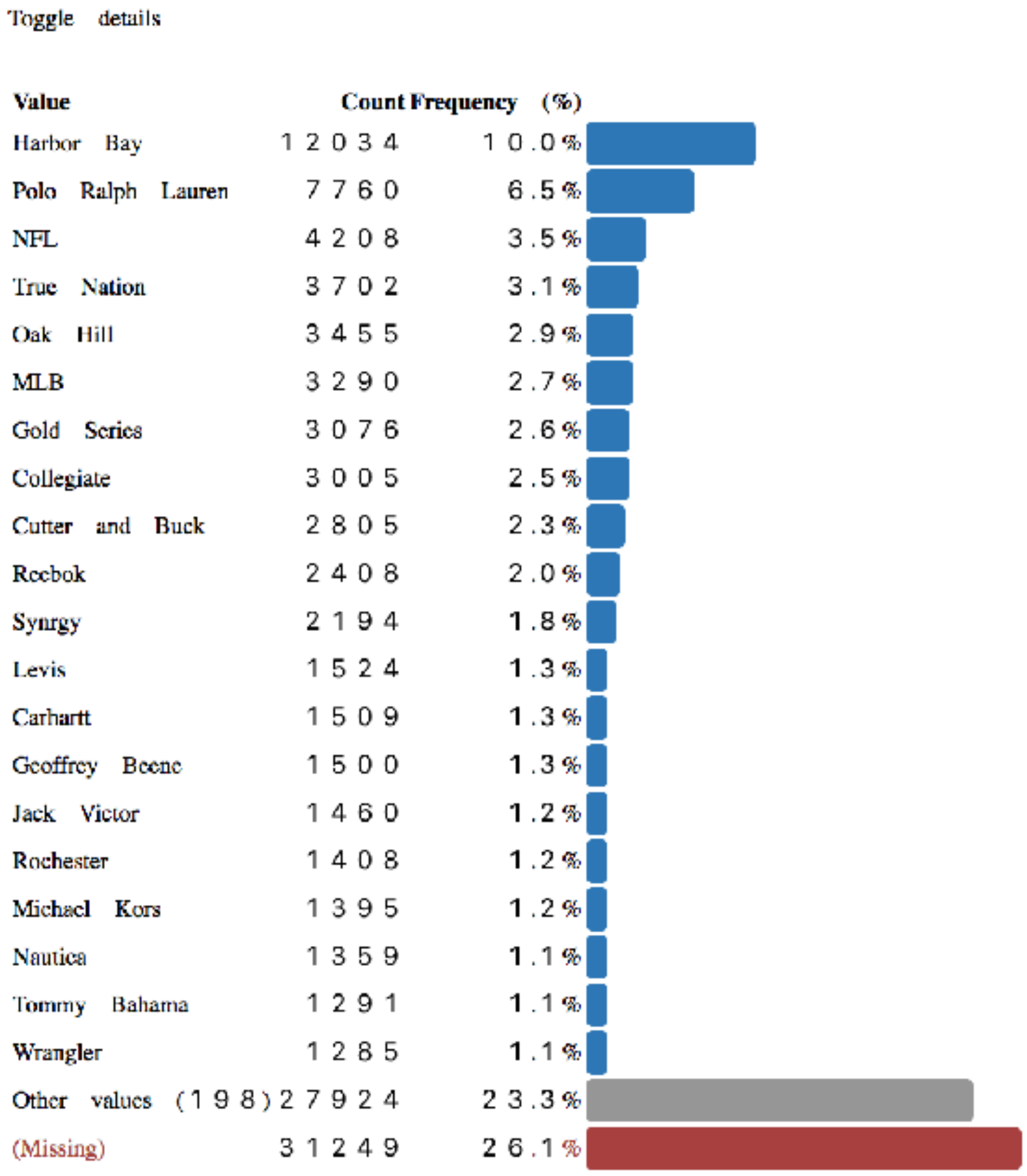

Toggle details

Value	Count	Frequency (%)
Harbor Bay	12034	10.0%
Polo Ralph Lauren	7760	6.5%
NFL	4208	3.5%
True Nation	3702	3.1%
Oak Hill	3455	2.9%
MLB	3290	2.7%
Gold Series	3076	2.6%
Collegiate	3005	2.5%
Cutter and Buck	2805	2.3%
Reebok	2408	2.0%
Synrgy	2194	1.8%
Levis	1524	1.3%
Carhartt	1509	1.3%
Geoffrey Beene	1500	1.3%
Jack Victor	1460	1.2%
Rochester	1408	1.2%
Michael Kors	1395	1.2%
Nautica	1359	1.1%
Tommy Bahama	1291	1.1%
Wrangler	1285	1.1%
Other values (198)	27924	23.3%
(Missing)	31249	26.1%

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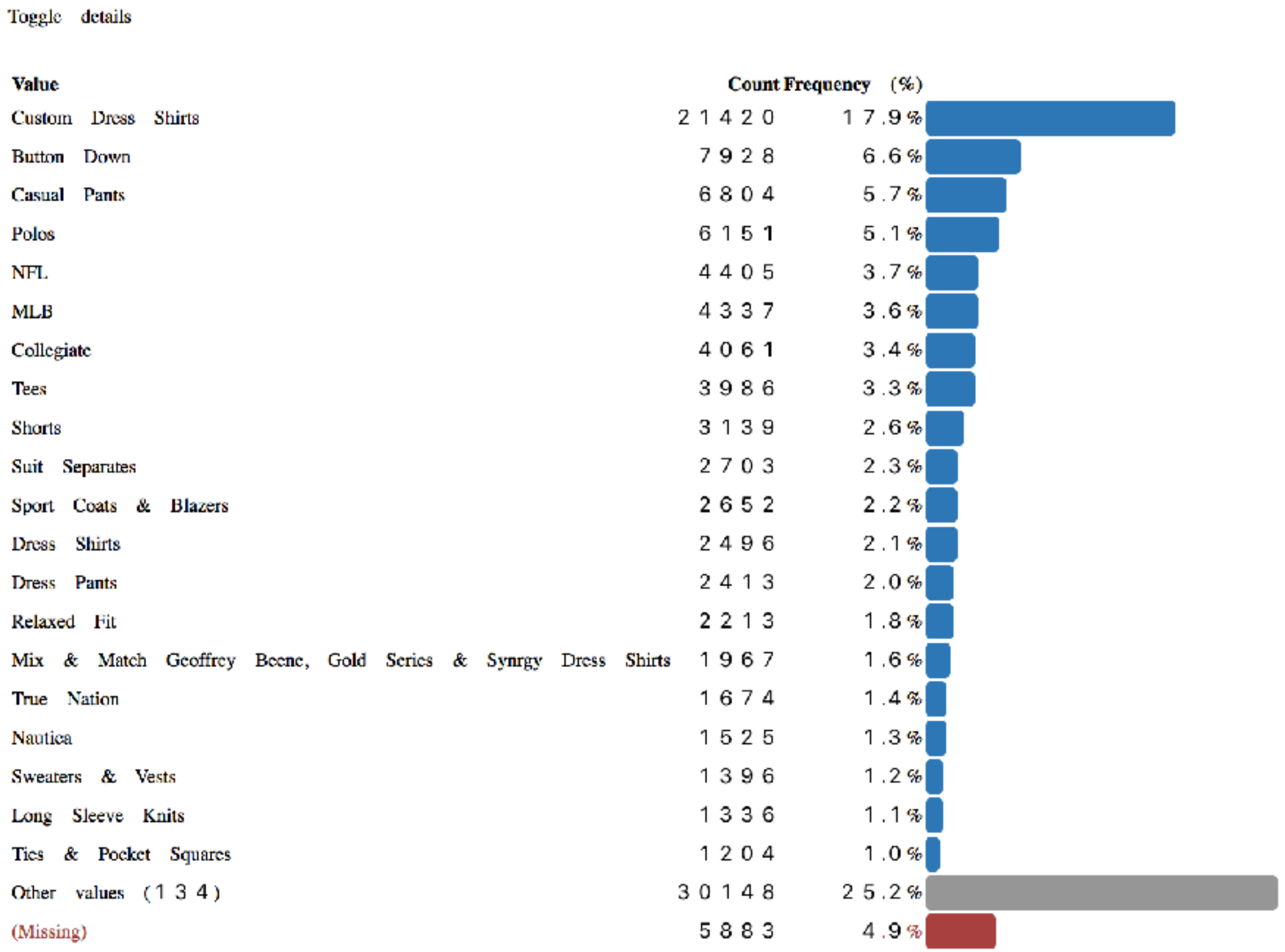
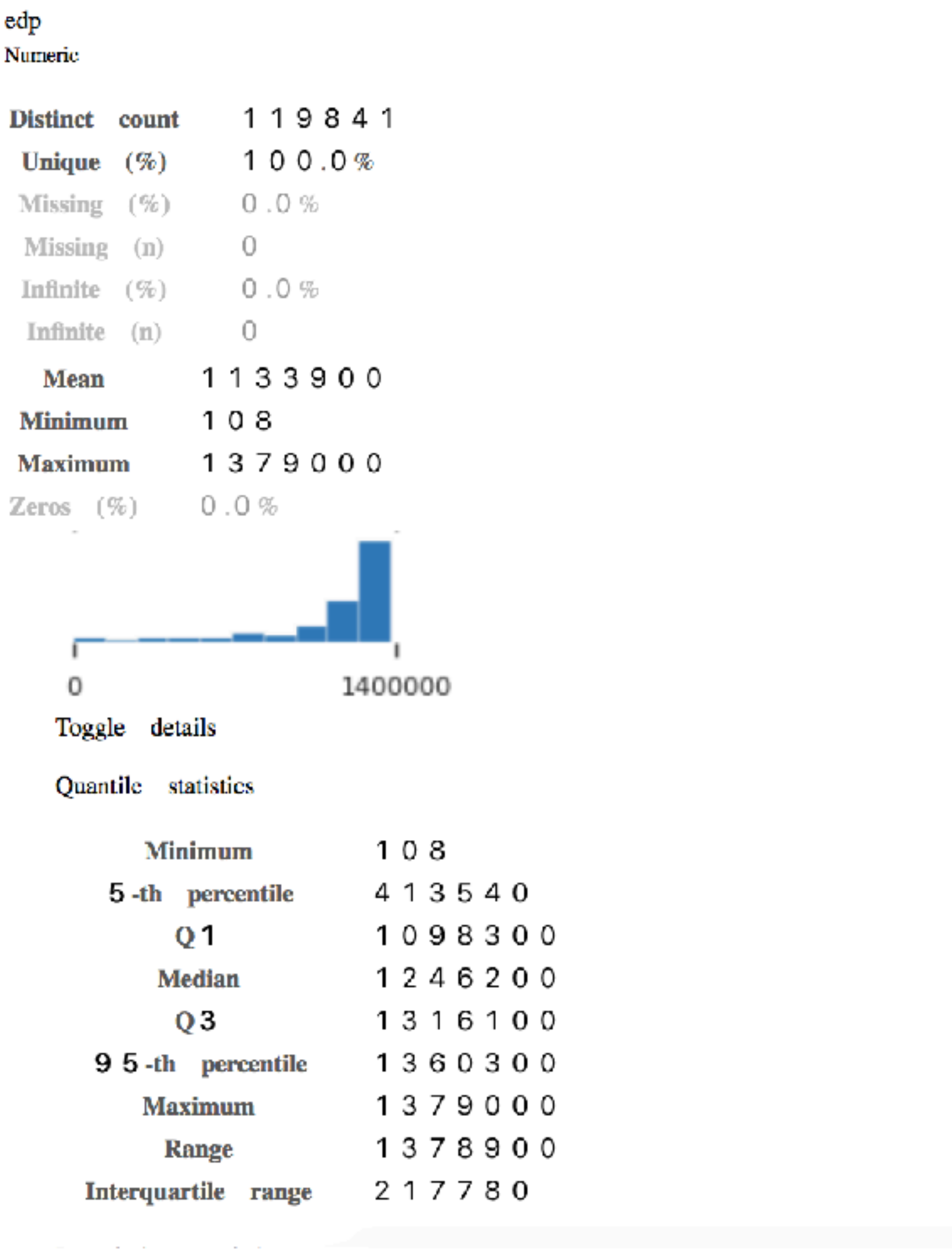


Toggle details

Value	Count	Frequency (%)
Custom Dress Shirts	21420	17.9%
Button Down	7928	6.6%
Casual Pants	6804	5.7%
Polos	6151	5.1%
NFL	4405	3.7%
MLB	4337	3.6%
Collegiate	4061	3.4%
Tees	3986	3.3%
Shorts	3139	2.6%
Suit Separates	2703	2.3%
Sport Coats & Blazers	2652	2.2%
Dress Shirts	2496	2.1%
Dress Pants	2413	2.0%
Relaxed Fit	2213	1.8%
Mix & Match Geoffrey Beene, Gold Series & Synrgy Dress Shirts	1967	1.6%
True Nation	1674	1.4%
Nautica	1525	1.3%
Sweaters & Vests	1396	1.2%
Long Sleeve Knits	1336	1.1%
Ties & Pocket Squares	1204	1.0%
Other values (134)	30148	25.2%
(Missing)	5883	4.9%



edp

Numeric

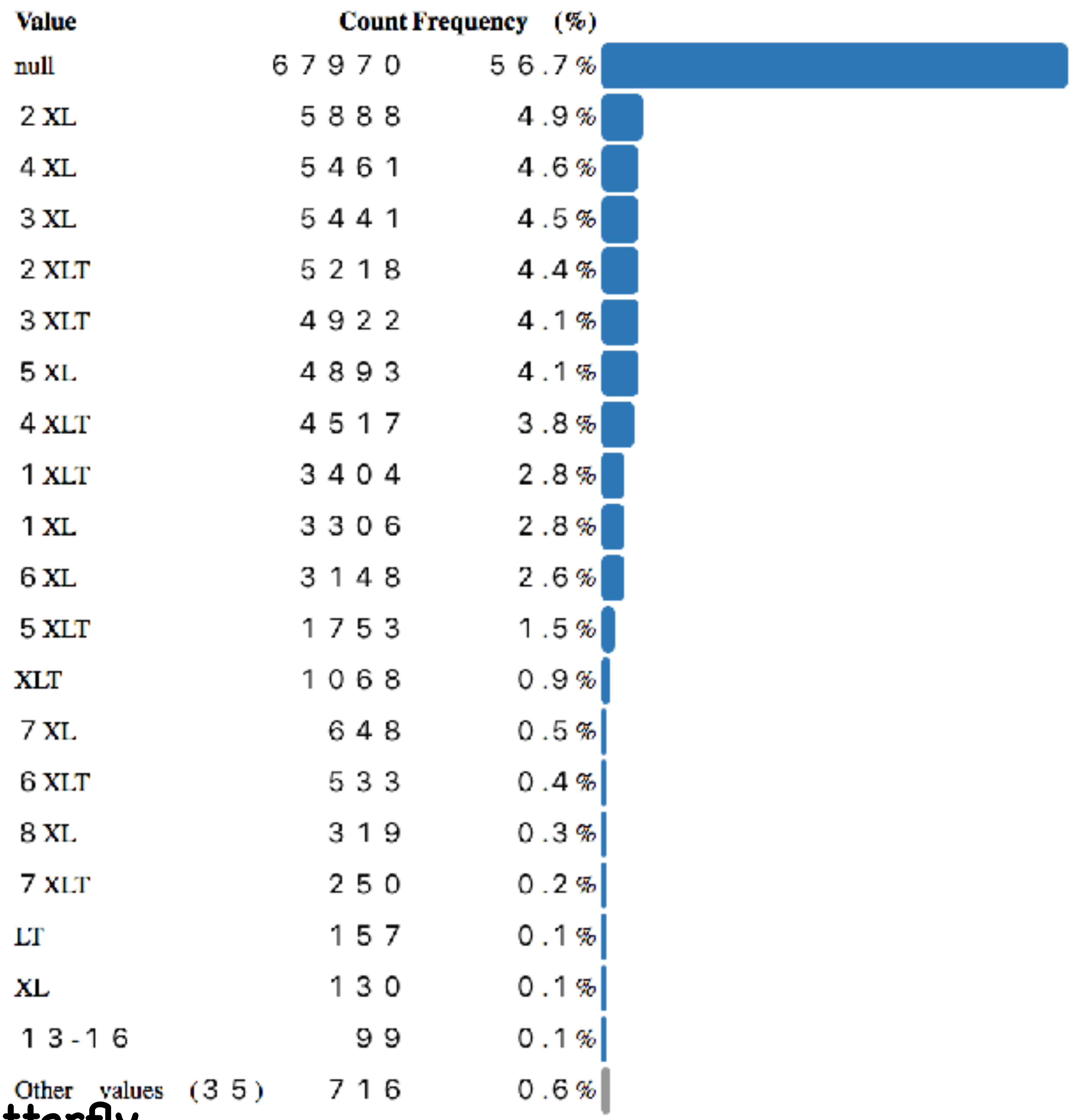
Distinct count	119841
Unique (%)	100.0%
Missing (%)	0.0%
Missing (n)	0
Infinite (%)	0.0%
Infinite (n)	0

Mean	1133900
Minimum	108
Maximum	1379000
Zeros (%)	0.0%

Toggle details

Quantile statistics

Minimum	108
5-th percentile	413540
Q1	1098300
Median	1246200
Q3	1316100
95-th percentile	1360300
Maximum	1379000
Range	1378900
Interquartile range	217780



Value	Count	Frequency (%)
null	67970	56.7%
2 XL	5888	4.9%
4 XL	5461	4.6%
3 XL	5441	4.5%
2 XLT	5218	4.4%
3 XLT	4922	4.1%
5 XL	4893	4.1%
4 XLT	4517	3.8%
1 XLT	3404	2.8%
1 XL	3306	2.8%
6 XL	3148	2.6%
5 XLT	1753	1.5%
XLT	1068	0.9%
7 XL	648	0.5%
6 XLT	533	0.4%
8 XL	319	0.3%
7 XLT	250	0.2%
LT	157	0.1%
XL	130	0.1%
13-16	99	0.1%
Other values (35)	716	0.6%

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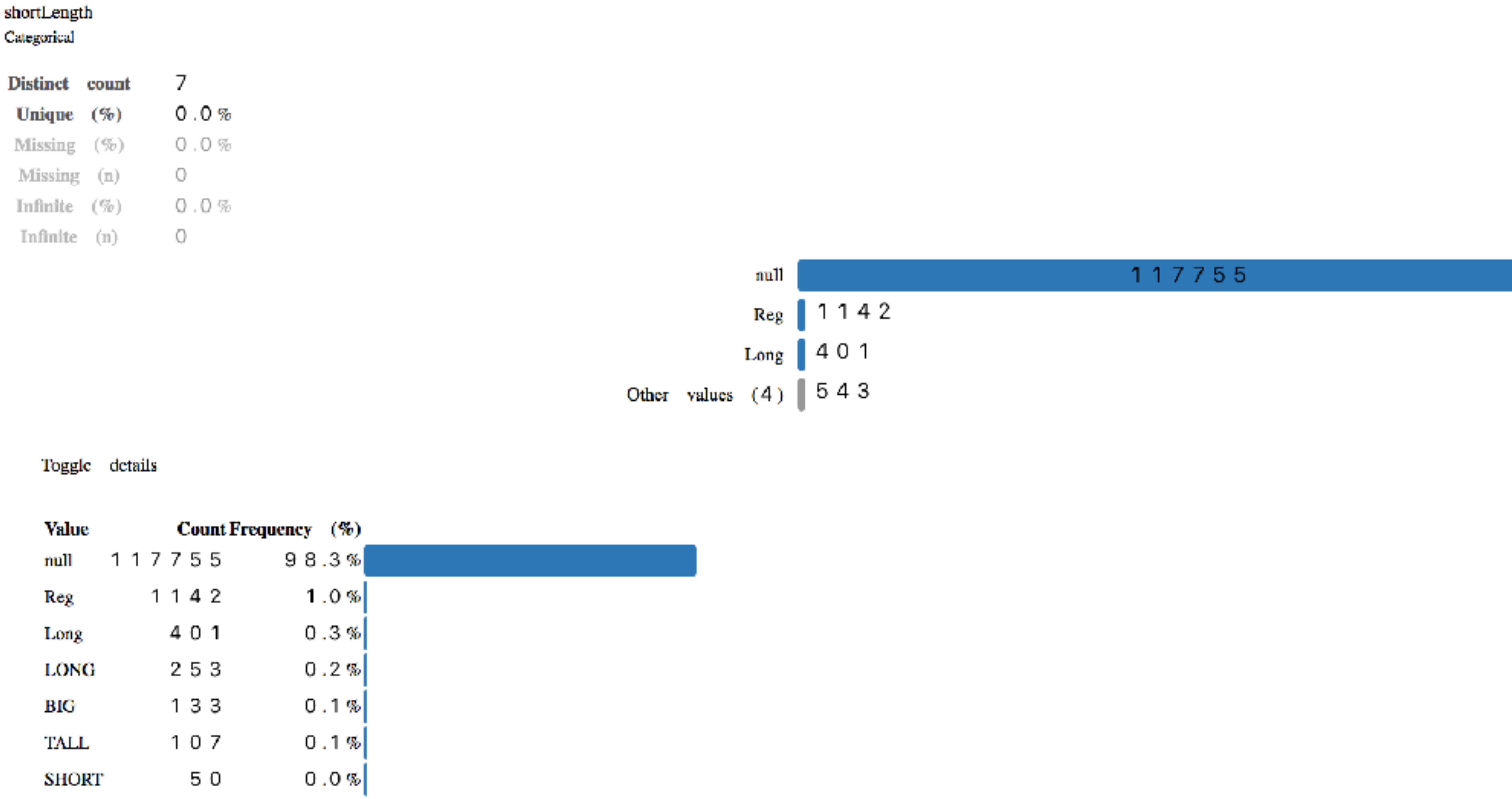
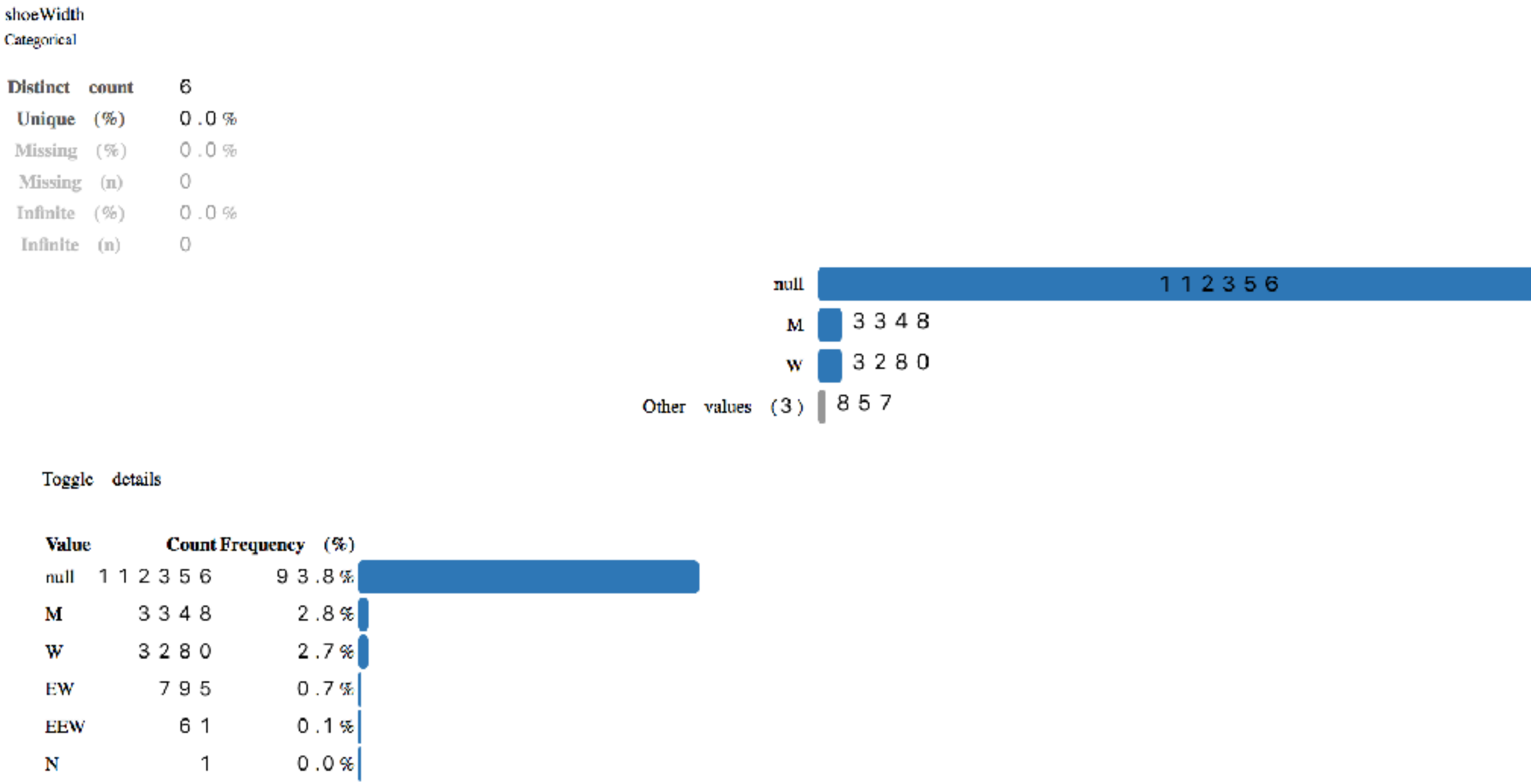


shortLength
Categorical

Distinct count	7
Unique (%)	0.0%
Missing (%)	0.0%
Missing (n)	0
Infinite (%)	0.0%
Infinite (n)	0

Toggle details

Value	Count	Frequency (%)
null	117755	98.3%
Reg	1142	1.0%
Long	401	0.3%
LONG	253	0.2%
BIG	133	0.1%
TALL	107	0.1%
SHORT	50	0.0%



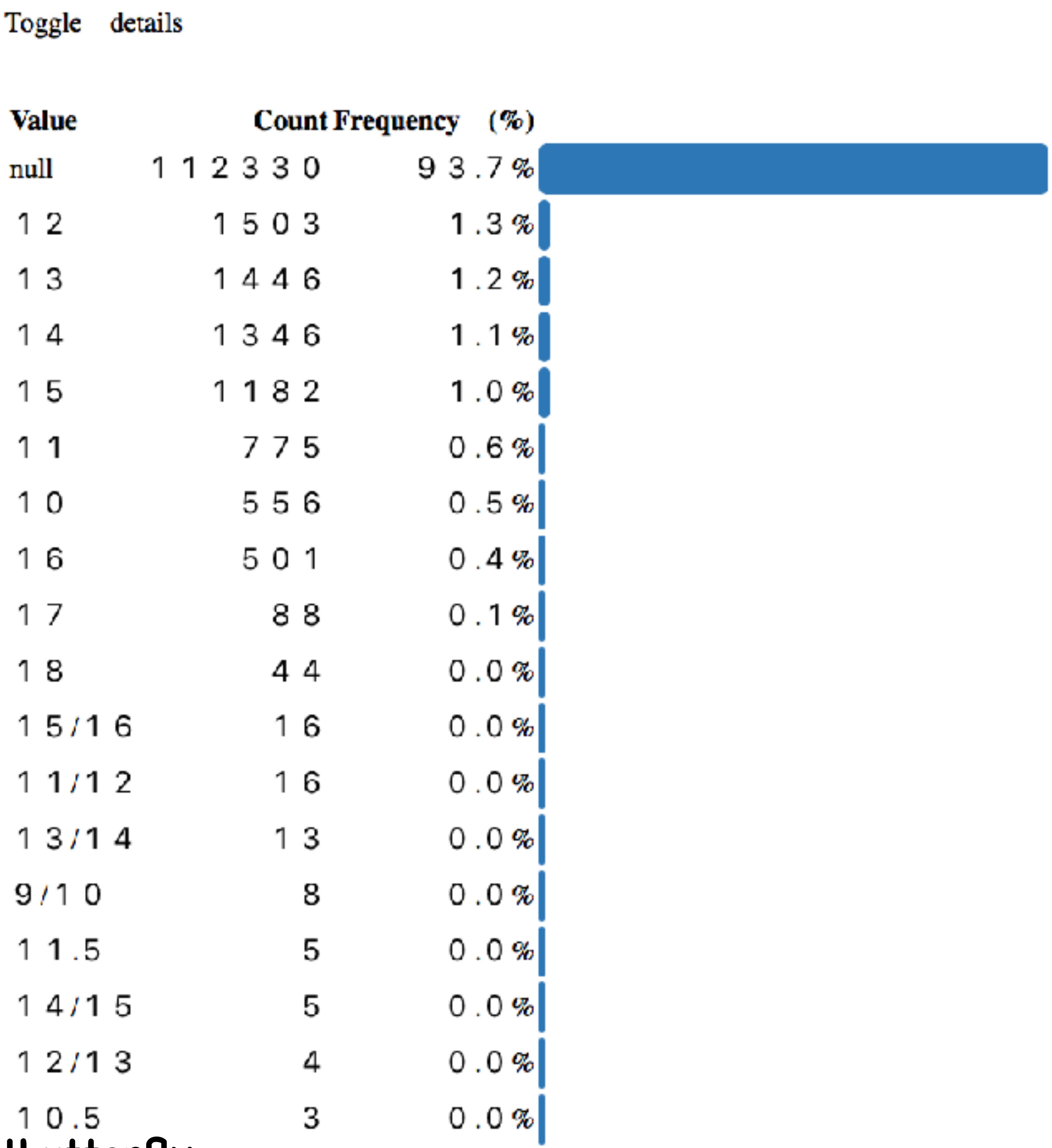
shoeWidth

Categorical

Distinct count	6
Unique (%)	0.0%
Missing (%)	0.0%
Missing (n)	0
Infinite (%)	0.0%
Infinite (n)	0

Toggle details

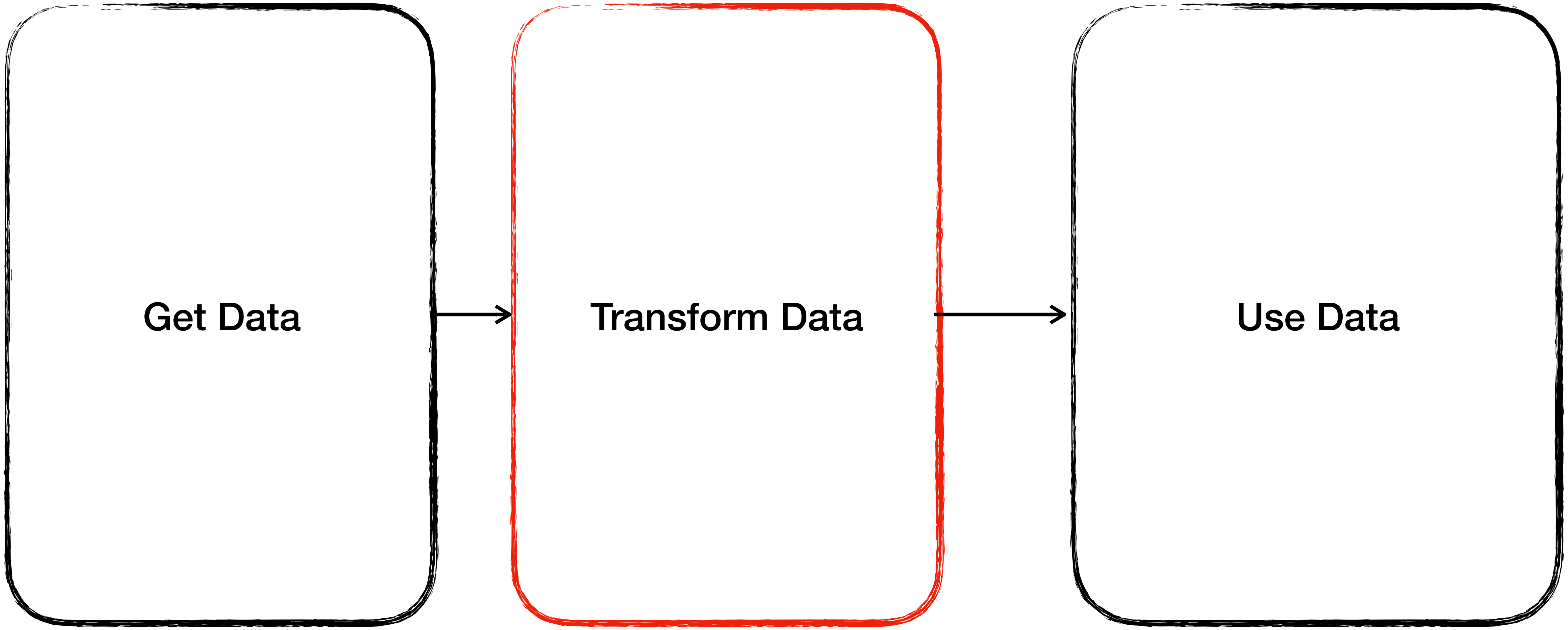
Value	Count	Frequency (%)
null	112356	93.8%
M	3348	2.8%
W	3280	2.7%
EW	795	0.7%
EEW	61	0.1%
N	1	0.0%



Toggle details

Value	Count	Frequency (%)
null	112330	93.7%
12	1503	1.3%
13	1446	1.2%
14	1346	1.1%
15	1182	1.0%
11	775	0.6%
10	556	0.5%
16	501	0.4%
17	88	0.1%
18	44	0.0%
15/16	16	0.0%
11/12	16	0.0%
13/14	13	0.0%
9/10	8	0.0%
11.5	5	0.0%
14/15	5	0.0%
12/13	4	0.0%
10.5	3	0.0%

What We Do?



Get Data

Transform Data

Use Data

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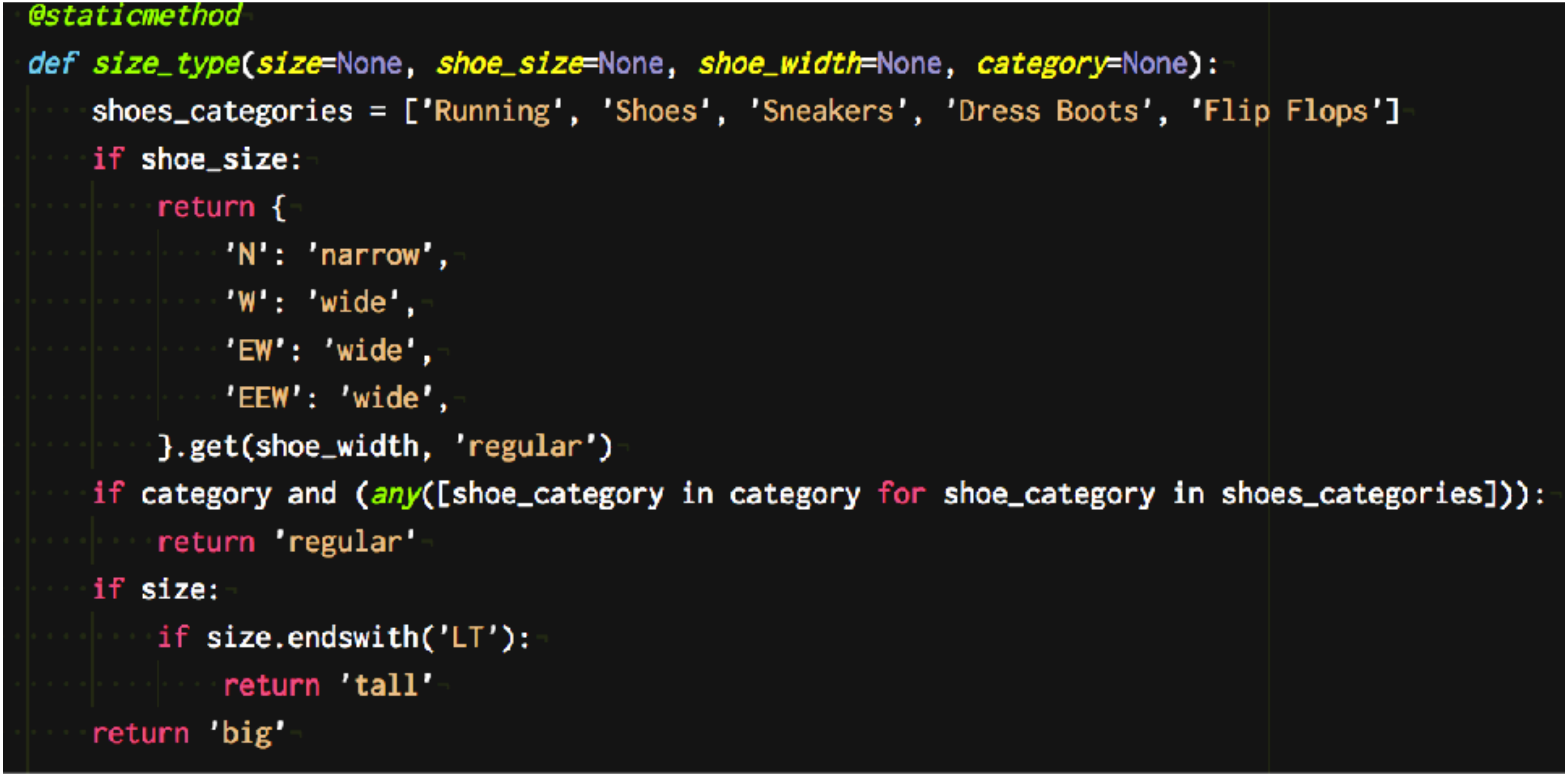
Testing Rules ٩✌°◡°✌۶

Write Ingestion

Write UDF functions

Test them

Testing Rules ୧✌°◡°✌୨



```python
@staticmethod
def size_type(size=None, shoe_size=None, shoe_width=None, category=None):
    shoes_categories = ['Running', 'Shoes', 'Sneakers', 'Dress Boots', 'Flip Flops']
    if shoe_size:
        return {
            'N': 'narrow',
            'W': 'wide',
            'EW': 'wide',
            'EEW': 'wide',
        }.get(shoe_width, 'regular')
    if category and (any([shoe_category in category for shoe_category in shoes_categories])):
        return 'regular'
    if size:
        if size.endswith('LT'):
            return 'tall'
    return 'big'
```

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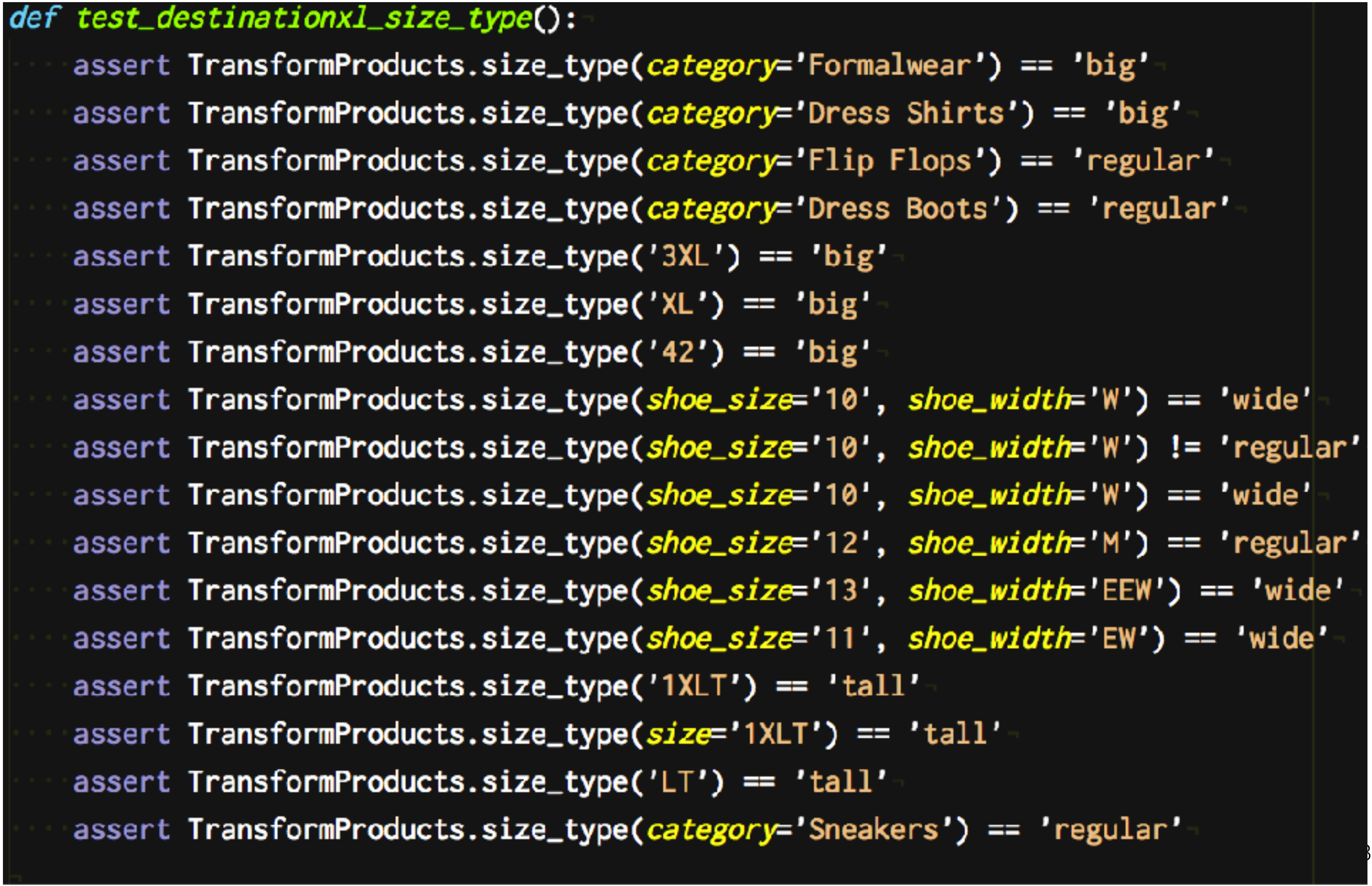
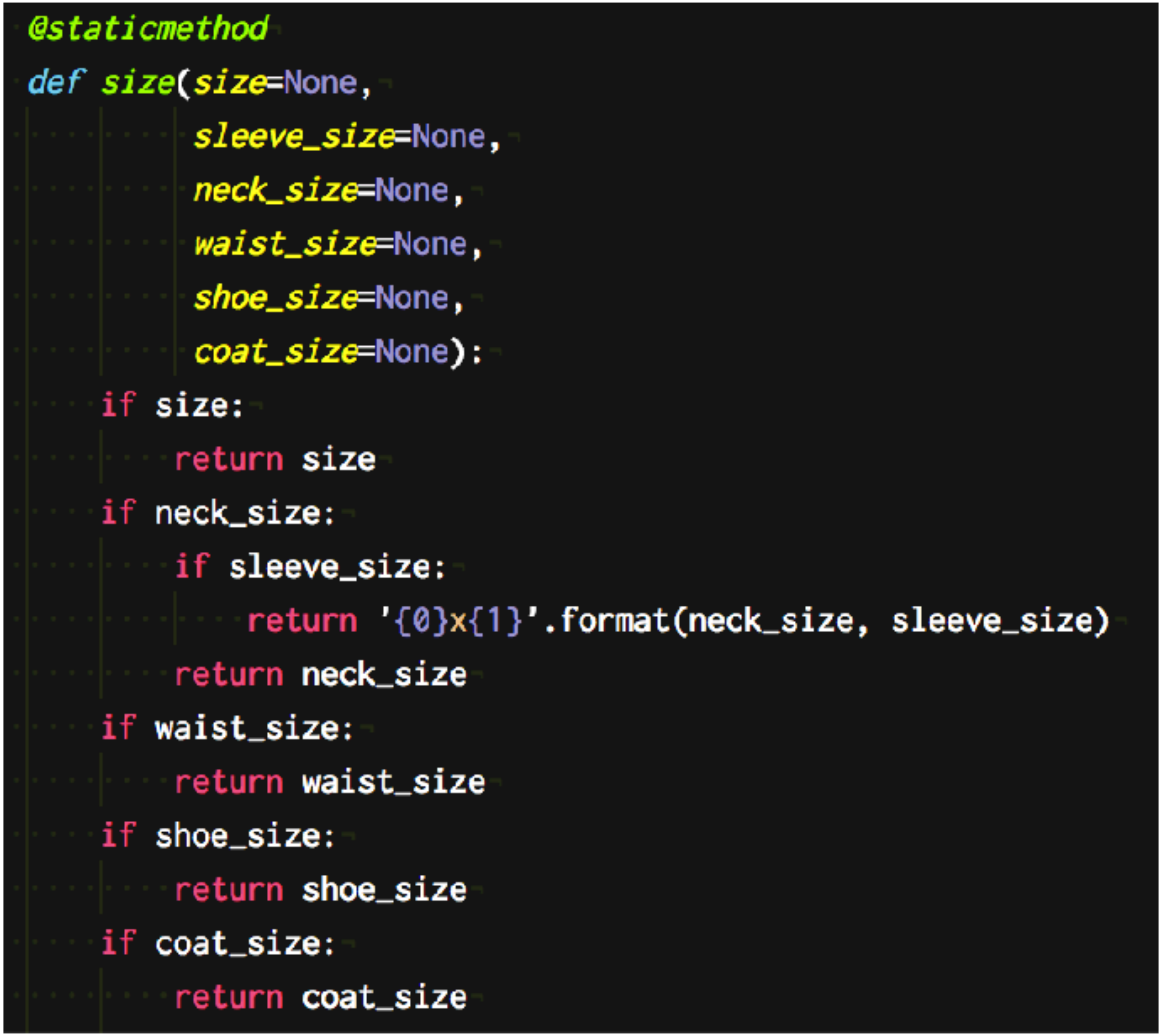
Testing Rules ୧✌°‿°✌୨



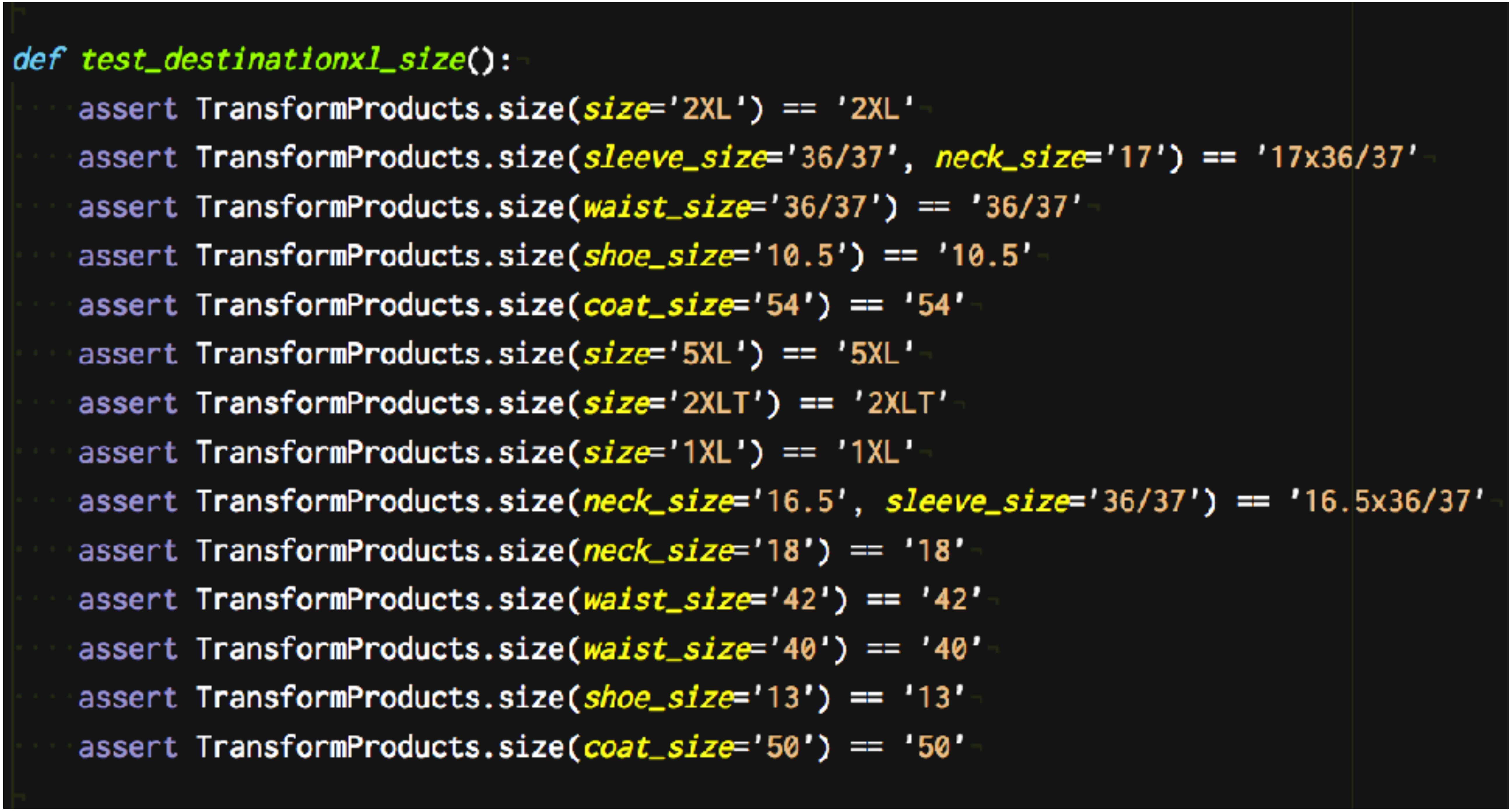
```
def test_destinationxl_size_type():
    assert TransformProducts.size_type(category='Formalwear') == 'big'
    assert TransformProducts.size_type(category='Dress Shirts') == 'big'
    assert TransformProducts.size_type(category='Flip Flops') == 'regular'
    assert TransformProducts.size_type(category='Dress Boots') == 'regular'
    assert TransformProducts.size_type('3XL') == 'big'
    assert TransformProducts.size_type('XL') == 'big'
    assert TransformProducts.size_type('42') == 'big'
    assert TransformProducts.size_type(shoe_size='10', shoe_width='W') == 'wide'
    assert TransformProducts.size_type(shoe_size='10', shoe_width='W') != 'regular'
    assert TransformProducts.size_type(shoe_size='10', shoe_width='W') == 'wide'
    assert TransformProducts.size_type(shoe_size='12', shoe_width='M') == 'regular'
    assert TransformProducts.size_type(shoe_size='13', shoe_width='EEW') == 'wide'
    assert TransformProducts.size_type(shoe_size='11', shoe_width='EW') == 'wide'
    assert TransformProducts.size_type('1XLT') == 'tall'
    assert TransformProducts.size_type(size='1XLT') == 'tall'
    assert TransformProducts.size_type('LT') == 'tall'
    assert TransformProducts.size_type(category='Sneakers') == 'regular'
```

Testing Rules ୧✌°◡°✌୨



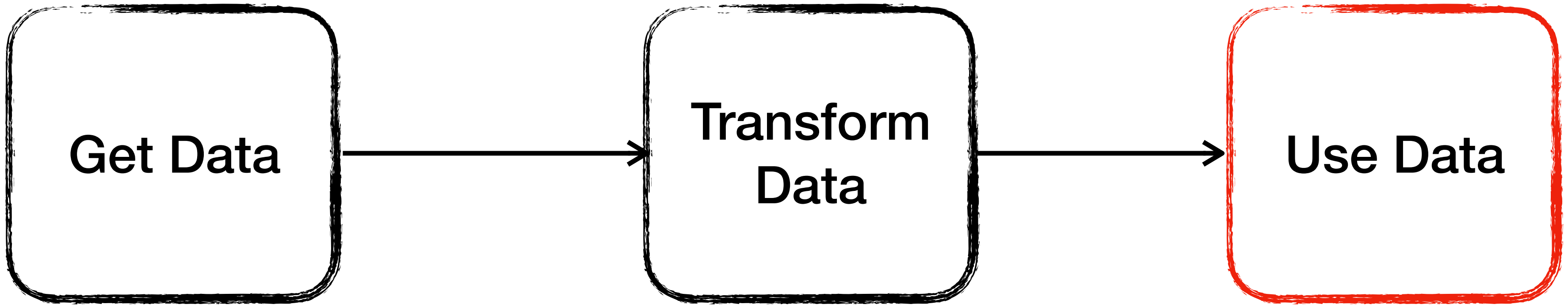
```python
@staticmethod
def size(size=None,
         sleeve_size=None,
         neck_size=None,
         waist_size=None,
         shoe_size=None,
         coat_size=None):
    if size:
        return size
    if neck_size:
        if sleeve_size:
            return '{0}x{1}'.format(neck_size, sleeve_size)
        return neck_size
    if waist_size:
        return waist_size
    if shoe_size:
        return shoe_size
    if coat_size:
        return coat_size
```

Testing Rules ٩✌°◡°✌۶



```python
def test_destinationxl_size():
    assert TransformProducts.size(size='2XL') == '2XL'
    assert TransformProducts.size(sleeve_size='36/37', neck_size='17') == '17x36/37'
    assert TransformProducts.size(waist_size='36/37') == '36/37'
    assert TransformProducts.size(shoe_size='10.5') == '10.5'
    assert TransformProducts.size(coat_size='54') == '54'
    assert TransformProducts.size(size='5XL') == '5XL'
    assert TransformProducts.size(size='2XLT') == '2XLT'
    assert TransformProducts.size(size='1XL') == '1XL'
    assert TransformProducts.size(neck_size='16.5', sleeve_size='36/37') == '16.5x36/37'
    assert TransformProducts.size(neck_size='18') == '18'
    assert TransformProducts.size(waist_size='42') == '42'
    assert TransformProducts.size(waist_size='40') == '40'
    assert TransformProducts.size(shoe_size='13') == '13'
    assert TransformProducts.size(coat_size='50') == '50'
```

What We Do?


Get Data

Transform Data

Use Data

FIT PREDICTOR

@manelbutterfly

“Maybe stories are just data with a soul.”

-Brené Brown