What to Do When Your Data Is Too Big

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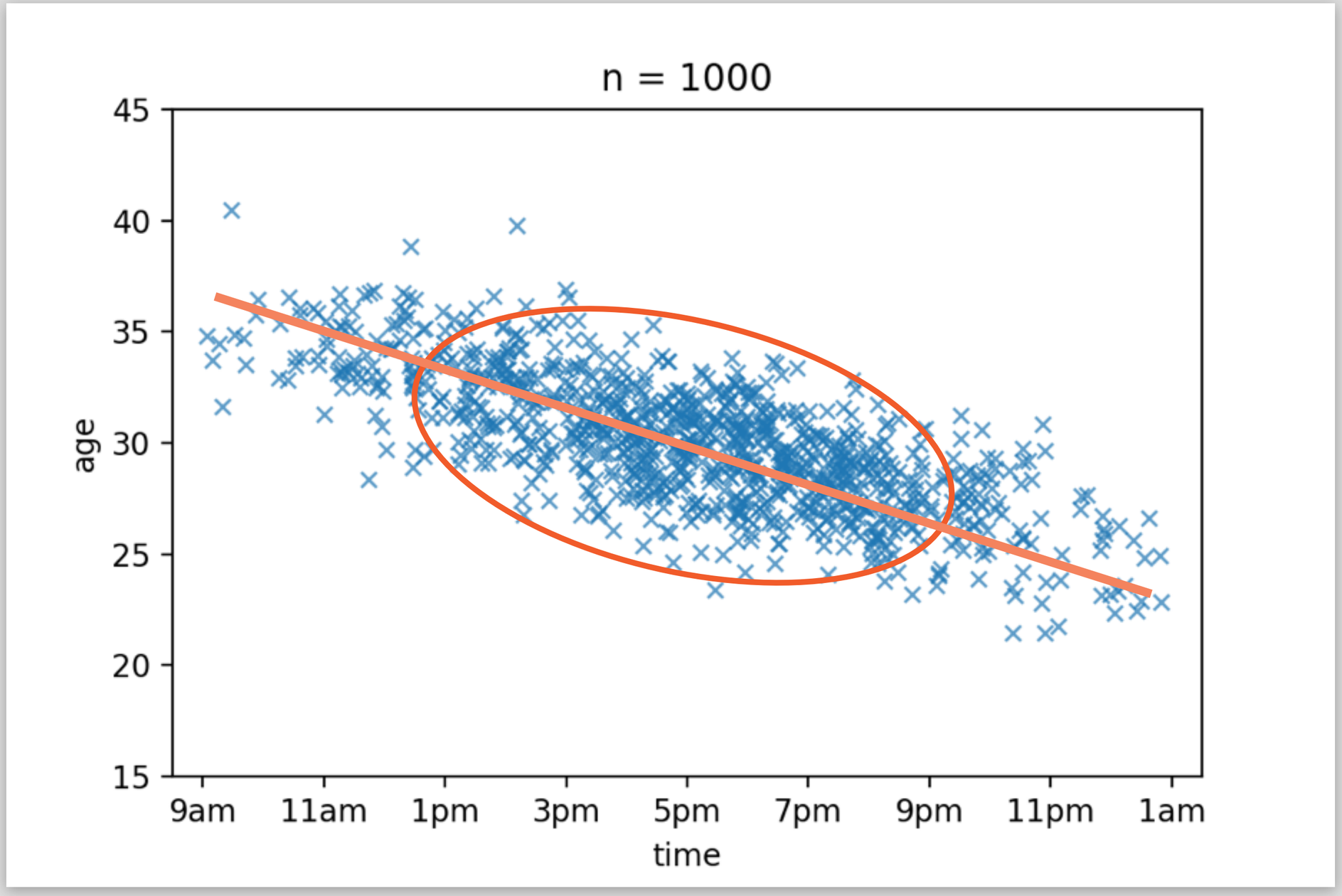
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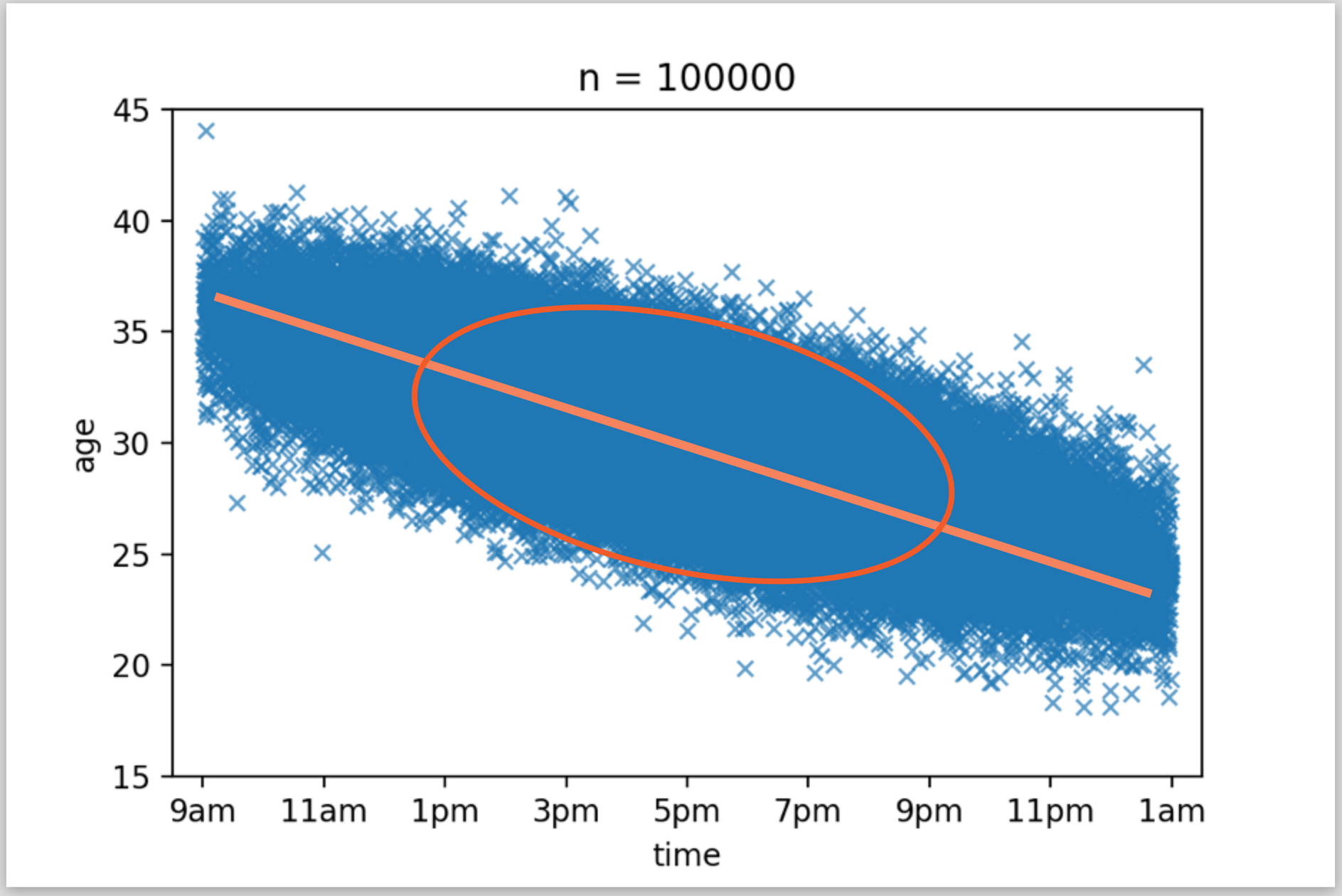
45
40
35
30
25
20
15
age
9am
11am
1pm
3pm
5pm
7pm
9pm
11pm
1am
time


n = 100000
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40
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age
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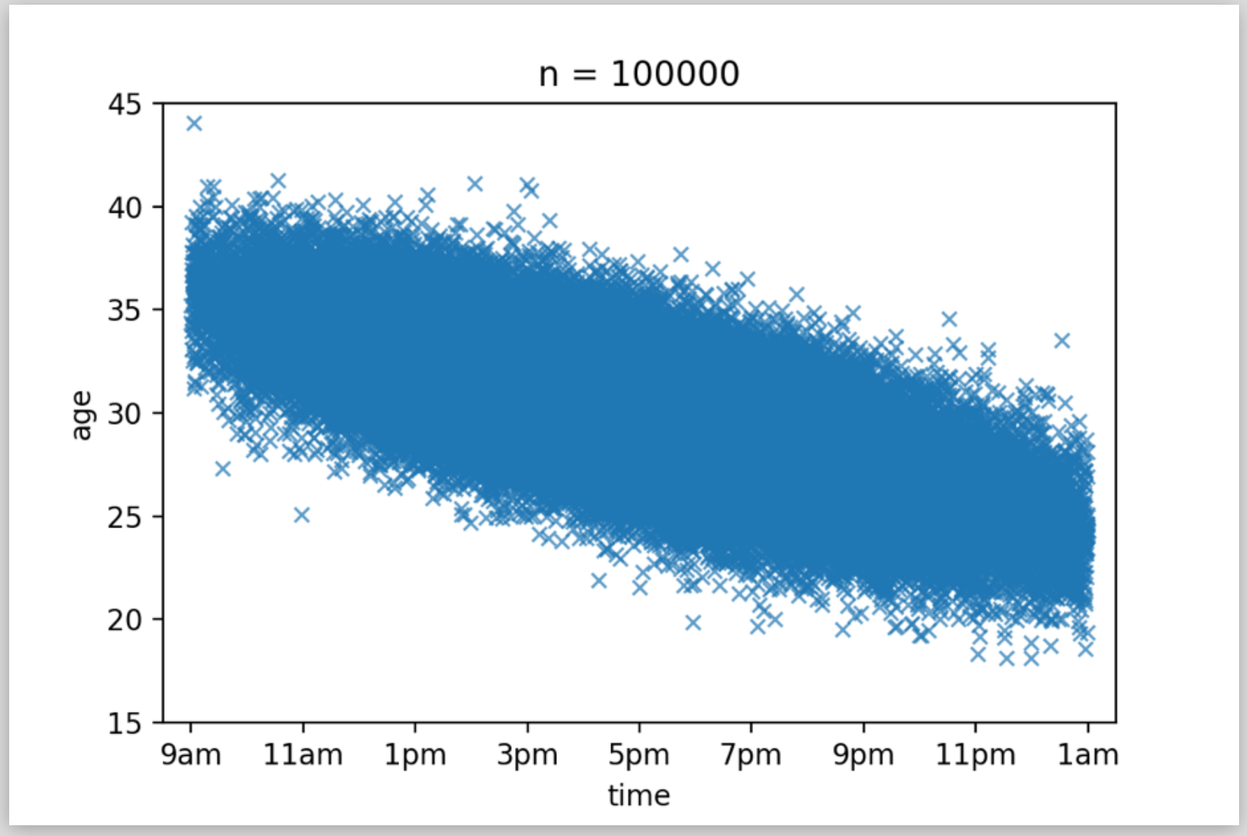
time

Introduction to Data Aggregation and Sampling

Data Aggregation


n = 100000
45
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30
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20
15
age
9am
11am
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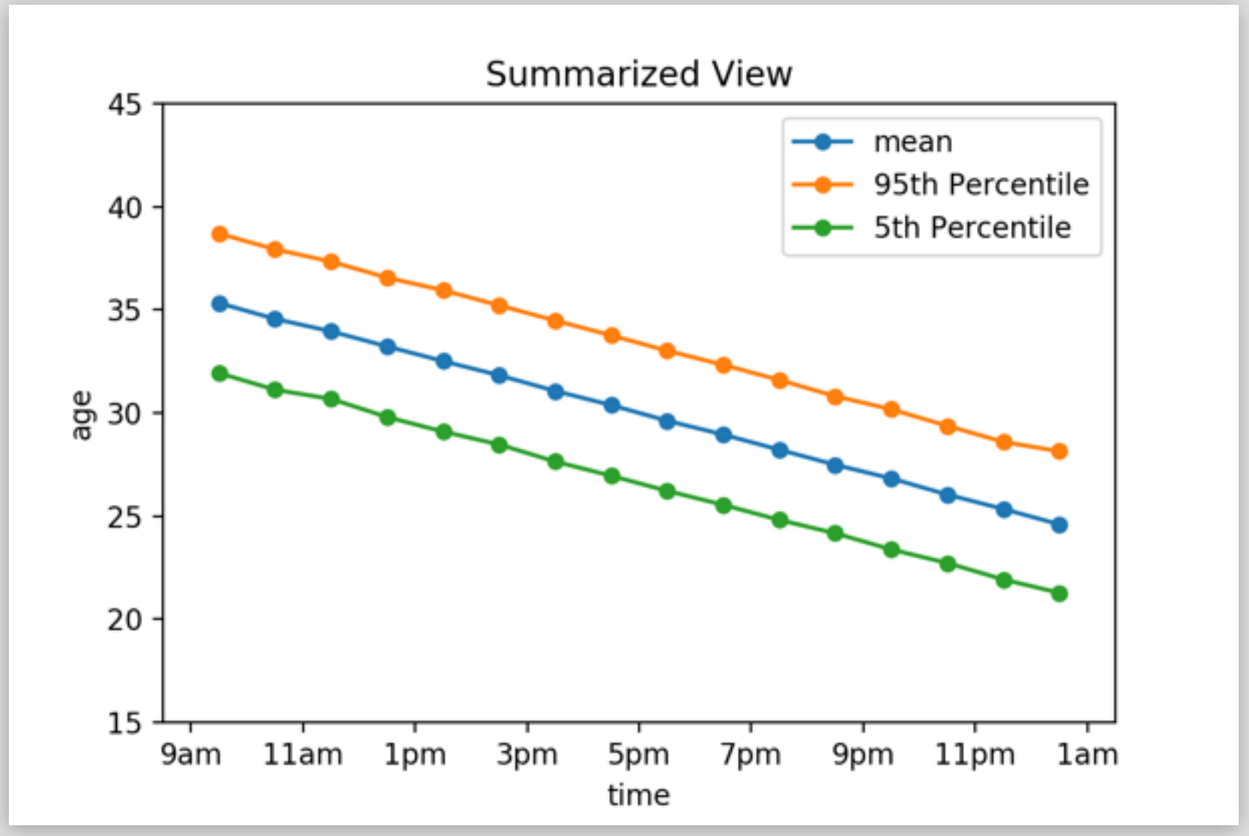
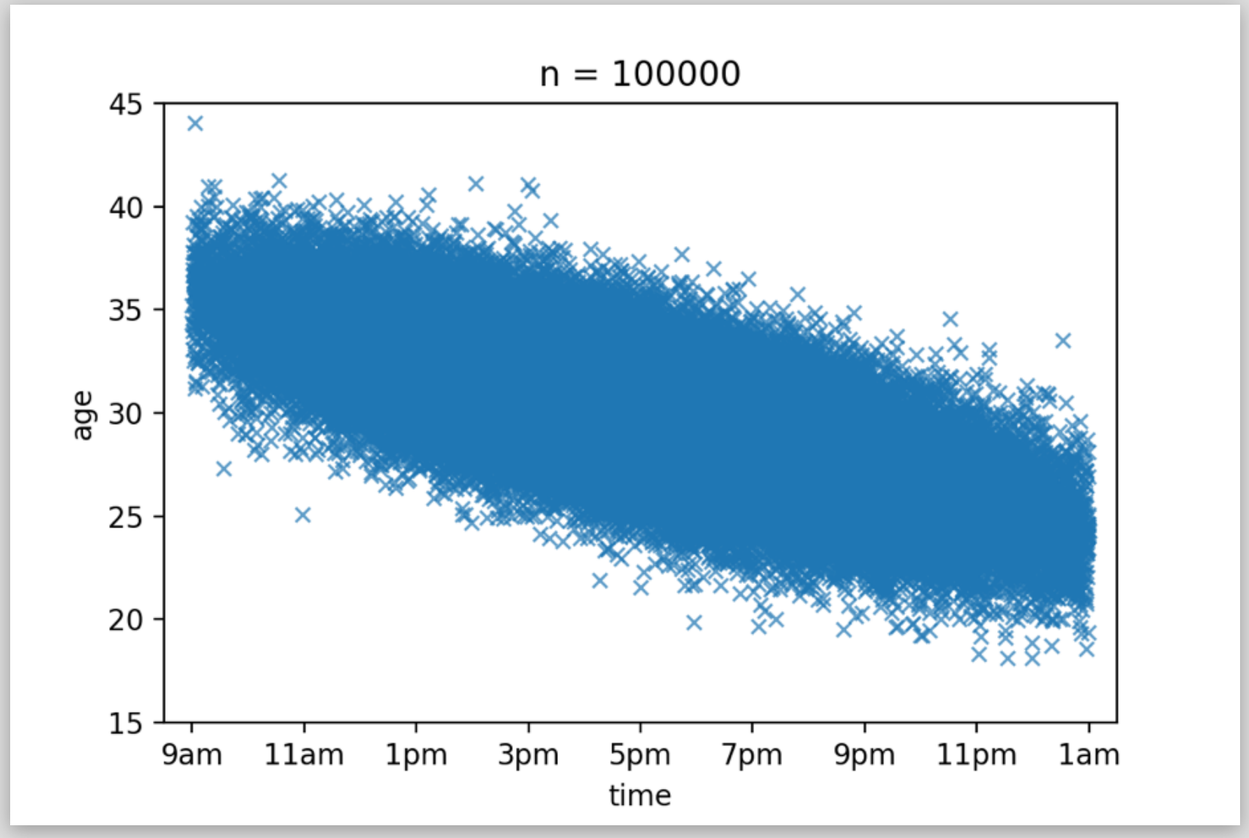
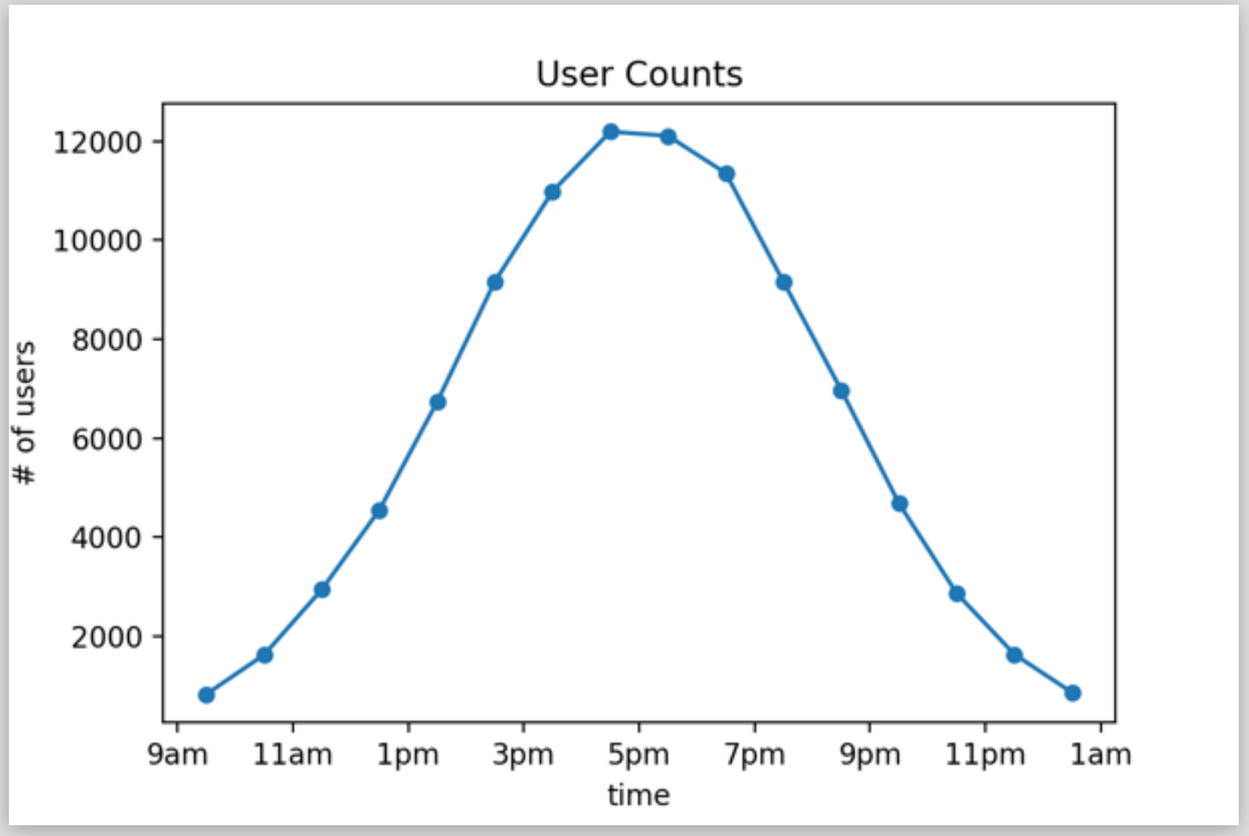
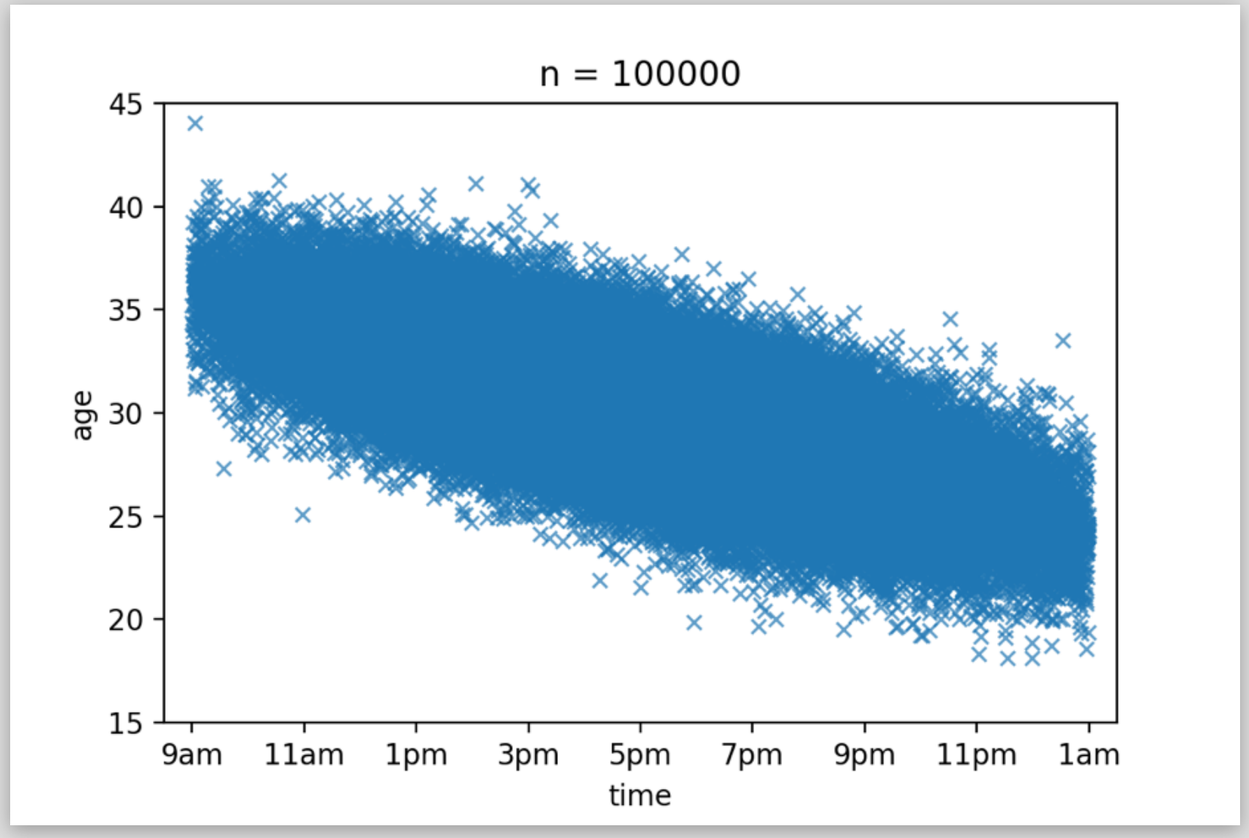
9pm
11pm
1am
time

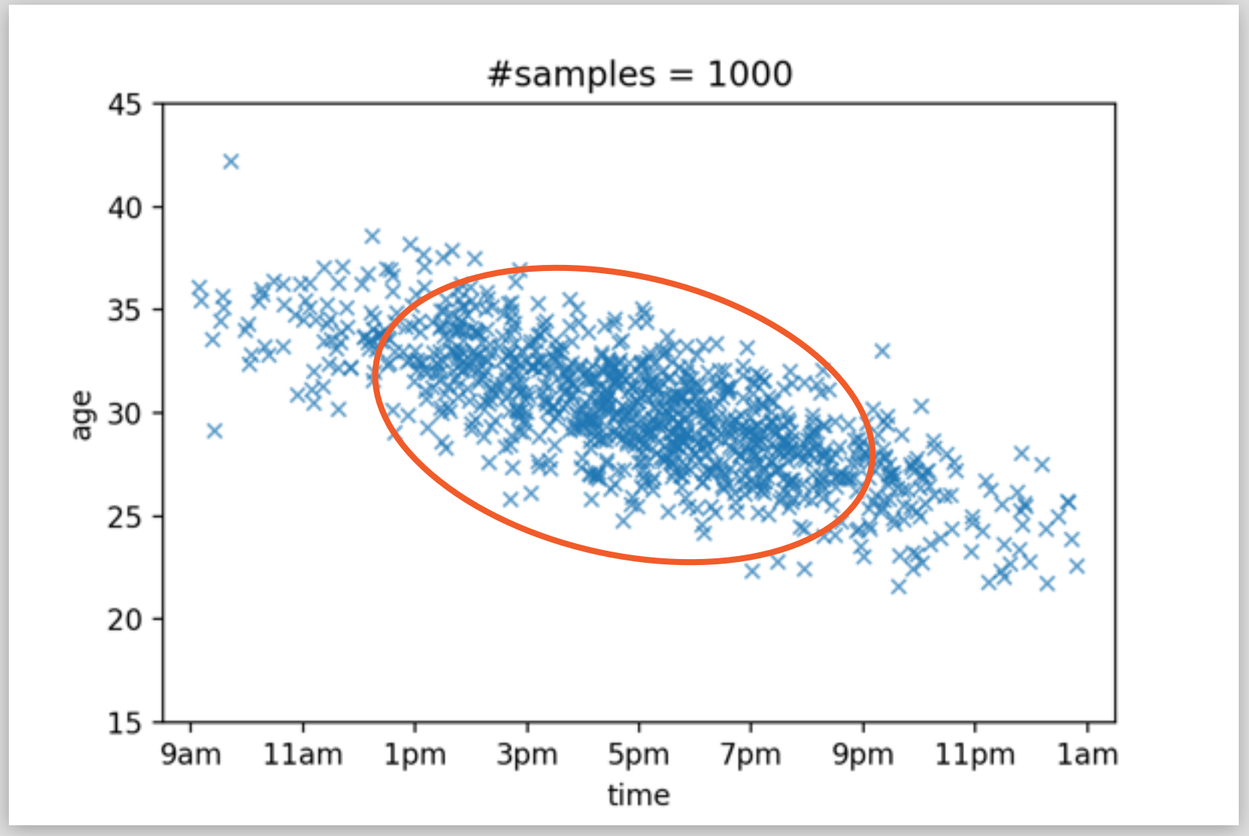

Summarized View
mean
95th Percentile
5th Percentile
45
40
35
30
25
20
15
age
9am
11am
1pm
3pm
5pm
7pm
9pm
11pm
1am
time


n = 100000
45
40
35
30
25
20
15
age
9am
11am
1pm
3pm
5pm
7pm
9pm
11pm
1am
time


User Counts
12000
10000
8000
6000
4000
2000
# of users
9am
11am
1pm
3pm
5pm
7pm
9pm
11pm
1am
time

Sampling





Note: Remember to try sampling a few times.

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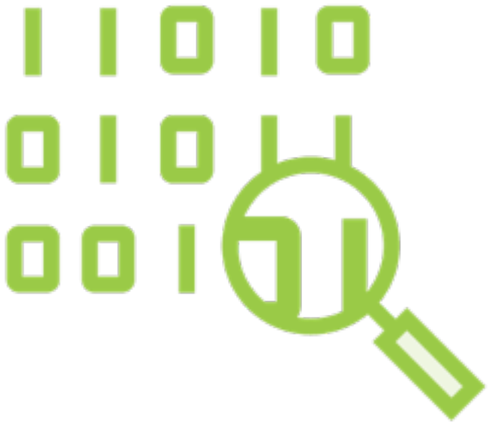

Aggregate data (mean, percentiles, etc.)

Sample a random subset of data

- Sometimes you don’t need all data

A Data Aggregation Example with Python

obama.csv

year_month	survey_organization	approve_percent	disapprove_percent
2009-01	ABC/Post	80	15
2009-01	AP-GFK	74	15
2009-01	CNN	84	14
		.	
		.	
		.	
2017-01	SurveyMonkey	62	37.5
2017-01	YouGov/Economist	47	42
2017-01	Zogby	50	48

Demo

Data Aggregation Example

- A scatter plot of approval ratings
- Mean and median of approval ratings

A Random Sampling Example with Python

obama_too_big.csv

year_month	survey_organization	approve_percent	disapprove_percent
2009-01	Generated Data	67	31
2009-01	Harris (Phone)	60	29
2009-01	Generated Data	65.9	19.1

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2015-12	Monmouth University	36	53
2016-01	Generated Data	46.8	49.2
2016-01	Generated Data	40.2	53.8

Demo

Random Sampling Example

- A scatter plot of approval ratings
- Randomly sample rows