The effect of city size on review quantity and quality

By: Emily Watabe, Shirley Ang, Katsuhiko Maeda, John Linford

KFC wants to assess its quality of service to inform two categories:

Large/small city difference

Improved service

KFC is 4th in locations and first in revenue

40,031

$23.2B

37,000

$16.1B

33,833

$29B

26,934

$31.3B

Source: Wikipedia, updated 2021

Reviews inform the success of a restaurant

94%

Diners who make decisions based on reviews

31%

Diners who will pay more based on positive reviews

Source: Small Biz Trends

RESEARCH QUESTION

Is there a difference in KFC ratings for large and small cities?

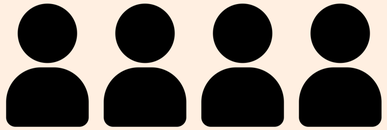
Null hypothesis

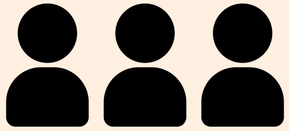
City size makes no difference in the quality of review

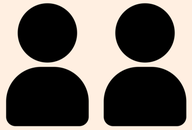
Alternative hypothesis

City size makes a difference in the quality of review

One stage stratification on city size

Large Metro 

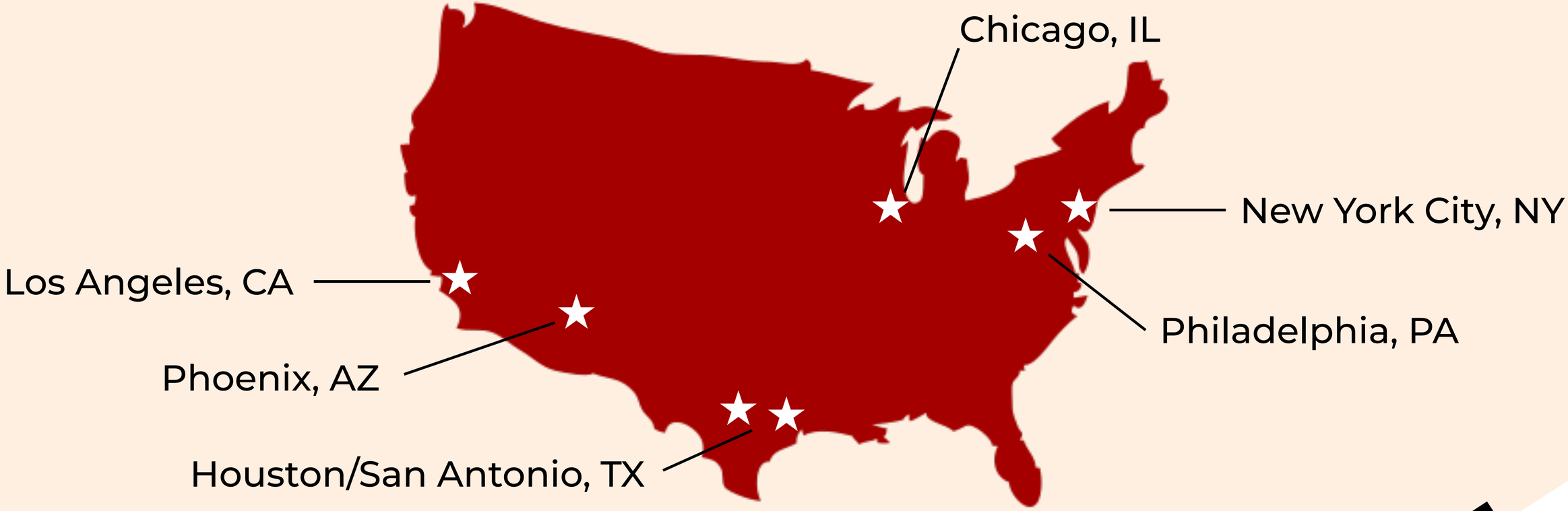
Metro 

Medium  → Our definition of ‘small’

Small  → (Sample size too small)

Source: Organization for Economic Cooperation and Development

Selecting ‘large’ cities, then selected ‘small’ cities within each state for comparison



Recorded location, number of reviews, and average review rating (out of five)

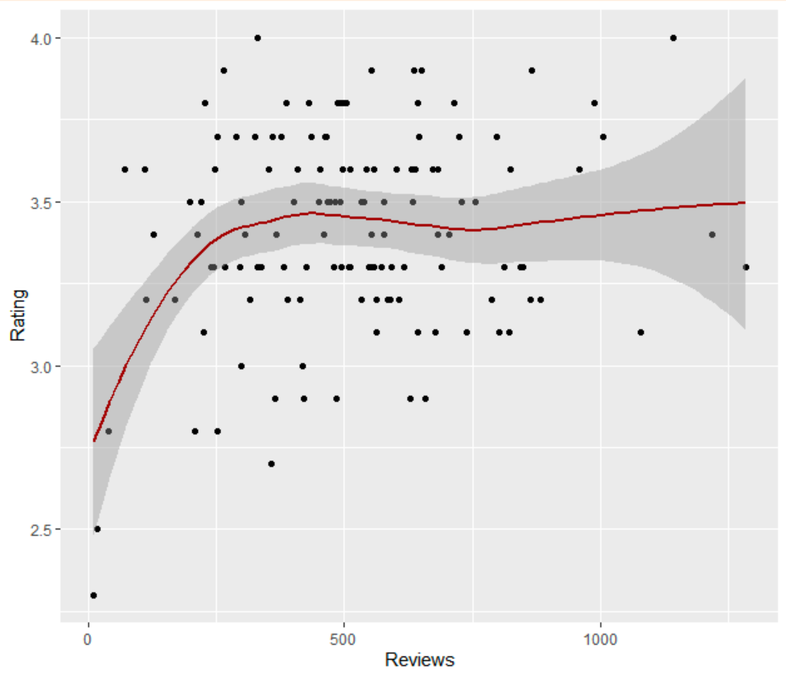
Location	Number of KFCs	Average Reviews	Average Rating
New York (NY)	7	360.71	3.2
Los Angeles (CA)	22	451.14	3.66
Chicago (IL)	22	561.64	3.47
Houston (TX)	34	471.50	3.29
Phoenix (AZ)	9	772.56	3.21
San Antonio (TX)	22	466.55	3.55
Philadelphia (PA)	18	599.22	3.28

Large cities (134)

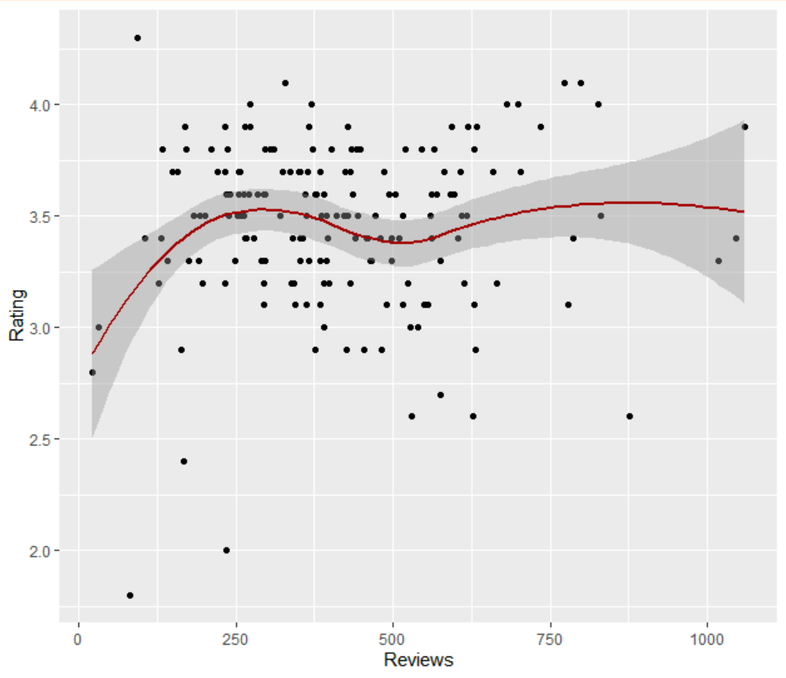
Location	Number of KFCs	Average Reviews	Average Rating
New York	2	551	3.15
California	112	375	3.55
Illinois	13	435.85	3.21
Texas	41	481.49	3.41
Arizona	5	446	2.52
Pennsylvania	1	1060	3.9

Small cities (174)

There isn’t a strong correlation between reviews and ratings



Small cities (0.07530594)

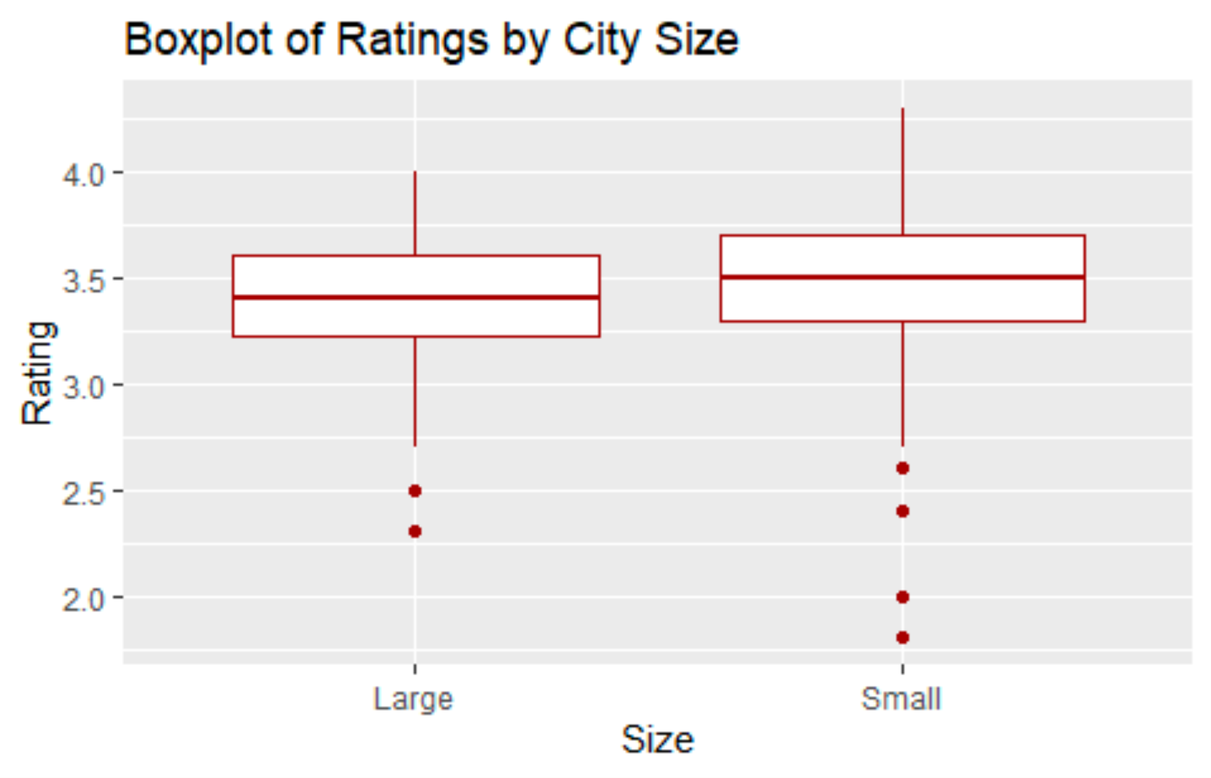


Large cities (0.1854604)

Created a random sample with equal probability from our data

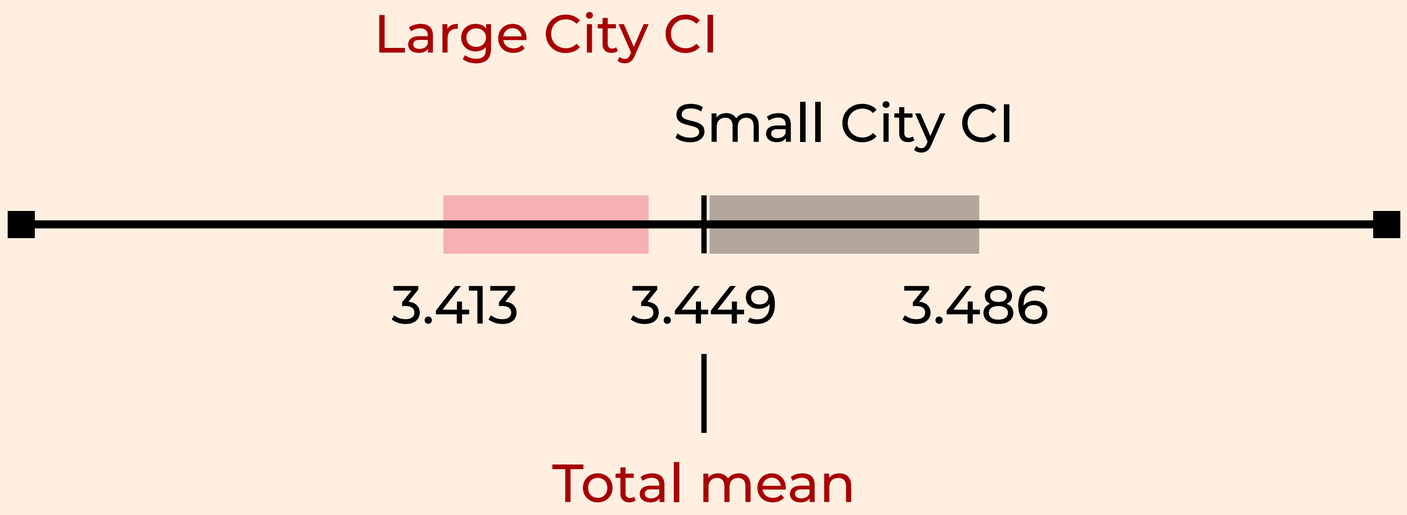
1. Took .75 of each dataset to maximize sample size
2. Replacement set to TRUE

Distributions don’t appear visually different



The two-sample t-test of unequal variance was not significant at p = .3002

Confidence intervals aren’t widely spread



There is no substantive difference in review quality/quantity and size of city. This means:

Reviews are unlikely to inform location selection

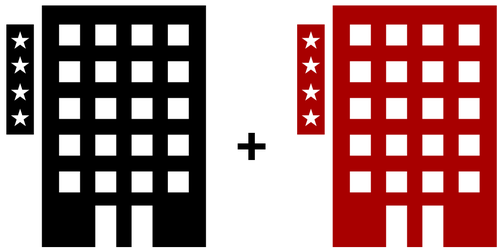
Improved service should be individualized

Our testing was necessarily limited

1. We only sampled from six states
2. Reviews can be biased and irregular
3. Reviews effect sales, but we don’t know which categories effect reviews for KFC
4. We only studied one chain, any conclusion is not applicable industry-wide

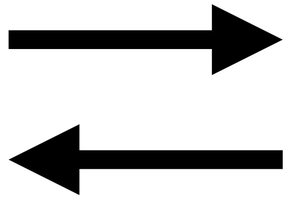
Further testing will require more granularity

1 More chains



2 Distinct categories

3 What effects reviews directly



Thank you.

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