Consumer Expenditure Survey
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Abstract

The purpose of this study is to examine how expenditures made per household are related to the highest level of education obtained by the people living there. One might expect those with a higher education level to earn more money and thus spend more in general. The research question at hand, however, is also concerned with exploring how households with varying levels of education might be different in how they distribute their spending into categories like food and apparel. Every quarter, the Bureau of Labor Statistics (BLS) uses a multi-stage, rotating panel design survey to collect data on consumer expenditures.

The data shows, as expected, a substantial difference in the amount of money spent on food, housing, apparel, and in total per quarter among households with different highest levels of education. Households where at least one person has obtained a professional or doctorate degree spend around five times on average more per quarter than those in which no one has attended school. This gap is larger for goods like clothing and smaller for necessities like food. In general, there is a steady increase in spending in all categories as highest education level increases.

The Question

- Does a higher education have an impact on lifestyle?
- Does education level impact specific expenditures such as food, housing, apparel?
- How does education level impact total expenditures?
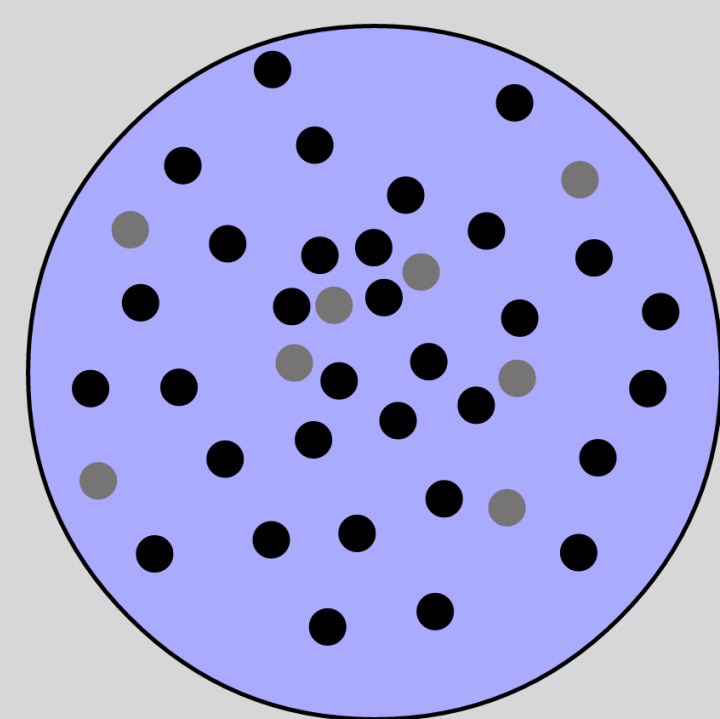
Survey Design
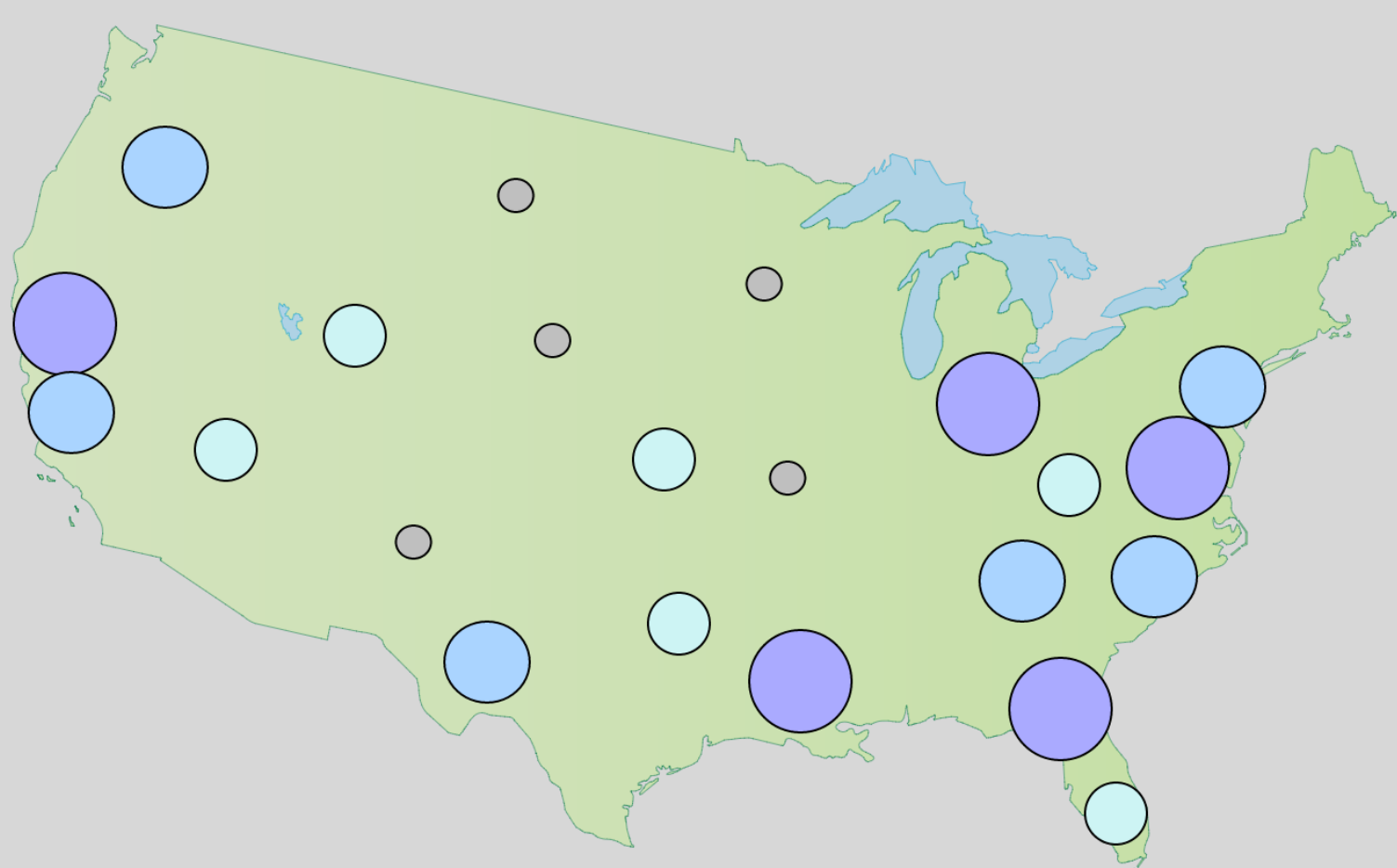
Samples are representative of the **total US civilian population** (non institutional)

First step: The selection of **91 areas (PSU's)**, each of which are composed of counties or groups of counties

Each PSU is one of **4 types**:
- Metropolitan Statistical Areas (MSA's) with a population greater than 1.5 million
- medium-sized MSA's
- nonmetropolitan areas
- nonmetropolitan areas where only the urban population data will be included

An **unclustered sample of Consumer Units (CUs)** is chosen within each of the 91 PSU's.

This **list of houses** (sampling frame) from which the CUs were picked **came from the 2000 Census of Population 100-percent-detail file**.

CU: the group of people living in one household.

This survey uses **3 rotating panels**. This diagram depicts when panel A's CU's get the questionnaire. The CU then reports expenditures for the **last 3 months**. After 5 quarters, the CU is replaced.
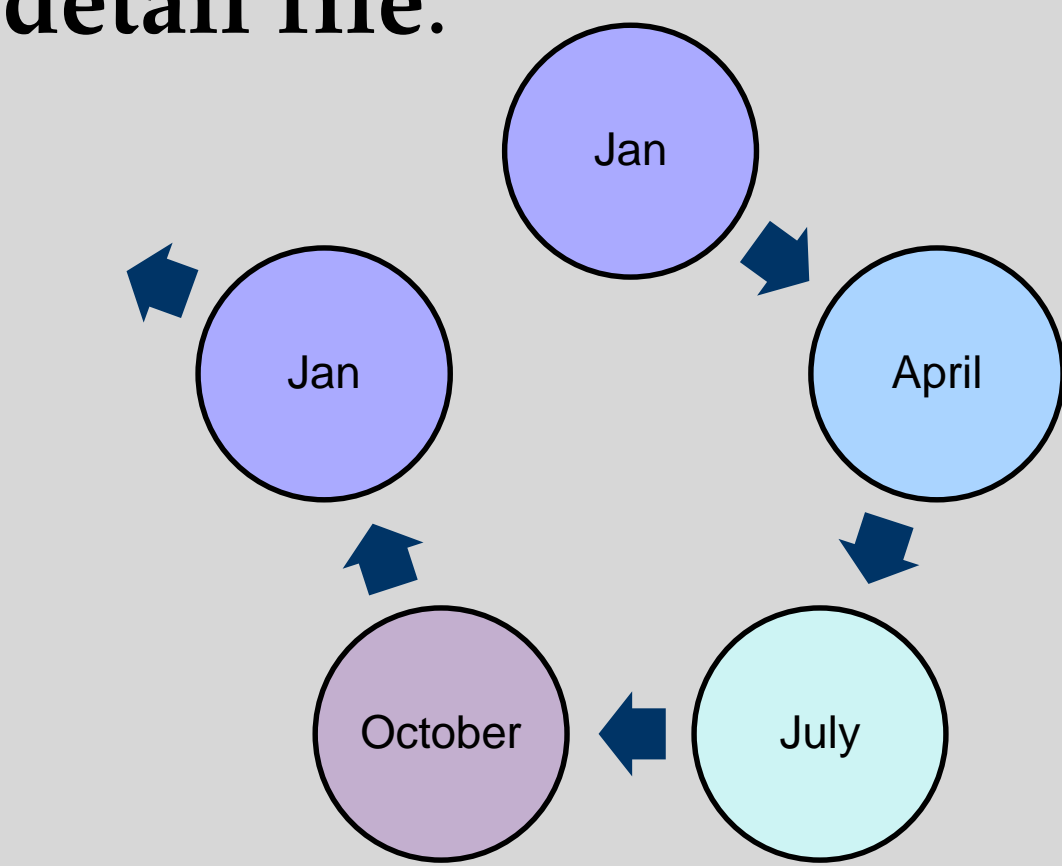
For panel B, the CU's receive questionnaire's on Feb, May, Aug.. and so on.
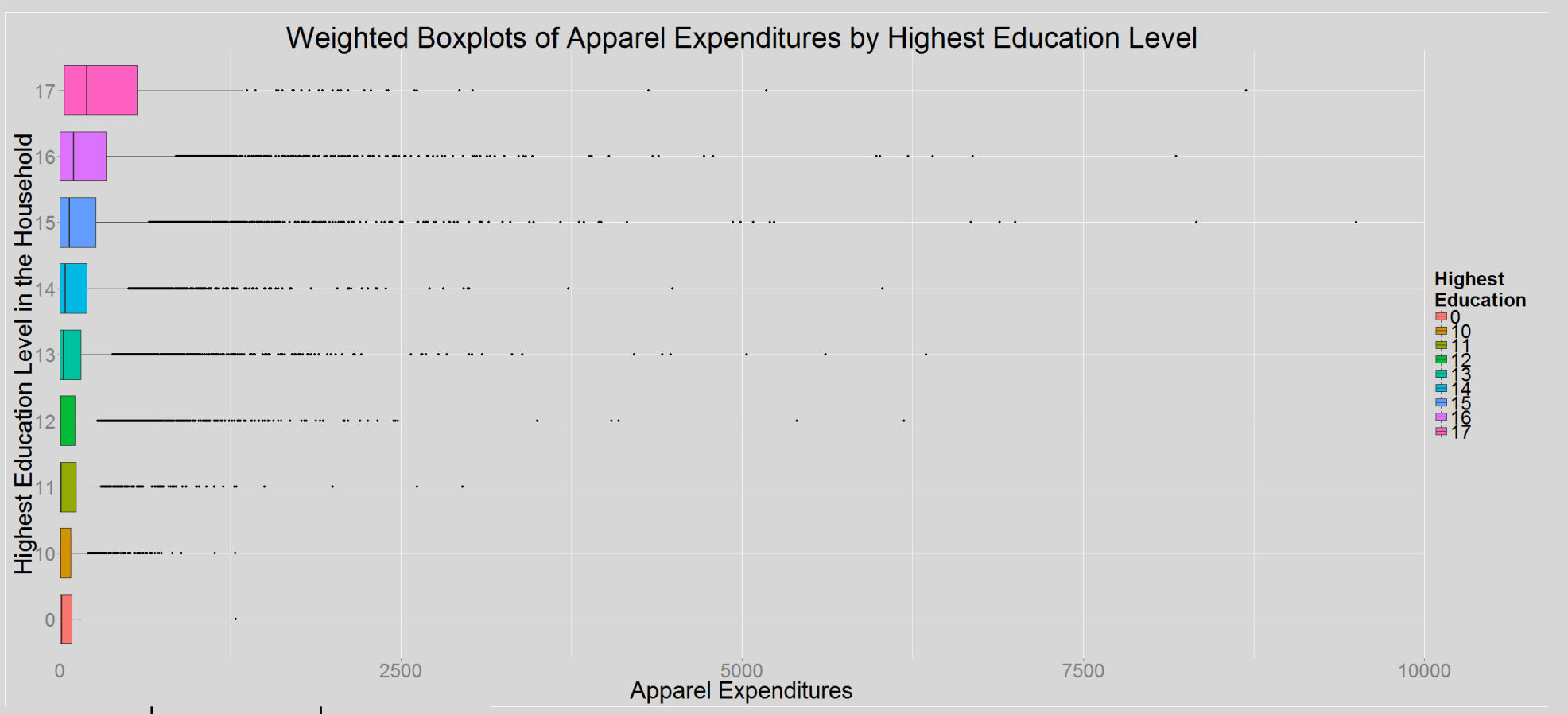
Data Exploration

Weighted Boxplots of Food Expenditures by Highest Education Level
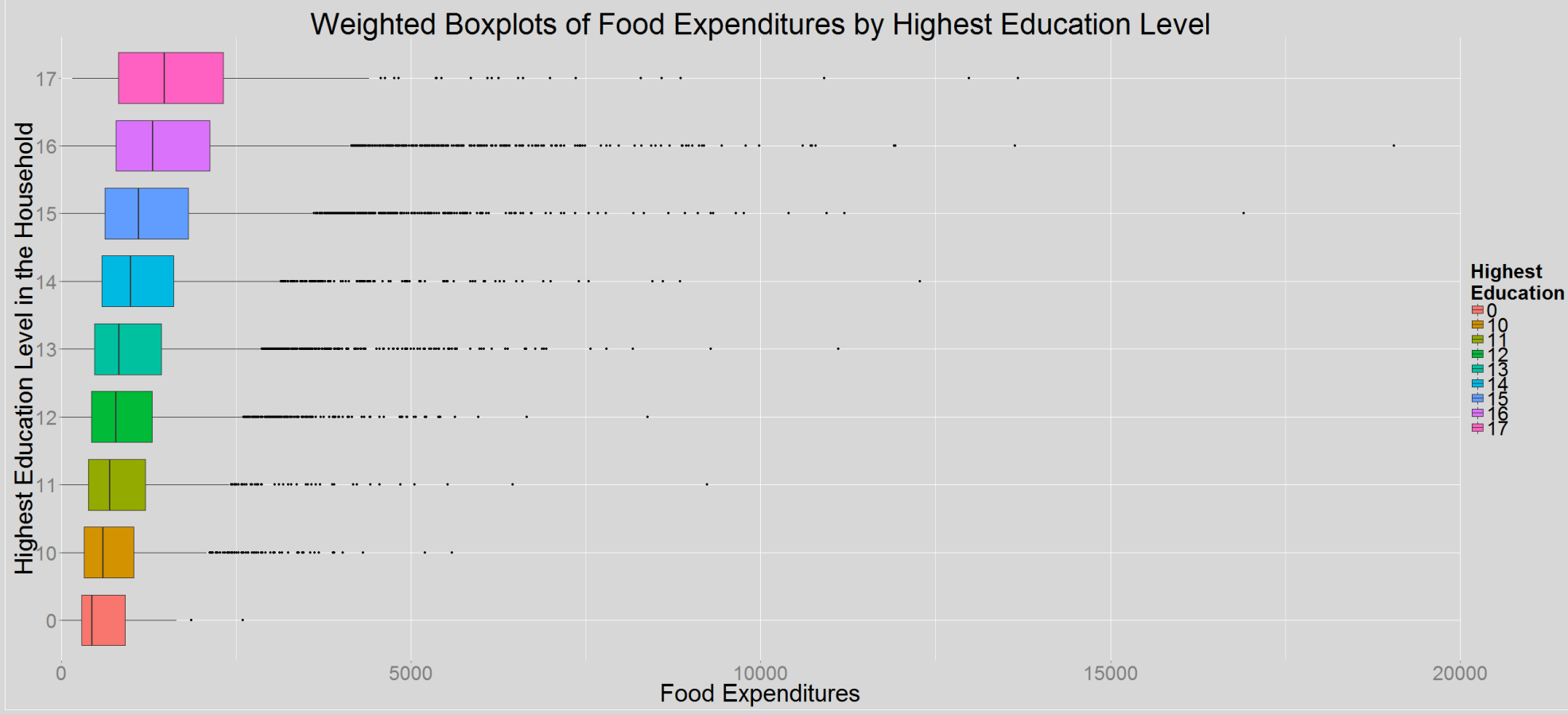
HIGH_EDU	AVG FOODPQ	SE
0	684.4608	154.14609
10	813.2782	29.29602
11	899.8643	35.41176
12	966.4474	15.4189
13	1069.1435	18.74799
14	1235.8400	24.16602
15	1392.7496	22.78892
16	1677.0883	29.85763
17	1886.9310	108.33085

- Median expenditures increase fairly linearly with education
- The maximum spent by households in which no one has attended school is about equal to the seventy-fifth percentile of CU's in which someone has a doctorate degree

Weighted Boxplots of House Expenditures by Highest Education Level
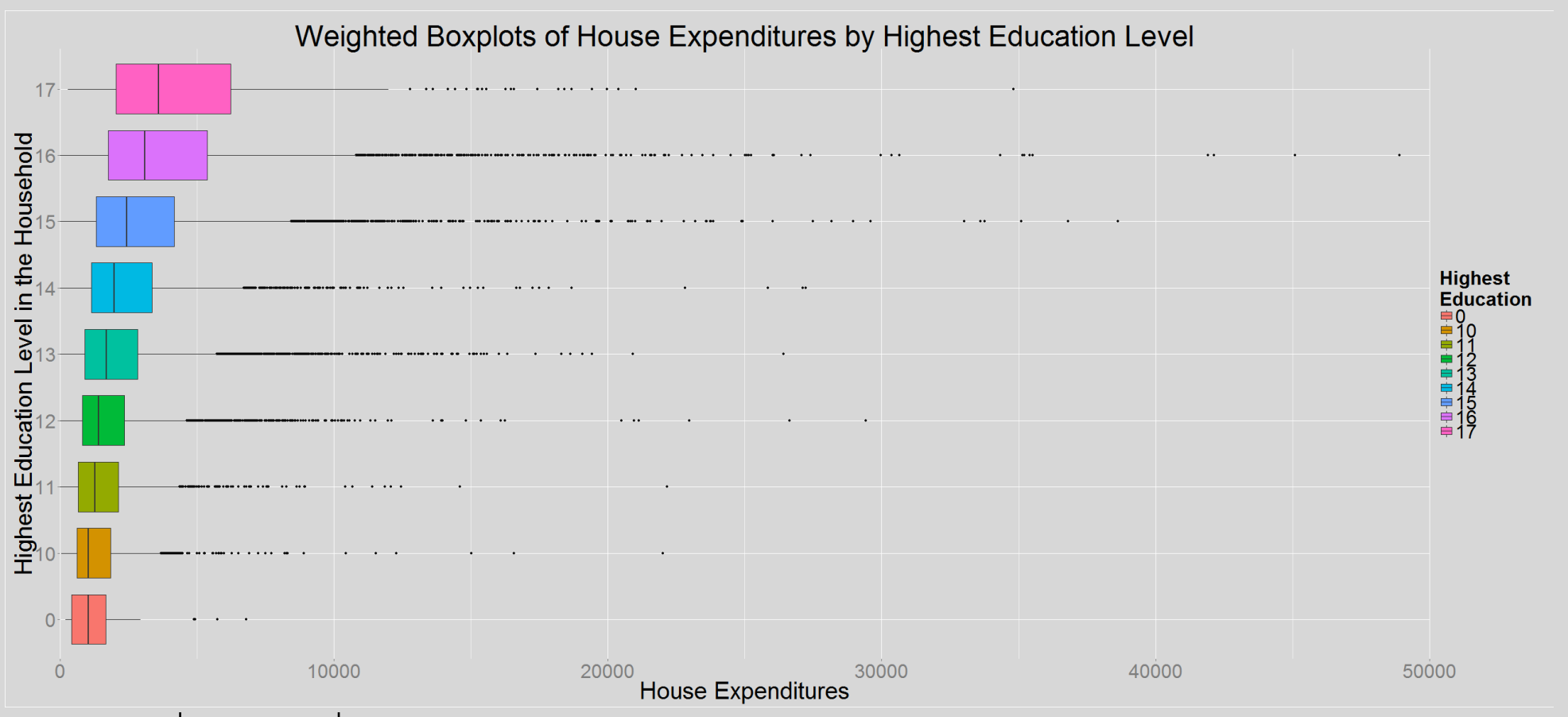
EDU	HOUSE	SE
0	1692.092	535.88908
10	1468.386	73.36080
11	1660.299	54.74892
12	1843.497	39.88800
13	2189.924	51.76436
14	2546.429	54.03962
15	3201.593	57.07351
16	4256.581	110.40218
17	4869.307	265.37950

- The four lowest levels have about the same median housing expenditures
- Expenditures increases non-linearly after 13 (some college)

Weighted Boxplots of Apparel Expenditures by Highest Education Level

EDU	APPAREL	SE
0	96.42134	61.109791
10	73.99194	6.294394
11	103.43423	10.471877
12	102.46369	3.853024
13	136.80003	4.546982
14	163.29004	6.950044
15	226.30929	6.354671
16	275.50286	9.590669
17	464.94509	45.839083

- Largest percent increase between highest and lowest levels
- PhD level households spend 5 times more than those with no education

Weighted Boxplots of Total Expenditures by Highest Education Level
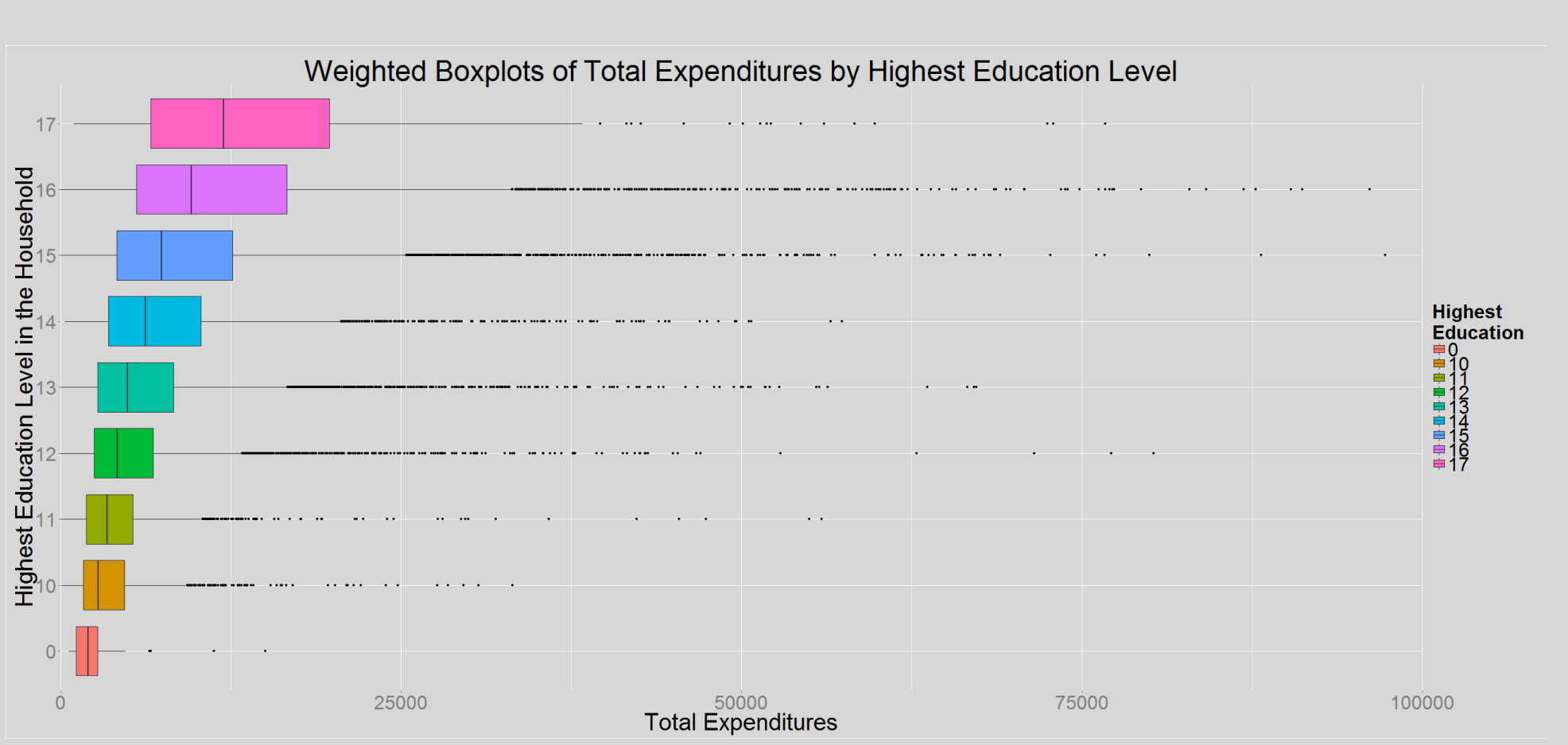
EDU	TOTAL	SE
0	3147.508	929.3599
10	3821.470	147.4508
11	4331.983	151.4866
12	5473.5952	110.8788
13	6553.773	148.0559
14	8086.071	200.8992
15	9930.513	176.2847
16	13279.432	299.9030
17	15219.252	688.8679

- Largest jump occurs from 15 (Bachelor's) to 16 (Master's)
- Combining expenses widens the expenditure gap by education
- Nonlinear increase in expenditures after 13 (some college)

Conclusion

- Higher education is associated with higher education expenditures
- These households also vary more in terms of how much they spend in total and in every category separately.

Caveats
- A few data points had to be excluded from the boxplots, but were included in the numerical estimations.
- Respondents may not be able to accurately recall all expenditures

References

- Consumer Expenditure Survey (CE) Public Use Microdata 2013 Interview dataset. *Public-Use Microdata*. Bureau of Labor Statistics. Web. <http://www.bls.gov/cex/pumd/data/comma/intrvw13.zip>.
- Consumer Expenditure Interview Survey. *2013 Users' Documentation*. Bureau of Labor Statistics. Web. <www.bls.gov/cex/2013/csxintvw.pdf>.
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