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**i)**

Low income areas and areas with a higher population of minorities are more at risk of discrimination. Graddy attempts to answer this by looking at whether there is price discrimination in regions where there are a more prominent black and low-income populace within New Jersey for a relatively homogenous product, fast food.

To answer this question, Graddy collected price data on various fast food restaurants from a study conducted by Card and Krueger (1994) in the area of New Jersey and Eastern Pennsylvania. Then she collected the census data using the zip code from each respective restaurant; she details how data that was missing or seemingly inaccurate was omitted. Subsequently, she produces a table by regressing the various fast foods items by their census data counterparts to determine correlation.

Lastly, she concludes that although there is a 5% higher price for a 50% increase in the proportion of the black population, this isn’t empirical proof of price discrimination as the correlation could be as a result of unmeasured variables (error term u) that could affect differences in cost. Lastly, she mentions that causation for this result maybe because of differences in demand however, discrimination can’t be ruled completely.

**ii)**

Differences in TV quality makes it difficult to measure the extent of price discrimination because a high- or low-quality TV could be aimed at a completely different market. Within these markets, it is important to account for the differences in elasticities and the level of competition faced as these variables affect price. However, these variables are difficult to measure and acquire in the real world; when running a regression could lead to an omitted variable bias (OVB) as they can easily be missed out. Therefore, it’s important to get as close to a homogenous product as possible to avoid OVB.

**iii)**

Fast food restaurants sell relatively homogenous products. In Graddy’s regression analysis in table 2, she uses variables that are almost homogenous like soda, fries and hamburgers which decreases the chance of having an omitted variable bias, allowing her to have a more accurate OLS estimator for price discrimination.

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Sample** | **All stores** | **Primary sample** | **Burger King** | **KFC** | **Roy Rogers** | **Wendy’s** | **T test KFC vs others** | **All NJ stores** |
| **Entire Sample** | **409** | **322** | **171** | **80** | **98** | **60** |  | **331** |
| **New Jersey** | **80.9%** | **81.1%** | **79.5%** | **85.0%** | **83.7%** | **75.0%** | **-1.032** | **100.0%** |
| **Greater than 20% black** | **16.1%** | **16.5%** | **12.9%** | **28.8%** | **14.3%** | **11.7%** | **3.461** | **19.9%** |
| **Greater than 20% in poverty** | **6.8%** | **7.8%** | **5.3%** | **12.5%** | **5.1%** | **6.7%** | **2.241** | **7.9%** |
| **Greater than 10% black** | **29.8%** | **32.0%** | **24.0%** | **46.3%** | **25.5%** | **31.7%** | **3.628** | **34.1%** |
| **Greater than 10% in poverty** | **19.6%** | **21.4%** | **15.8%** | **30.0%** | **12.2%** | **28.3%** | **2.641** | **21.1%** |

**IV)**

**V)**

**The fast food chain that had the lowest proportional representation in areas where the poverty rate exceeds 20% was Roy Rogers with 5.1% representation.**

**vi)**

Table 2. Determinants of the Price of a Meal-Dependent Variable: Log of Average Price of a Meal

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Variable | 1 | 2 | 3 | 4 | 5 | 6 |
| Prop. Black | .1080  (.0375) | 0.0955  (0.422) | .0758  (.0386) | .0946  (.0384) | .0346  (.0239) |  |
| Log income | -.1572  (.0401) | -.0723  .0507 | -.1460  (.0398) | .0862 (.0297) |  | .0458 (.0159) |
| Prop in poverty | .7281  (.2337) | -.4689  (.2802) | -.6122 (.2371) | .0388 (.1598) |  |  |
| Log pop. density | .0076  (.0054) | .0022  (.0059) | .0039 (.0054) |  |  |  |
| Log starting wage | .0299  (.1037) | .0534  (.1163) |  |  |  |  |
| Log no. employees | -.0323  (.0154) | -.0431  (.0174) |  |  |  |  |
| Crime rate | .2311  (1282) | .2145  (.1465) | .1684 (.1308) |  |  |  |
| Log value of housing | .1212  (.0237) | .0257  (.0367) | .1215 (.0243) |  |  |  |
| Company-owned | -.0277  (.0104) | -.0200  (.0108) |  |  |  |  |
| Prop. Without a car | .0595  (.1148) | -.0630  (.1499) | .0868 (.1194) |  |  |  |
| Store concentration | .0240  (.0099) | .0208  (.0106) |  |  |  |  |
| New Jersey | .0495  (.0105) |  | .0556 (.0103) |  |  |  |
| County dummy variables |  | 28 |  |  |  |  |
| Chain dummy variables | 3 | 3 | 3 | 3 | 3 | 3 |
| R squared | .835 | .863 | .825 | .756 | .744 | .749 |
| Observation | 322 | 322 | 322 | 355 | 355 | 355 |

NOTE: County dummy variables and chain dummy variables are each jointly significant at .001. Robust standard errors are in parentheses

**Almost all of Graddy’s results can be confirmed using robust standard errors, however there is a small difference between some of Graddy’s results and the results I gathered.**

**vii)**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Column** | **1** | **2** | **3** | **4** | **5** | **6** |
| **F statistic** | **227.37** | **50.88** | **560.20** | **479.46** | **471.95** | **477.54** |
| **Degrees of freedom** | **F (3, 306)** | **F (31, 279)** | **F (3, 310)** | **F (3, 348)** | **F (3, 350)** | **F (3, 350)** |
| **P value** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** |

**In conclusion, the joint significance of county and chain dummy variables affect the results of the F- statistic as the result changes as well as the degrees of freedom.**

**viii)**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Variable** | **Meal** | **Soda** | **Fries** | **Entree** |
| **Prop. black** | **.1275**  **(.0849)** | **-.0964**  **(.0567)** | **.1331**  **(.0791)** | **.3705**  **(.2018)** |
| **Log income** | **-.1551**  **(.0407)** | **-.0914**  **(.0283)** | **-.1401**  **(.0399)** | **-.2325**  **(.0813)** |
| **Prop. In poverty** | **-.6500**  **(.2658)** | **-.3283**  **(.1550)** | **-.4501**  **(.2057)** | **-1.038**  **(.5128)** |
| **Log pop. density** | **.0082**  **(.0059)** | **-.0032**  **(.0046)** | **.0068**  **(.0058)** | **.0208**  **(.0114)** |
| **Log starting wage** | **.0405**  **(.1044)** | **-.0555**  **(.0738)** | **-.0485**  **(.1053)** | **.1817**  **(.1928)** |
| **Log no. employees** | **-.0279**  **(.0159)** | **-.0085**  **(.0091)** | **-.0181**  **(.0123)** | **-.0475**  **(.0324)** |
| **Crime rate** | **.1918**  **(.1217)** | **.1360**  **(.1162)** | **.1187**  **(.1275)** | **.3192**  **(.2378)** |
| **Log value of housing** | **.1200**  **.0242** | **.1010**  **(.0153)** | **.1537**  **(.0211)** | **.1223**  **(.0491)** |
| **Company owned** | **-.0167**  **(.0119)** | **-.0064**  **(.0083)** | **-.0344**  **(.0124)** | **-.0151**  **(.0231)** |
| **Prop. without a car** | **.0489**  **(.1341)** | **.1011**  **(.0983)** | **.0949**  **(.1144)** | **-.0910**  **(.2725)** |
| **Store concentration** | **.0265**  **(.0119)** | **-.0075**  **(.0088)** | **.0152**  **(.0112)** | **.0692**  **(.0235)** |
| **New Jersey** | **.0506**  **(.0106)** | **.0518**  **(.0084)** | **.0657**  **(.0118)** | **.0407**  **(.0205)** |
| **Prop. black x store conc.** | **-.0310**  **(.0560)** | **.0545**  **(.0420)** | **-.0907**  **(.0492)** | **-.0918**  **(.1172)** |
| **Prop. black x franchised** | **.0828**  **(.0509)** | **.0720**  **(.0403)** | **.0196**  **(.0437)** | **.1019**  **(.1143)** |
| **Prop. black x** | **-.0550**  **(.0804)** | **.1198**  **(.0524)** | **.0029**  **(.0773)** | **-.2575**  **(.1865)** |
| **R-squared** | **0.8373** | **0.5022** | **0.6123** | **0.8826** |

NOTE: County dummy variables and chain dummies are each jointly significant at .001. Standard deviations are in parentheses.

**Prop. Without a car was calculated by using the median of the variable ‘prpncar’ (through experimentation).**