**SPSS Assignment**

*HCUP State Inpatient Databases (SID) File Composition - Number of Discharges by Year*

1. Table 1.1: Summary Statistics

|  |  |  |  |
| --- | --- | --- | --- |
| **Statistics** | | | |
|  | | State | 2014 |
| N | 35 | 35 | 31 |
| 0 | 0 | 4 |
| Mean | |  | 604175.23 |
| Median | |  | 393002.00 |
| Mode | |  | 49564a |
| Std. Deviation | |  | 609284.435 |
| Skewness | |  | 2.318 |
| Std. Error of Skewness | |  | .421 |
| Range | |  | 2692420 |
| Minimum | |  | 49564 |
| Maximum | |  | 2741984 |
| a. Multiple modes exist. The smallest value is shown | | | |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Descriptive Statistics** | | | | | |
|  | N | Minimum | Maximum | Mean | Std. Deviation |
| @2010 | 31 | 52965 | 3970921 | 756629.13 | 860411.474 |
| @2011 | 31 | 52214 | 3933239 | 751274.35 | 854179.027 |
| @2012 | 29 | 52180 | 2670520 | 643490.93 | 632443.484 |
| @2013 | 30 | 51211 | 2673488 | 588375.63 | 610874.074 |
| @2014 | 31 | 49564 | 2741984 | 604175.23 | 609284.435 |
| @2015 | 32 | 52755 | 2817621 | 593000.38 | 613848.008 |
| @2016 | 33 | 53652 | 2837863 | 579918.24 | 612520.383 |
| @2017 | 33 | 53630 | 2847000 | 604805.73 | 609849.696 |
| @2018 | 32 | 53560 | 3819392 | 658876.53 | 782976.339 |
| @2019 | 20 | 57180 | 2893530 | 561352.25 | 632297.345 |
| @2020 | 1 | 301581 | 301581 | 301581.00 | . |
| Rec\_States (1 to 35) | 35 | 1 | 35 | 18.00 | 10.247 |
| Valid N (listwise) | 1 |  |  |  |  |

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**For 2014**

|  |  |  |
| --- | --- | --- |
| **Statistics** | | |
| @2014 | | |
| N | Valid | 31 |
| Missing | 39 |
| Mean | | 604175.23 |
| Median | | 393002.00 |
| Mode | | 49564a |
| a. Multiple modes exist. The smallest value is shown | | |

The above table shows that the descriptive statistics Number of Discharges by State for year 2014. Thus, the mean, median, and mode are 604175.23, 393002.00, and 49564 respectively.

**Number Of Discharges**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **@2014** | | | | | |
|  | | Frequency | Percent | Valid Percent | Cumulative Percent |
| Valid | 49564 | 1 | 1.4 | 3.2 | 3.2 |
| 105429 | 1 | 1.4 | 3.2 | 6.5 |
| 118120 | 1 | 1.4 | 3.2 | 9.7 |
| 131368 | 1 | 1.4 | 3.2 | 12.9 |
| 134470 | 1 | 1.4 | 3.2 | 16.1 |
| 145686 | 1 | 1.4 | 3.2 | 19.4 |
| 196150 | 1 | 1.4 | 3.2 | 22.6 |
| 201260 | 1 | 1.4 | 3.2 | 25.8 |
| 264539 | 1 | 1.4 | 3.2 | 29.0 |
| 281302 | 1 | 1.4 | 3.2 | 32.3 |
| 302758 | 1 | 1.4 | 3.2 | 35.5 |
| 306798 | 1 | 1.4 | 3.2 | 38.7 |
| 313874 | 1 | 1.4 | 3.2 | 41.9 |
| 365188 | 1 | 1.4 | 3.2 | 45.2 |
| 378167 | 1 | 1.4 | 3.2 | 48.4 |
| 393002 | 1 | 1.4 | 3.2 | 51.6 |
| 467952 | 1 | 1.4 | 3.2 | 54.8 |
| 519303 | 1 | 1.4 | 3.2 | 58.1 |
| 586926 | 1 | 1.4 | 3.2 | 61.3 |
| 588450 | 1 | 1.4 | 3.2 | 64.5 |
| 602982 | 1 | 1.4 | 3.2 | 67.7 |
| 633390 | 1 | 1.4 | 3.2 | 71.0 |
| 645960 | 1 | 1.4 | 3.2 | 74.2 |
| 748658 | 1 | 1.4 | 3.2 | 77.4 |
| 790338 | 1 | 1.4 | 3.2 | 80.6 |
| 995510 | 1 | 1.4 | 3.2 | 83.9 |
| 1044001 | 1 | 1.4 | 3.2 | 87.1 |
| 1084667 | 1 | 1.4 | 3.2 | 90.3 |
| 1224448 | 1 | 1.4 | 3.2 | 93.5 |
| 2367188 | 1 | 1.4 | 3.2 | 96.8 |
| 2741984 | 1 | 1.4 | 3.2 | 100.0 |
| Total | 31 | 44.3 | 100.0 |  |
| Missing | System | 39 | 55.7 |  |  |
| Total | | 70 | 100.0 |  |  |

2. We compare the number of discharges in 2010, 2012, and 2015 in all states using an ANOVA.

Here, we recode the states as follows

Table

Description automatically generated

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Descriptives** | | | | | | | | |
| 2010 2012 2015 | | | | | | | | |
|  | N | Mean | Std. Deviation | Std. Error | 95% Confidence Interval for Mean | | Minimum | Maximum |
| Lower Bound | Upper Bound |
| ALASKA | 1 | 61871.00 | . | . | . | . | 61871 | 61871 |
| ARIZONA | 3 | 768192.00 | 25892.596 | 14949.097 | 703871.23 | 832512.77 | 739795 | 790492 |
| ARKANSAS | 3 | 403918.67 | 9649.065 | 5570.890 | 379949.06 | 427888.27 | 393310 | 412172 |
| CALIFORNIA | 1 | 3970921.00 | . | . | . | . | 3970921 | 3970921 |
| COLORADO | 3 | 476622.67 | 2743.896 | 1584.189 | 469806.45 | 483438.88 | 473461 | 478382 |
| District of Columbia | 1 | 135240.00 | . | . | . | . | 135240 | 135240 |
| FLORIDA | 3 | 2709411.00 | 94939.554 | 54813.377 | 2473568.07 | 2945253.93 | 2640092 | 2817621 |
| GEORGIA | 3 | 1071394.67 | 13837.343 | 7988.994 | 1037020.80 | 1105768.53 | 1061815 | 1087259 |
| HAWAII | 3 | 125672.00 | 8545.702 | 4933.864 | 104443.30 | 146900.70 | 120426 | 135533 |
| IOWA | 3 | 329664.00 | 10973.981 | 6335.831 | 302403.12 | 356924.88 | 319434 | 341255 |
| KANSAS | 3 | 317656.00 | 4395.080 | 2537.501 | 306738.02 | 328573.98 | 314563 | 322687 |
| KENTUCKY | 3 | 619139.67 | 18824.070 | 10868.082 | 572378.08 | 665901.25 | 600662 | 638292 |
| MAINE | 3 | 150513.67 | 5388.962 | 3111.319 | 137126.74 | 163900.59 | 144922 | 155674 |
| MARYLAND | 3 | 690300.00 | 59746.821 | 34494.843 | 541880.67 | 838719.33 | 628251 | 747442 |
| MASSACHUSETTS | 3 | 820704.67 | 24718.239 | 14271.082 | 759301.16 | 882108.18 | 796716 | 846093 |
| MICHIGAN | 3 | 1252434.67 | 18886.308 | 10904.015 | 1205518.48 | 1299350.86 | 1235001 | 1272498 |
| MINNESOTA | 3 | 593262.33 | 14150.920 | 8170.038 | 558109.50 | 628415.17 | 583342 | 609467 |
| MISSISSIPPI | 2 | 378289.00 | 3700.997 | 2617.000 | 345036.86 | 411541.14 | 375672 | 380906 |
| NEBRASKA | 3 | 209055.67 | 8688.852 | 5016.511 | 187471.36 | 230639.97 | 202601 | 218935 |
| NEVADA | 3 | 306967.00 | 13525.115 | 7808.729 | 273368.75 | 340565.25 | 296502 | 322239 |
| NEW JERSEY | 3 | 1040896.67 | 53835.382 | 31081.873 | 907162.16 | 1174631.17 | 985912 | 1093504 |
| NEW MEXICO | 3 | 201894.00 | 6244.145 | 3605.059 | 186382.68 | 217405.32 | 197725 | 209073 |
| NEW YORK | 3 | 2496300.33 | 135931.429 | 78480.047 | 2158627.94 | 2833972.72 | 2346869 | 2612610 |
| NORTH CAROLINA | 3 | 1110158.00 | 16653.039 | 9614.637 | 1068789.56 | 1151526.44 | 1099789 | 1129367 |
| OREGON | 3 | 369209.00 | 9305.082 | 5372.292 | 346093.89 | 392324.11 | 358486 | 375160 |
| RHODE ISLAND | 3 | 135494.00 | 3719.032 | 2147.184 | 126255.41 | 144732.59 | 132789 | 139735 |
| SOUTH CAROLINA | 3 | 535748.67 | 10321.180 | 5958.936 | 510109.43 | 561387.90 | 526562 | 546917 |
| SOUTH DAKOTA | 3 | 105062.67 | 1252.351 | 723.045 | 101951.66 | 108173.68 | 103668 | 106091 |
| UTAH | 3 | 282402.00 | 8253.412 | 4765.110 | 261899.39 | 302904.61 | 274576 | 291025 |
| VERMONT | 3 | 52633.33 | 406.397 | 234.633 | 51623.79 | 53642.88 | 52180 | 52965 |
| WASHINGTON | 3 | 646743.33 | 5490.680 | 3170.046 | 633103.73 | 660382.94 | 640892 | 651783 |
| WEST VIRGINIA | 3 | 280088.00 | 15716.156 | 9073.727 | 241046.90 | 319129.10 | 262113 | 291237 |
| WISCONSIN | 3 | 621175.33 | 13802.710 | 7968.998 | 586887.50 | 655463.16 | 605479 | 631418 |
| Total | 92 | 664051.65 | 707335.148 | 73744.787 | 517566.69 | 810536.61 | 52180 | 3970921 |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Test of Homogeneity of Variances** | | | | | |
|  | | Levene Statistic | df1 | df2 | Sig. |
| 2010 2012 2015 | Based on Mean | 5.485 | 29 | 59 | .000 |
| Based on Median | 1.719 | 29 | 59 | .039 |
| Based on Median and with adjusted df | 1.719 | 29 | 6.435 | .248 |
| Based on trimmed mean | 5.132 | 29 | 59 | .000 |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **ANOVA** | | | | | |
| 2010 2012 2015 | | | | | |
|  | Sum of Squares | df | Mean Square | F | Sig. |
| Between Groups | 45453371072626.195 | 32 | 1420417846019.569 | 1102.360 | .000 |
| Within Groups | 76022939336.667 | 59 | 1288524395.537 |  |  |
| Total | 45529394011962.860 | 91 |  |  |  |

Chart, line chart

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We performed a one-way ANOA test on 92 discharges for all states in 2010, 2012 and 2015. The results of the Levene statistic was significant because p-value is less than 0.000. Thus, the groups are statistically significantly different. The F-value (32,59) = 1102.36 and the p-value < 0.001. So, we can say that there was a statistically significant difference among the states on the average number of discharges.

3. We compare the number of discharges in all states between 2010 and 2015 using an independent t-test.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Group Statistics** | | | | | |
|  | Year | N | Mean | Std. Deviation | Std. Error Mean |
| Merge 2010 & 2015 | 2010 | 31 | 756629.13 | 860411.474 | 154534.463 |
| 2015 | 32 | 593000.38 | 613848.008 | 108514.022 |

Table

Description automatically generated with low confidence

In this part, we performed an “independent sample T test” to compare the mean discharges for all states between 2010 and 2015. The statistics of 2010 and 2015 are (M =756629.13, Std. Dev = 860411.474), 2015 (M = 593000.38, Std. Dev = 613848.008), respectively. The results suggest that equal variances are assumed between 2010 and 2015. Since, t-test (df = 61) = 0.871, p = 0.387. Hence, there is no significant difference in the discharges for 2010 and 2015.

4. We compare the number of discharges in 2011 in Grouped States

Here, we recode the state variable as follows

Graphical user interface, text, application

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Table

Description automatically generated

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Test of Homogeneity of Variances** | | | | | |
|  | | Levene Statistic | df1 | df2 | Sig. |
| @2011 | Based on Mean | 1.995 | 4 | 21 | .132 |
| Based on Median | .603 | 4 | 21 | .665 |
| Based on Median and with adjusted df | .603 | 4 | 7.695 | .672 |
| Based on trimmed mean | 1.542 | 4 | 21 | .227 |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **ANOVA** | | | | | |
| @2011 | | | | | |
|  | Sum of Squares | df | Mean Square | F | Sig. |
| Between Groups | 2321198540977.772 | 4 | 580299635244.443 | .657 | .629 |
| Within Groups | 18550227720830.574 | 21 | 883344177182.408 |  |  |
| Total | 20871426261808.344 | 25 |  |  |  |

Table

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Table

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Chart, line chart

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We performed a one-way ANOVA on 5 groups of states (see above) in 2011 consisting of 26 discharges. The result of the Leven statistic was not significant because p-value (= 0.132) is greater than alpha level (=0.05). Thus, the groups are not statistically significantly different. There is no statistically significant difference in discharges between the groups. Furthermore, the difference “within groups” is more than the difference “between groups”.

# **References**

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