Impact of Child’s Special Health Care Needs on Employment of Parents and Family Members: A Datamining Approach Using SAS EM

Vivek Manikandan Damodaran, Ram Poudel
Abstract

• In the United States more than 10 million children have special health care needs. Maternal and Child Health Bureau defines Children with Special Health Care Needs (CHSCN) as those who have one or more chronic physical, developmental, behavioral, or emotional conditions and therefore require extra health and related services beyond that required by normal children.

• Children with special health care needs are likely to require a high amount of parental and family care that affects parents’ employment significantly. Family members often struggle to pay for health care needs of such child and wrestle with balancing employment and caregiving. This study aims at analyzing indicator variables that cause those family members to shrink their working hours or stop from working.
Study Population

• Using CSHCN Screener, the 2009-2010 NS-CSHCN interview sample was obtained by screening 372,698 children (0-17 years old) living in 196,159 households nationwide. Out of 372,698 children screened, only 59,941 were identified with special health care needs.

• Among all 41 variables, 2 are interval, 21 are binary and 18 are nominal variables. Target is a binary indicator variable which ask yes or no for “Impact on Family Work Life: CSHCN whose family members had cutback and/or stopped working because of child’s health needs.

• SAS Enterprise Miner Client 12.3 version was used for model development.
SAS Diagram
Results:

**Fig 2.** State-Level Disability Prevalence (%) and Employment Rate (%) of Individuals with Disabilities of 18-64 Years in the United States of America, 2012
Table 1. Disability Prevalence (%) and Employment Rate (%) of Individuals with Disabilities, SSI Recipients, and Per Capita Income in the United States of America, 2012

<table>
<thead>
<tr>
<th></th>
<th>Median (IQR)</th>
<th>Mean (95%CI)</th>
<th>Min / Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prevalence of Disabilities (%)</td>
<td>12.00 (10.90;13.90)</td>
<td>12.64 (12.04;13.24)</td>
<td>9.30 / 18.60</td>
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<tr>
<td>Employment. Rate of Individuals with Disabilities (18-64 years) (%)</td>
<td>34.60 (31.5;39.30)</td>
<td>35.33 (33.61;37.04)</td>
<td>24.70/54.20</td>
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<tr>
<td>Employment. Rate of Individuals with Disabilities (21-64 years) (%)</td>
<td>35.00 (32.00;40.20)</td>
<td>35.67 (33.95;37.40)</td>
<td>24.5/54.1</td>
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<tr>
<td>SSI Recipients (18-64 years) (%)</td>
<td>34.60 (31.50;39.30)</td>
<td>35.33 (33.61;37.04)</td>
<td>24.70/54.20</td>
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<tr>
<td>Per Capita Income/Year ($)</td>
<td>41471.00 (37,049.00;45413.00)</td>
<td>42492.00 (40,353.04;44,630.96)</td>
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# Model Selection

<table>
<thead>
<tr>
<th>Selected Model</th>
<th>Predecessor Node</th>
<th>Model Node</th>
<th>Model Description</th>
<th>Target Variable</th>
<th>T</th>
<th>Selection Criterion: Valid: Misclassification Rate</th>
<th>Train: Akaike's Information Criterion</th>
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<td>Reg3</td>
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ROC Curves of All Nine Models from Model Comparison Node

Sensitivity: 43.56
Specificity: 94.08
Results-Contd

1. **Age of a child**: As child grows older there is less effects on a target: work life of family members. (Odds Ratio: 0.977)

2. **Language spoken at home**: If English is a language spoken at home, impacts on target is less (odds ratios: English vs. Hispanic- 3.07, English vs. Non-Hispanic- 1.29)

3. **Gender of Child**: Male Child is positively associated with impacts on work life of family members. (Odds Ratio: 1.16)

4. **Poverty level of a family**: As the income level goes up the odds of impact on work life of family members goes down.

   (Odds ratios: 0-99% FPL vs. 100-199% FPL; 0. 94, 0-99% FPL vs. 200-299% FPL; 0. 89, 0-99% FPL vs. 300-399% FPL; 0.83)
5. **Family’s financial burden:** Families with less financial problems have less impacts on work life (Odds Ratio: 0.58).

6. **Activity limitations of a child because of disabilities:** It has positive impacts on work life of family (Odds Ratio: 1.23).

7. **Family structure:** Families with biological two parents have less impact on their work life than others (Odds Ratios: biological two parents vs. stepfamily-0.1.18, biological two parents vs. mother only-1.23, biological two parents vs. other family structure-1.29).

8. **Type of Insurance:** If child is currently insured, the impacts on family members’ work life is inverse (Odds ratio: 0.95).
Conclusion

- Most of the Southern States of the country where per capita income is less have more population with disabilities but low employment rate.
- A large proportion of children with disabilities and other special needs are in low-income families whose family members had impacts on their jobs.
- Researches show low-income children are more likely to have learning disabilities than higher-income children.
- A work-life balance for employees, especially those with special needs children, is essential to the health and productivity of any organization.
- Children in poverty are more prone than other children to have a chronic condition that limits activities.
- Children of minorities’ members had to limit or cut back their jobs that push them more to poverty which makes them more vulnerable.
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