Online Appendix

Estimating Risk Preferences from Deductible Choice, by Alma Cohen and Liran Einav

In Section III of the paper we mention and report selected results from various specifications of the model. Table 6 of the paper summarizes many of these results. In this online appendix we report the full results of all specifications we mention. All tables follow the same structure, as described below.

The first two columns report the estimated coefficients in the ln(λ) equation and ln(r) equation, respectively. Note that all variables in these equations are measured in deviations from their means, so the estimated constant can be interpreted as the mean individual in the data. The third column reports additional quantities of interest. First, we report the estimated parameters of the variance-covariance matrix, i.e. the standard deviation of the residual in both equations, and the correlation coefficient between the two errors. Then, we report a set of descriptive figures in the population, as implied by the estimates. All these figures are unconditional on observables, so, for example, “Mean r” represents the estimate for the average coefficient of absolute risk aversion in the sample (measured in NIS^{-1}), integrating over both the estimated distribution and the observables.

The results are based on 100,000 iterations of the Gibbs sampler, after dropping the first 10,000 iterations. The reported coefficient is the average of these draws, and in parentheses we report the standard deviation of each quantity in these 90,000 draws. In the first two columns, we denote by * coefficients that are significantly different from zero at a five percent confidence level.

There are 19 tables in this appendix. Table A1 reproduces the benchmark estimates (Table 4 in the paper) based on all new customers in the sample. Tables A2-A11 report results from estimating the benchmark model on various subsamples. In Table A2 we look only at customers with one or zero claims, showing that the key results are not driven by individuals with multiple claims. In Table A3-A5 we look at exitors and stayers, addressing potential selection concerns. Tables A6-A7 look at individuals who approached the company through different channels, again potentially addressing concerns regarding selection into the sample. Tables A8-A9 report results for the first two years of the sample and the last three, respectively, showing that most of the results (except the reported time trend) are fairly stable over time. This, again, addresses selection issues, which are likely to be more important early on, when the company was new in the market. Tables A10-A11 estimate the model on experienced drivers and new drivers separately, showing that the key results are fairly stable, suggesting that incomplete information about own risk type, which varies with driving experience, does not change the main results.

Tables A12-A16 report the benchmark specification, with additional covariates. In Table A12 we include dummy variables for other coverage decisions. This shows that the estimated risk aversion can help explaining other risky choices by the same individuals. Tables A13-A15 include three different proxies for income, and Table A16 includes estimated mileage. The reason the additional regressors of Tables A13-A16 are not in the benchmark specification is simply because these regressors’ coverage is not full, so adding them requires us to drop significant fraction of the observations.
Finally, Tables A17-A19 report the results from alternative specifications of the model. In Table A17 we assume a CARA vNM utility function. In Table A18 we estimate a model in which individuals do not have full information about their risk types, but they learn about their risk type from their (unobserved) history of claims. In Table A19 we provide an extreme alternative to the Poisson assumption, which has much thinner tails, and show that except for the correlation coefficient, the rest of the results remain similar.

The text provides more details regarding the various specifications and the definitions of the variables.
Table A1: The Benchmark Model, All new customers

<table>
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<tr>
<th>Variable</th>
<th>ln((\lambda)) equation</th>
<th>ln((r)) equation</th>
<th>Additional Quantities</th>
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</thead>
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<td><strong>Demographics:</strong></td>
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<td></td>
<td>Var-covar matrix ((\Sigma)):</td>
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<tr>
<td>Constant</td>
<td>-1.5406* (0.0073)</td>
<td>-11.8118* (0.1032)</td>
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<tr>
<td>Age</td>
<td>-0.0001 (0.0026)</td>
<td>-0.0623* (0.0213)</td>
<td>(\sigma_r) 3.1515 (0.0773)</td>
</tr>
<tr>
<td>Age(^2)</td>
<td>6.24 \times 10^{-6} (2.53 \times 10^{-5})</td>
<td>6.44 \times 10^{-4} (2.11 \times 10^{-4})</td>
<td>(\rho) 0.8391 (0.0265)</td>
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<td>Female</td>
<td>0.0006 (0.0086)</td>
<td>0.2049* (0.0643)</td>
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<td>Family</td>
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<td>Unconditional Stats:</td>
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<td>0.1927* (0.0974)</td>
<td>Mean (\lambda) 0.2196 (0.0013)</td>
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<tr>
<td>Divorced</td>
<td>0.0396* (0.0155)</td>
<td>-0.1754 (0.1495)</td>
<td>Median (\lambda) 0.2174 (0.0017)</td>
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<tr>
<td>Widower</td>
<td>0.0135 (0.0281)</td>
<td>-0.1320 (0.2288)</td>
<td>Std. Dev. (\lambda) 0.0483 (0.0019)</td>
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<tr>
<td>Other (NA)</td>
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<td>-0.4599 (0.7397)</td>
<td>Mean (r) 0.0019 (0.0002)</td>
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<td>Median (r) 7.27 \times 10^{-6} (7.56 \times 10^{-7})</td>
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<td>0.1283 (0.2156)</td>
<td>Std. Dev. (r) 0.0197 (0.0015)</td>
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<td>High School</td>
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<td>Corr((r, \lambda)) 0.2067 (0.0085)</td>
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<tr>
<td>Academic</td>
<td>-0.0277* (0.0124)</td>
<td>0.2177* (0.0840)</td>
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<td>Other (NA)</td>
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<tr>
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<td>0.0001 (0.0651)</td>
<td>No. of Obs. 105,800</td>
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<td>0.7244* (0.1272)</td>
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<td>-0.0411* (0.0176)</td>
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<td>Log(Engine size)</td>
<td>0.1299* (0.0235)</td>
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<td><strong>Driving:</strong></td>
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<td>0.3000* (0.0722)</td>
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<td>0.0459 (0.1670)</td>
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<td>Gender</td>
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<td>Age</td>
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<td>21-24</td>
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<td>Fifth year</td>
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No. of Obs. 105,800
Table A2: The Benchmark Model, New customers with no multiple claims

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<th>Variable</th>
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<th>$\ln(\tau)$ equation</th>
<th>Additional Quantities</th>
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<td>Demographics:</td>
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<td>$\sigma_\lambda$ 0.1370 (0.0114)</td>
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<td>$\sigma_\tau$ 2.6979 (0.0806)</td>
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<td>$\rho$ 0.5473 (0.0564)</td>
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<td>Married</td>
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<td>0.1210 (0.0789)</td>
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</tr>
<tr>
<td>Widower</td>
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<td>-0.2054 (0.1892)</td>
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<td>Unconditional Stats:</td>
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<tr>
<td>Commercial Car</td>
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<td>Young driver</td>
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<tr>
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<td>&gt;3 0.0943* (0.0167)</td>
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<tr>
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<td>omitted</td>
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<tr>
<td>Fifth year</td>
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No. of Obs. 103,260
Table A3: The Benchmark Model, New customers who are not observed to renew

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<th>ln((\lambda)) equation</th>
<th>ln((r)) equation</th>
<th>Additional Quantities</th>
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<tr>
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</tr>
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<td>-0.1653 (0.2000)</td>
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<tr>
<td>License Years</td>
<td>3.65(\times)10(^{-5}) (0.0013)</td>
<td>-0.0165 (0.0245)</td>
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</tr>
<tr>
<td>License Years(^2)</td>
<td>-1.08(\times)10(^{-5}) (2.73(\times)10(^{-5}))</td>
<td>2.25(\times)10(^{-4}) (4.87(\times)10(^{-4}))</td>
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</tr>
<tr>
<td>Good Driver</td>
<td>-0.0271* (0.0075)</td>
<td>-0.0325 (0.1339)</td>
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</tr>
<tr>
<td>“Any Driver”</td>
<td>0.0102* (0.0064)</td>
<td>0.4341* (0.1224)</td>
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</tr>
<tr>
<td>Secondary Car</td>
<td>-0.0169 (0.0088)</td>
<td>-0.0668 (0.1431)</td>
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<tr>
<td>Business Use</td>
<td>0.0154 (0.0101)</td>
<td>-0.2202 (0.1877)</td>
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<tr>
<td>History Length</td>
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<td>0.2518* (0.0784)</td>
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</tr>
<tr>
<td>Claim History</td>
<td>0.0548* (0.0117)</td>
<td>0.3458 (0.2758)</td>
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<tr>
<td><strong>Young Driver:</strong></td>
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<tr>
<td>Young driver</td>
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<td>0.0628 (0.3457)</td>
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<tr>
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<tr>
<td>Female</td>
<td>0.0219* (0.0057)</td>
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<td>Age 17-19</td>
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<tr>
<td>19-21</td>
<td>-0.0460* (0.0128)</td>
<td>-</td>
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<td>21-24</td>
<td>-0.0530* (0.0127)</td>
<td>-</td>
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<td>&gt;24</td>
<td>0.0138 (0.0107)</td>
<td>-</td>
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<td>Experience &lt;1</td>
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<tr>
<td>1-3</td>
<td>-0.0168 (0.0105)</td>
<td>-</td>
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</tr>
<tr>
<td>&gt;3</td>
<td>0.0638* (0.0127)</td>
<td>-</td>
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<td><strong>Company Year:</strong></td>
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<td>First year</td>
<td>omitted</td>
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<tr>
<td>Second year</td>
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<td>-1.8280* (0.1634)</td>
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<tr>
<td>Third year</td>
<td>-0.0611* (0.0115)</td>
<td>-3.3507* (0.2209)</td>
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<tr>
<td>Fourth year</td>
<td>-0.0906* (0.0129)</td>
<td>-4.9211* (0.2479)</td>
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<tr>
<td>Fifth year</td>
<td>-0.5331* (0.022)</td>
<td>-4.1964* (0.2187)</td>
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</tbody>
</table>

**Var-covar matrix (\(\Sigma\)):**
- \(\sigma_\lambda\) = 0.0877 (0.0066)
- \(\sigma_r\) = 4.1094 (0.1230)
- \(\rho\) = 0.8483 (0.0306)

**Unconditional Stats:**
- Mean \(\lambda\) = 0.2260 (0.0017)
- Median \(\lambda\) = 0.2400 (0.0027)
- Std. Dev. \(\lambda\) = 0.0572 (0.0017)
- Mean \(r\) = 0.0023 (0.0003)
- Median \(r\) = 7.75\(\times\)10\(^{-7}\) (1.54\(\times\)10\(^{-7}\))
- Std. Dev. \(r\) = 0.0256 (0.0020)
- Corr(\(r, \lambda\)) = 0.1486 (0.0088)
- No. of Obs. = 48,387
Table A4: The Benchmark Model, New customers who renew (using only their first choice)

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<tr>
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<th>ln(r) equation</th>
<th>Additional Quantities</th>
</tr>
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<td>Constant</td>
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<td>-10.5004* (0.1184)</td>
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<td>-0.0716* (0.0267)</td>
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<td>Age^2</td>
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<td>7.10·10^{-4} (2.62·10^{-4})</td>
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<td>Female</td>
<td>-0.0027 (0.0166)</td>
<td>0.2365* (0.0816)</td>
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<td>Family</td>
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<tr>
<td>Married</td>
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<td>0.1772 (0.1239)</td>
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<tr>
<td>Divorced</td>
<td>0.0762 (0.0357)</td>
<td>-0.1643 (0.2006)</td>
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<tr>
<td>Widower</td>
<td>0.0545 (0.0504)</td>
<td>-0.3161 (0.2866)</td>
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<tr>
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<td>-0.1491 (0.0392)</td>
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<tr>
<td>Education</td>
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<tr>
<td>Elementary</td>
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<td>0.1959 (0.2542)</td>
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<tr>
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<td>omitted</td>
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<tr>
<td>Technical</td>
<td>0.0367 (0.0319)</td>
<td>0.0481 (0.1557)</td>
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<tr>
<td>Academic</td>
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<td>0.0936 (0.1011)</td>
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<td>Other (NA)</td>
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<td>0.0538 (0.0992)</td>
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<tr>
<td>Emigrant</td>
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<td>-0.0950 (0.0876)</td>
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<tr>
<td><strong>Car Attributes:</strong></td>
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<tr>
<td>Log(Value)</td>
<td>0.1621* (0.0332)</td>
<td>0.2674 (0.1507)</td>
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<tr>
<td>Car Age</td>
<td>0.0082 (0.0043)</td>
<td>-0.0439* (0.0215)</td>
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<td>Commercial Car</td>
<td>-0.1226* (0.0363)</td>
<td>0.0497 (0.1593)</td>
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<tr>
<td>Log(Engine size)</td>
<td>0.1872* (0.0455)</td>
<td>-0.3714 (0.2234)</td>
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</tr>
<tr>
<td><strong>Driving:</strong></td>
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<tr>
<td>License Years</td>
<td>-0.0038 (0.0033)</td>
<td>0.0323 (0.0172)</td>
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</tr>
<tr>
<td>License Years^2</td>
<td>-2.60·10^{-7} (6.53·10^{-5})</td>
<td>-3.91·10^{-4} (3.20·10^{-4})</td>
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<tr>
<td>Good Driver</td>
<td>-0.0517* (0.0220)</td>
<td>-0.2021 (0.1038)</td>
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<tr>
<td>“Any Driver”</td>
<td>0.0457* (0.0198)</td>
<td>0.3144* (0.0885)</td>
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<tr>
<td>Secondary Car</td>
<td>-0.0225 (0.0234)</td>
<td>0.0399 (0.1054)</td>
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<tr>
<td>Business Use</td>
<td>0.0780* (0.0287)</td>
<td>-0.3314* (0.1560)</td>
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<tr>
<td>History Length</td>
<td>-0.0355* (0.0114)</td>
<td>0.5331* (0.1054)</td>
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<tr>
<td>Claim History</td>
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<td>0.2176 (0.2527)</td>
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<td>Young driver</td>
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<td>-0.3956 (0.2055)</td>
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<td>Gender</td>
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<tr>
<td>Male</td>
<td>omitted</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>0.0436* (0.0131)</td>
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<td></td>
</tr>
<tr>
<td>Age</td>
<td></td>
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</tr>
<tr>
<td>17-19</td>
<td>omitted</td>
<td></td>
<td></td>
</tr>
<tr>
<td>19-21</td>
<td>-0.0119 (0.0266)</td>
<td></td>
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<tr>
<td>21-24</td>
<td>-0.0086 (0.0279)</td>
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<tr>
<td>&gt;24</td>
<td>0.0166 (0.0266)</td>
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<tr>
<td>&lt;1</td>
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<tr>
<td>1-3</td>
<td>0.0080 (0.0224)</td>
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<td>&gt;3</td>
<td>0.0672* (0.0258)</td>
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<td><strong>Company Year:</strong></td>
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</tr>
<tr>
<td>First year</td>
<td>omitted</td>
<td>omitted</td>
<td></td>
</tr>
<tr>
<td>Second year</td>
<td>-0.1060* (0.0216)</td>
<td>-1.3223* (0.1014)</td>
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<tr>
<td>Third year</td>
<td>-0.1179* (0.0242)</td>
<td>-2.6223* (0.1379)</td>
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<tr>
<td>Fourth year</td>
<td>-0.2048* (0.0259)</td>
<td>-3.4519* (0.1678)</td>
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</tr>
<tr>
<td>Fifth year</td>
<td>dropped</td>
<td>dropped</td>
<td></td>
</tr>
</tbody>
</table>

**Var-covar matrix (Σ):**
- $\sigma_\lambda = 0.2466 (0.0140)$
- $\sigma_r = 2.9388 (0.0937)$
- $\rho = 0.4629 (0.0671)$

**Unconditional Stats:**
- Mean $\lambda = 0.1904 (0.0017)$
- Median $\lambda = 0.1822 (0.0019)$
- Std. Dev. $\lambda = 0.0568 (0.0026)$
- Mean $r = 0.0029 (0.0003)$
- Median $r = 2.85·10^{-5} (3.23·10^{-6})$
- Std. Dev. $r = 0.0242 (0.0023)$
- $Corr(r, \lambda) = 0.1516 (0.0200)$

No. of Obs. 57,413
Table A5: The Benchmark Model, New customers who renew (using only their second choice)

<table>
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<tr>
<th>Variable</th>
<th>( \ln(\lambda) ) equation</th>
<th>( \ln(r) ) equation</th>
<th>Additional Quantities</th>
</tr>
</thead>
<tbody>
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<td><strong>Demographics:</strong></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Constant</td>
<td>-1.6162* (0.0112)</td>
<td>-11.0411* (0.1258)</td>
<td>Var-covar matrix (( \Sigma )):</td>
</tr>
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<td>Age</td>
<td>-0.0002 (0.0053)</td>
<td>-0.0732 (0.0379)</td>
<td>( \sigma_\lambda ) 0.2510 (0.0138)</td>
</tr>
<tr>
<td>Age(^2)</td>
<td>-1.62 \times 10^{-6} (5.18 \times 10^{-5})</td>
<td>7.66 \times 10^{-4} (3.62 \times 10^{-4})</td>
<td>( \sigma_r ) 3.2574 (0.1012)</td>
</tr>
<tr>
<td>Female</td>
<td>0.0129 (0.0155)</td>
<td>0.1841 (0.1062)</td>
<td>( \rho ) 0.6374 (0.0647)</td>
</tr>
<tr>
<td>Family</td>
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<tr>
<td>Married</td>
<td>0.0104 (0.0221)</td>
<td>0.0187 (0.1511)</td>
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<tr>
<td>Divorced</td>
<td>0.0719* (0.0312)</td>
<td>-0.3039 (0.2522)</td>
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<tr>
<td>Widower</td>
<td>0.0740 (0.0457)</td>
<td>-0.5805 (0.3726)</td>
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</tr>
<tr>
<td>Other(NA)</td>
<td>0.0591 (0.1965)</td>
<td>-5.4397 (11.4346)</td>
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<tr>
<td><strong>Education</strong></td>
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<td>Unconditional Stats:</td>
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<td>-0.1053 (0.3586)</td>
<td>Mean ( \lambda ) 0.2082 (0.0019)</td>
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<tr>
<td>High School</td>
<td>omitted</td>
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<td>Median ( \lambda ) 0.2001 (0.0023)</td>
</tr>
<tr>
<td>Technical</td>
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<td>0.4866* (0.1962)</td>
<td>Std. Dev. ( \lambda ) 0.0645 (0.0026)</td>
</tr>
<tr>
<td>Academic</td>
<td>-0.0326 (0.0177)</td>
<td>0.2421 (0.1268)</td>
<td>Mean ( r ) 0.0030 (0.0004)</td>
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<td>Other(NA)</td>
<td>-0.0505* (0.0181)</td>
<td>0.2962* (0.1297)</td>
<td>Median ( r ) 1.61 \times 10^{-5} (2.02 \times 10^{-6})</td>
</tr>
<tr>
<td>Emigrant</td>
<td>0.0181 (0.0147)</td>
<td>-0.0867 (0.1027)</td>
<td>Std. Dev. ( r ) 0.0263 (0.0024)</td>
</tr>
<tr>
<td><strong>Car Attributes:</strong></td>
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<td>Corr(( r, \lambda )) 0.2109 (0.0198)</td>
</tr>
<tr>
<td>Log(Value)</td>
<td>0.0706* (0.0267)</td>
<td>0.5865* (0.1869)</td>
<td>No. of Obs. 57,413</td>
</tr>
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<td>Commercial Car</td>
<td>-0.0525 (0.0309)</td>
<td>-0.1661 (0.2089)</td>
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</tr>
<tr>
<td>Log(Engine size)</td>
<td>0.1300* (0.0388)</td>
<td>-0.3797 (0.2855)</td>
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</tr>
<tr>
<td><strong>Driving:</strong></td>
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<tr>
<td>License Years</td>
<td>0.0006 (0.0029)</td>
<td>0.0124 (0.0209)</td>
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</tr>
<tr>
<td>License Years(^2)</td>
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<td>-7.00 \times 10^{-5} (3.76 \times 10^{-4})</td>
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<tr>
<td>Good Driver</td>
<td>-0.0522* (0.0200)</td>
<td>-0.2817* (0.1399)</td>
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<tr>
<td>“Any Driver”</td>
<td>0.0345* (0.0169)</td>
<td>0.3587* (0.1162)</td>
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<tr>
<td>Secondary Car</td>
<td>-0.0412 (0.0224)</td>
<td>0.1633 (0.1354)</td>
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<tr>
<td>Business Use</td>
<td>0.0617* (0.0241)</td>
<td>-0.4593* (0.1876)</td>
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<tr>
<td>History Length</td>
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<td>0.4064* (0.0900)</td>
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<tr>
<td>Claim History</td>
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<td>-0.6532* (0.3106)</td>
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<td><strong>Young Driver:</strong></td>
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<tr>
<td>Young driver</td>
<td>0.0289 (0.0157)</td>
<td>0.1776 (0.4079)</td>
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<tr>
<td>Gender</td>
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<tr>
<td>Male</td>
<td>omitted</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>0.0205 (0.0123)</td>
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<td></td>
</tr>
<tr>
<td>Age</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>17-19</td>
<td>omitted</td>
<td></td>
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<tr>
<td>19-21</td>
<td>-0.0067 (0.0249)</td>
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<tr>
<td>21-24</td>
<td>-0.0050 (0.0269)</td>
<td>-</td>
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</tr>
<tr>
<td>&gt;24</td>
<td>-0.0007* (0.0247)</td>
<td>-</td>
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<tr>
<td>Experience</td>
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<td></td>
</tr>
<tr>
<td>&lt;1</td>
<td>omitted</td>
<td></td>
<td></td>
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<tr>
<td>1-3</td>
<td>-0.0010 (0.0213)</td>
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<tr>
<td>&gt;3</td>
<td>0.0242 (0.0512)</td>
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<tr>
<td><strong>Company Year:</strong></td>
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</tr>
<tr>
<td>First year</td>
<td>dropped</td>
<td>dropped</td>
<td></td>
</tr>
<tr>
<td>Second year</td>
<td>omitted</td>
<td>omitted</td>
<td></td>
</tr>
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<td>Third year</td>
<td>-0.0616* (0.0186)</td>
<td>-1.5357* (0.1402)</td>
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<td>Fourth year</td>
<td>-0.1461* (0.024)</td>
<td>-2.5432* (0.1723)</td>
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<tr>
<td>Fifth year</td>
<td>-0.4007* (0.0296)</td>
<td>-2.9105* (0.1755)</td>
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</tr>
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</table>
Table A6: The Benchmark Model, New customers who were “referred by a friend”

<table>
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<tr>
<th>Variable</th>
<th>$\ln(\lambda)$ equation</th>
<th>$\ln(r)$ equation</th>
<th>Additional Quantities</th>
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<tr>
<td>Demographics:</td>
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<td></td>
<td>Var-covar matrix ($\Sigma$):</td>
</tr>
<tr>
<td>Constant</td>
<td>-1.5925* (0.0155)</td>
<td>-14.4151* (0.4633)</td>
<td>$\sigma_\lambda$ 0.2426 (0.0185)</td>
</tr>
<tr>
<td>Age</td>
<td>-0.0109* (0.0049)</td>
<td>-0.0183 (0.0711)</td>
<td>$\sigma_r$ 4.2357 (0.2102)</td>
</tr>
<tr>
<td>Age$^2$</td>
<td>1.20·10$^{-4}$ (5.02·10$^{-5}$)</td>
<td>2.74·10$^{-4}$ (7.06·10$^{-4}$)</td>
<td>$\rho$ 0.4795 (0.0917)</td>
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<tr>
<td>Female</td>
<td>0.0154 (0.0157)</td>
<td>0.0955 (0.2221)</td>
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<td>Family</td>
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<td>Unconditional Stats:</td>
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<td>Mean $\lambda$ 0.2129 (0.0025)</td>
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<td>-0.0065 (0.0224)</td>
<td>-0.0945 (0.3585)</td>
<td>Median $\lambda$ 0.2046 (0.0032)</td>
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<td>Widower</td>
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<td>-0.3476 (0.7192)</td>
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<td>Other (NA)</td>
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<td>Mean $r$ 0.0030 (0.0005)</td>
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<td></td>
<td>Median $r$ 8.35·10$^{-7}$ (3.31·10$^{-7}$)</td>
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<td>Std. Dev. $r$ 0.0305 (0.0033)</td>
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<td>0.3404 (0.3198)</td>
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<td>Other (NA)</td>
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<td>Car Age</td>
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<td>-0.0700 (0.3990)</td>
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<td>Log(Engine size)</td>
<td>0.0901 (0.0473)</td>
<td>-0.1024 (0.6611)</td>
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<td>Driving</td>
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<tr>
<td>License Years</td>
<td>-0.0011 (0.0030)</td>
<td>0.0192 (0.0404)</td>
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<tr>
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<td>3.32·10$^{-5}$ (7.34·10$^{-4}$)</td>
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<td>Good Driver</td>
<td>-0.0488* (0.0227)</td>
<td>-0.1653 (0.2937)</td>
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<tr>
<td>“Any Driver”</td>
<td>0.0444* (0.0181)</td>
<td>0.3755 (0.2332)</td>
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<td>Secondary Car</td>
<td>-0.0273 (0.0232)</td>
<td>0.1933 (0.2780)</td>
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<td>Business Use</td>
<td>0.0379 (0.0263)</td>
<td>-1.1237* (0.3852)</td>
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<tr>
<td>History Length</td>
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<td>Claim History</td>
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<td>0.1177 (0.5713)</td>
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<tr>
<td>Female</td>
<td>0.0171 (0.0154)</td>
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<td>Age</td>
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<td>17-19</td>
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<td>19-21</td>
<td>0.0565 (0.0325)</td>
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<td>21-24</td>
<td>0.0373 (0.0341)</td>
<td>-</td>
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<tr>
<td>&gt;24</td>
<td>0.0974* (0.0328)</td>
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<td>Experience</td>
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<td>omitted</td>
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<td>1-3</td>
<td>-0.0368 (0.0259)</td>
<td>-</td>
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<td>&gt;3</td>
<td>0.0234 (0.0296)</td>
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<td>Company Year:</td>
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<td>omitted</td>
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<td>Second year</td>
<td>-0.1295* (0.0252)</td>
<td>-1.6167* (0.3032)</td>
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<td>Third year</td>
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<td>-3.5663* (0.3950)</td>
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<td>Fourth year</td>
<td>-0.2348* (0.0326)</td>
<td>-4.8738* (0.4222)</td>
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<td>Fifth year</td>
<td>-0.4645* (0.0437)</td>
<td>-4.9922* (0.4434)</td>
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Table A7: The Benchmark Model, New customers who were “referred by a advertising”

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<th>( \ln(r) ) equation</th>
<th>Additional Quantities</th>
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<td><strong>Demographics:</strong></td>
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<tr>
<td>Constant</td>
<td>-1.5467* (0.0075)</td>
<td>-11.7773* (0.1137)</td>
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<td>Age</td>
<td>0.0002 (0.0030)</td>
<td>-0.0502* (0.0251)</td>
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</tr>
<tr>
<td>Age^2</td>
<td>4.10 \cdot 10^{-7} (3.17 \cdot 10^{-5})</td>
<td>5.18 \cdot 10^{-4} (2.52 \cdot 10^{-4})</td>
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</tr>
<tr>
<td>Female</td>
<td>-0.0023 (0.0107)</td>
<td>0.2300* (0.0812)</td>
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<tr>
<td>Family</td>
<td>omitted</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Married</td>
<td>-0.0183 (0.0143)</td>
<td>0.2410 (0.1234)</td>
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</tr>
<tr>
<td>Divorced</td>
<td>0.0452* (0.0198)</td>
<td>-0.1454 (0.1890)</td>
<td></td>
</tr>
<tr>
<td>Widower</td>
<td>0.0221 (0.0340)</td>
<td>-0.0738 (0.2817)</td>
<td></td>
</tr>
<tr>
<td>Other (NA)</td>
<td>-0.0380 (0.1163)</td>
<td>-0.4850 (0.9733)</td>
<td></td>
</tr>
</tbody>
</table>
| Education                 |                                |                        | Var-covar matrix (\( \Sigma \)):
| Elementary                | -0.0241 (0.0392)               | 0.0761 (0.2555)        | \( \sigma_\lambda \) 0.1655 (0.0098) |
| High School               | omitted                        |                        | \( \sigma_r \) 3.1858 (0.0835) |
| Technical                 | 0.0049 (0.0198)                | 0.1767 (0.1469)        | \( \rho \) 0.8058 (0.0286) |
| Academic                  | -0.0256 (0.0139)               | 0.1899 (0.0960)        |                       |
| Other (NA)                | -0.0005 (0.0119)               | 0.0397 (0.0949)        |                       |
| Emigrant                  | 0.0086 (0.0106)                | -0.0259 (0.0788)       |                       |
| **Car Attributes:**       |                                |                        | Unconditional Stats: |
| Log(Value)                | 0.0656* (0.0203)               | 0.8555* (0.1517)       | Mean \( \lambda \) 0.2189 (0.0014) |
| Car Age                   | 0.0042 (0.0025)                | -0.0320 (0.0201)       | Median \( \lambda \) 0.2158 (0.0017) |
| Commercial Car            | -0.0754* (0.0204)              | 0.0021 (0.1409)        | Std. Dev. \( \lambda \) 0.0510 (0.0020) |
| Log(Engine size)          | 0.1434* (0.0267)               | -0.4167 (0.2198)       | Mean \( r \) 0.0021 (0.0002) |
| **Driving:**              |                                |                        | Median \( r \) 7.56 \cdot 10^{-6} (8.56 \cdot 10^{-7}) |
| License Years             | -0.0008 (0.0020)               | 0.0097 (0.0163)        | Std. Dev. \( r \) 0.0216 (0.0017) |
| License Years^2           | -2.41 \cdot 10^{-5} (4.32 \cdot 10^{-5}) | -8.90 \cdot 10^{-5} (3.11 \cdot 10^{-4}) | Corr(\( r, \lambda \)) 0.2118 (0.0095) |
| Good Driver               | -0.0743* (0.0128)              | 0.0363 (0.0952)        |                       |
| “Any Driver”              | 0.0359* (0.0123)               | 0.3041* (0.0857)       |                       |
| Secondary Car             | -0.0411* (0.0166)              | 0.1045 (0.1042)        |                       |
| Business Use              | 0.0624* (0.0159)               | -0.2817* (0.1340)      |                       |
| History Length            | 0.0011 (0.0062)                | 0.3491* (0.0687)       |                       |
| Claim History             | 0.1426* (0.0183)               | -0.0928 (0.2008)       |                       |
| **Young Driver:**         |                                |                        |                       |
| Young driver              | 0.0710* (0.0251)               | -0.2467 (0.2507)       |                       |
| Gender                    |                                |                        |                       |
| Male                      | omitted                        |                        |                       |
| Female                    | 0.0364* (0.0074)               | -                        |                       |
| Age                       |                                |                        |                       |
| 17-19                     | omitted                        |                        |                       |
| 19-21                     | -0.0744* (0.0152)              | -                        |                       |
| 21-24                     | -0.0762* (0.0153)              | -                        |                       |
| >24                       | -0.0555 (0.0141)               | -                        |                       |
| Experience                |                                |                        |                       |
| <1                        | omitted                        |                        |                       |
| 1-3                       | 0.0038 (0.0127)                | -                        |                       |
| >3                        | 0.0896* (0.0146)               | -                        |                       |
| **Company Year:**         |                                |                        |                       |
| First year                | omitted                        |                        |                       |
| Second year               | -0.0706* (0.0134)              | -1.5200* (0.0953)       |                       |
| Third year                | -0.0898* (0.0164)              | -2.8902* (0.1334)       |                       |
| Fourth year               | -0.1604* (0.0186)              | -3.8932* (0.1510)       |                       |
| Fifth year                | -0.4107* (0.0245)              | -4.0018* (0.1581)       |                       |
|                           |                                 |                        |                       |

No. of Obs. 79,366
Table A8: The Benchmark Model, New customers during the first two years

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<th>ln(r) equation</th>
<th>Additional Quantities</th>
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<tbody>
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<td>Demographics:</td>
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<td></td>
<td>Var-covar matrix (Σ):</td>
</tr>
<tr>
<td>Constant</td>
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<td>-10.5635* (0.1257)</td>
<td>σ_λ 0.2506 (0.0136)</td>
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<tr>
<td>Age</td>
<td>-0.0061 (0.0036)</td>
<td>-0.0126 (0.0331)</td>
<td>σ_r 3.0984 (0.0991)</td>
</tr>
<tr>
<td>Age^2</td>
<td>5.85·10^{-5} (3.73·10^{-5})</td>
<td>2.81·10^{-4} (3.32·10^{-4})</td>
<td>ρ 0.6987 (0.0574)</td>
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<tr>
<td>Female</td>
<td>-0.0035 (0.0120)</td>
<td>0.3248* (0.1105)</td>
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<tr>
<td>Family</td>
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<td>Unconditional Stats:</td>
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<td>Married</td>
<td>-0.0234 (0.0141)</td>
<td>0.3255* (0.1621)</td>
<td>Mean λ 0.2437 (0.002)</td>
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<td>Divorced</td>
<td>0.0206 (0.0248)</td>
<td>0.1064 (0.2593)</td>
<td>Median λ 0.2351 (0.0023)</td>
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<tr>
<td>Widower</td>
<td>0.0423 (0.0387)</td>
<td>-0.3781 (0.3973)</td>
<td>Std. Dev. λ 0.0663 (0.0034)</td>
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<tr>
<td>Other (NA)</td>
<td>-0.0049 (0.1197)</td>
<td>-0.0227 (1.2371)</td>
<td>Mean r 0.0031 (0.0004)</td>
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<td>Education</td>
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<td>Median r 2.60·10^{-5} (3.23·10^{-6})</td>
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<tr>
<td>Elementary</td>
<td>0.0024 (0.0382)</td>
<td>0.1235 (0.3090)</td>
<td>Std. Dev. r 0.0258 (0.0026)</td>
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<td>High School</td>
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<td>omitted</td>
<td>Corr(r, λ) 0.2253 (0.021)</td>
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<td>No. of Obs. 45,739</td>
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<td>-0.0769 (0.1077)</td>
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<td>Log(Value)</td>
<td>0.0381 (0.0211)</td>
<td>1.3079* (0.2227)</td>
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<td>Car Age</td>
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<td>-0.0275 (0.0283)</td>
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<td>Commercial Car</td>
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<td>0.3130 (0.1849)</td>
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<tr>
<td>Log(Engine size)</td>
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<td>-0.8222* (0.3031)</td>
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<tr>
<td>Driving</td>
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<tr>
<td>License Years</td>
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<td>License Years^2</td>
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<td>Good Driver</td>
<td>-0.0463* (0.0149)</td>
<td>0.0367 (0.1211)</td>
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<td>“Any Driver”</td>
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<td>0.3416* (0.1152)</td>
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<tr>
<td>Secondary Car</td>
<td>-0.0492* (0.0185)</td>
<td>0.3101* (0.1354)</td>
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<tr>
<td>Business Use</td>
<td>0.0609* (0.0202)</td>
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<tr>
<td>History Length</td>
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<td>Claim History</td>
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<td>Young driver</td>
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<td>Male</td>
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<tr>
<td>Female</td>
<td>0.0555* (0.0108)</td>
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<td>Age</td>
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<td>17-19</td>
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<tr>
<td>19-21</td>
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<tr>
<td>21-24</td>
<td>-0.0456* (0.0217)</td>
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<tr>
<td>&gt;24</td>
<td>0.0208 (0.0374)</td>
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<tr>
<td>Experience</td>
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<tr>
<td>&lt;1</td>
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<td>-</td>
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<tr>
<td>1-3</td>
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<tr>
<td>&gt;3</td>
<td>0.0474 (0.0388)</td>
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<tr>
<td>Company Year:</td>
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<td>First year</td>
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<td>omitted</td>
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<tr>
<td>Second year</td>
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<tr>
<td>Fifth year</td>
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Table A9: The Benchmark Model, New customers during years 3-5

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<th>$\ln(r)$ equation</th>
<th>Additional Quantities</th>
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<tr>
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<td>0.1558 (0.1167)</td>
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<tr>
<td>Family</td>
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<tr>
<td>Single</td>
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<td>Married</td>
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<td>0.1068 (0.1659)</td>
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<td>Divorced</td>
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<td>-0.0514 (0.3996)</td>
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<tr>
<td>Other (NA)</td>
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<tr>
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<td>Elementary</td>
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<td>-0.4773 (0.4941)</td>
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<td><strong>Car Attributes:</strong></td>
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<tr>
<td>Log(Value)</td>
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<td>0.7900* (0.2145)</td>
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<tr>
<td>Commercial Car</td>
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<td>-0.4840* (0.2329)</td>
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<tr>
<td>Log(Engine size)</td>
<td>0.1174* (0.0332)</td>
<td>-0.2868 (0.3448)</td>
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<tr>
<td><strong>Driving:</strong></td>
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<tr>
<td>License Years</td>
<td>-0.0012 (0.0026)</td>
<td>0.0336 (0.0259)</td>
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<tr>
<td>License Years$^2$</td>
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<td>-2.11·10$^{-4}$ (4.93·10$^{-4}$)</td>
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<td>-0.4839* (0.1697)</td>
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<td>0.3917* (0.1320)</td>
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<td>-0.0993 (0.1585)</td>
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<td>0.4159 (0.4094)</td>
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<td>19-21</td>
<td>-0.0684* (0.0228)</td>
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<td>21-24</td>
<td>-0.0511* (0.0221)</td>
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<tr>
<td>&gt;24</td>
<td>-0.0050 (0.0200)</td>
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<td>1-3</td>
<td>0.0432 (0.0229)</td>
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<td>&gt;3</td>
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<td><strong>Company Year:</strong></td>
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<td>dropped</td>
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<tr>
<td>Third year</td>
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<td>omitted</td>
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<tr>
<td>Fourth year</td>
<td>-0.0609* (0.0122)</td>
<td>-1.3479* (0.1345)</td>
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<td>Fifth year</td>
<td>-0.3302* (0.0248)</td>
<td>-1.9311* (0.1761)</td>
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</table>

**Var-covar matrix ($\Sigma$):**

- $\sigma_\lambda$ 0.1245 (0.0101)
- $\sigma_r$ 4.5318 (0.1867)
- $\rho$ 0.6109 (0.0733)

**Unconditional Stats:**

- Mean $\lambda$ 0.2029 (0.0018)
- Median $\lambda$ 0.2011 (0.0022)
- Std. Dev. $\lambda$ 0.0428 (0.0016)
- Mean $r$ 0.0016 (0.0002)
- Median $r$ 3.42·10$^{-7}$ (1.04·10$^{-7}$)
- Std. Dev. $r$ 0.0214 (0.0022)
- $Corr(\lambda, r)$ 0.1132 (0.0135)

No. of Obs. 60,061
Table A10: The Benchmark Model, New customers with driving experience of 10+ years

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<th>ln($r$) equation</th>
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<td>σ_λ 0.1689 (0.0107)</td>
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<td>0.0004 (0.0105)</td>
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<tr>
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<td>0.0429 (0.1318)</td>
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<td>Log(Engine size)</td>
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<tr>
<td><strong>Driving:</strong></td>
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<tr>
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<td>-0.0118 (0.0225)</td>
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</tr>
<tr>
<td>License Years^2</td>
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<td>1.96·10^{-4} (3.76·10^{-4})</td>
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<td>-0.0280 (0.0906)</td>
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<tr>
<td>“Any Driver”</td>
<td>0.0364* (0.0134)</td>
<td>0.3032* (0.0849)</td>
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<tr>
<td>Secondary Car</td>
<td>-0.0398* (0.0164)</td>
<td>0.1203 (0.0933)</td>
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<tr>
<td>Business Use</td>
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<td>-0.3586 (0.2162)</td>
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<tr>
<td>Gender</td>
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<tr>
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<td>-</td>
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<tr>
<td>Female</td>
<td>0.0362* (0.0079)</td>
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<tr>
<td>Age</td>
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</tr>
<tr>
<td>17-19</td>
<td>omitted</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>19-21</td>
<td>-0.0508* (0.0149)</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>21-24</td>
<td>-0.0331* (0.0157)</td>
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<tr>
<td>&gt;24</td>
<td>-0.0110 (0.0151)</td>
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<tr>
<td>Experience</td>
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<tr>
<td>&lt;1</td>
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<td>-</td>
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<tr>
<td>1-3</td>
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<tr>
<td>&gt;3</td>
<td>0.0682* (0.0152)</td>
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<tr>
<td><strong>Company Year:</strong></td>
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</tr>
<tr>
<td>First year</td>
<td>omitted</td>
<td>omitted</td>
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<tr>
<td>Second year</td>
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<td>-1.4596* (0.0947)</td>
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<td>Fourth year</td>
<td>-0.1574* (0.0202)</td>
<td>-3.9330* (0.1606)</td>
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<td>Fifth year</td>
<td>-0.4170* (0.0271)</td>
<td>-3.9950* (0.1746)</td>
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</tbody>
</table>

**Var-covar matrix (Σ):**

- $\sigma_\lambda$ 0.1689 (0.0107)
- $\sigma_r$ 3.1459 (0.0836)
- $\rho$ 0.7608 (0.0336)

**Unconditional Stats:**

- Mean $\lambda$ 0.2144 (0.0014)
- Median $\lambda$ 0.211 (0.0018)
- Std. Dev. $\lambda$ 0.0508 (0.0021)
- Mean $r$ 0.0021 (0.0002)
- Median $r$ 8.25·10^{-6} (9.12·10^{-7})
- Std. Dev. $r$ 0.0211 (0.0018)
- Corr($r, \lambda$) 0.1999 (0.0101)

No. of Obs. 82,966
Table A11: The Benchmark Model, New customers with driving experience of 9- years

<table>
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<th>( \ln(\gamma) ) equation</th>
<th>Additional Quantities</th>
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<td>Var-covar matrix ((\Sigma)):</td>
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<td>( \sigma_\lambda ) 0.2601 (0.0229)</td>
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<td>( \sigma_\gamma ) 4.8557 (0.3637)</td>
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<td>( \rho ) 0.5716 (0.0926)</td>
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<tr>
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<td>Widower</td>
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<tr>
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<td>Elementary</td>
<td>dropped</td>
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<td>High School</td>
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<td>Technical</td>
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<td>Mean ( \gamma ) 0.2197 (0.0038)</td>
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<td>-0.0625 (0.1058)</td>
<td>Std. Dev. ( \lambda ) 0.0734 (0.0061)</td>
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<td>Commercial Car</td>
<td>-0.0419 (0.0305)</td>
<td>-0.5156 (0.7847)</td>
<td>Median ( \gamma ) 1.19 \cdot 10^{-7} (1.14 \cdot 10^{-7})</td>
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<tr>
<td>Log(Engine size)</td>
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<td>Std. Dev. ( \gamma ) 0.0319 (0.0035)</td>
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<td>Corr(( \gamma, \lambda )) 0.1865 (0.0270)</td>
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<td>No. of Obs. 22,834</td>
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<tr>
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<td>Business Use</td>
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<td>History Length</td>
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<td>17-19</td>
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<td>0.0101 (0.0325)</td>
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<td>&gt;24</td>
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<td>-2.3482* (0.515)</td>
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<td>-0.1849* (0.0273)</td>
<td>-3.3500* (0.5316)</td>
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<td>Fourth year</td>
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<td>-4.9452* (0.5982)</td>
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<td>Fifth year</td>
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<td>-5.9004* (0.6434)</td>
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Table A12: The Benchmark Model, Including other insurance choices as covariates

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<th>Additional Quantities</th>
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<td>Age^2</td>
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<tr>
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<td>Family</td>
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<td>-0.1708 (0.1592)</td>
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<td>Education</td>
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<td>0.2211* (0.0825)</td>
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<td>0.7015* (0.1239)</td>
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<td>Log(Engine size)</td>
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<td>-0.0610 (0.0846)</td>
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<tr>
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<td>-0.0378* (0.0122)</td>
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<td>0.3538* (0.0644)</td>
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<td>0.0002 (0.0213)</td>
<td>0.1234 (0.1227)</td>
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<td>Windshield coverage</td>
<td>0.0572* (0.0228)</td>
<td>0.8126* (0.1742)</td>
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Var-covar matrix (Σ):

- $\lambda$: 0.1541 (0.0083)
- $\sigma_r$: 3.1655 (0.0753)
- $\rho$: 0.8229 (0.0287)

Unconditional Stats:

- Mean $\lambda$: 0.2191 (0.0014)
- Median $\lambda$: 0.2166 (0.0017)
- Std. Dev. $\lambda$: 0.0492 (0.0017)
- Mean $r$: 0.0019 (0.0002)
- Median $r$: 7.03·10⁻⁶ (7.26·10⁻⁷)
- Std. Dev. $r$: 0.0202 (0.0087)
- Corr($r, \lambda$): 0.2060 (0.0087)

No. of Obs.: 105,800
Table A13: The Benchmark Model, Including an additional income proxy I

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<td>-11.8844* (0.1047)</td>
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<td>0.2083* (0.0763)</td>
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<td>Unconditional Stats:</td>
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<td>-0.1926 (0.1609)</td>
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<td>Std. Dev. r</td>
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<td>Log(Value)</td>
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<td>0.7323* (0.1410)</td>
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<td>Log(Engine size)</td>
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<td>-0.2500 (0.1991)</td>
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<td>License Years^2</td>
<td>-2.91·10^{-5} (3.64·10^{-5})</td>
<td>-1.19·10^{-4} (2.73·10^{-4})</td>
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<td>0.0633 (0.1806)</td>
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<td>Age</td>
<td>17-19</td>
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<tr>
<td>19-21</td>
<td>-0.0380* (0.0129)</td>
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<td>21-24</td>
<td>-0.0450* (0.0132)</td>
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<tr>
<td>&gt;24</td>
<td>0.0134 (0.0127)</td>
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<td>Experience</td>
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<td>0.0771* (0.0127)</td>
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<td>omitted</td>
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<td>Second year</td>
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<td>-1.4501* (0.0947)</td>
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<td>Third year</td>
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<td>Fourth year</td>
<td>-0.1562* (0.0167)</td>
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<td>Fifth year</td>
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<td>-3.9814* (0.1536)</td>
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<td><strong>Income Proxy:</strong></td>
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<td>-0.3328* (0.1543)</td>
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Table A14: The Benchmark Model, Including an additional income proxy II

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<td>Var-covar matrix ((\Sigma)):</td>
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<tr>
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<td>-11.9018* (0.1127)</td>
<td>(\sigma_\lambda) 0.1603 (0.0094)</td>
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<td>Age</td>
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<td>(\sigma_r) 3.2155 (0.0764)</td>
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<td>Age^2</td>
<td>(1.33 \cdot 10^{-3}) (2.91 \cdot 10^{-5})</td>
<td>(5.17 \cdot 10^{-4}) (2.39 \cdot 10^{-4})</td>
<td>(\rho) 0.8064 (0.0297)</td>
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<td>0.2390* (0.1168)</td>
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<td>Divorced 0.0336 (0.0177)</td>
<td>-0.2203 (0.1763)</td>
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<td>Academic -0.0294* (0.0132)</td>
<td>0.2404* (0.0917)</td>
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<td><strong>Car Attributes:</strong></td>
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<td>Unconditional Stats:</td>
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<td>Mean (\lambda) 0.2204 (0.0015)</td>
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<td>Median (\lambda) 0.2174 (0.0017)</td>
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<td>Commercial Car</td>
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<td>-0.0953 (0.1434)</td>
<td>Std. Dev. (\lambda) 0.0503 (0.0019)</td>
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<tr>
<td>Log(Engine size)</td>
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<td>-0.2913 (0.2048)</td>
<td>Mean (r) 0.0020 (0.0002)</td>
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<td>Median (r) 6.65 \cdot 10^{-6} (7.50 \cdot 10^{-7})</td>
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<td>License Years</td>
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<td>Std. Dev. (r) 0.0209 (0.0016)</td>
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<td>License Years^2</td>
<td>(2.98 \cdot 10^{-5}) (4.04 \cdot 10^{-5})</td>
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<td>Corr((r, \lambda)) 0.2060 (0.0099)</td>
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<td>-0.0094 (0.0961)</td>
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<td>19-21 -0.0516* (0.0138)</td>
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<td>21-24 -0.0569* (0.0139)</td>
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<td>&gt;24 0.0112 (0.0132)</td>
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<td>Experience</td>
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<td>1-3 0.0114 (0.0115)</td>
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<td>&gt;3 0.0882* (0.0135)</td>
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</tr>
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<tr>
<td>Second year</td>
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<td>-1.4632* (0.0951)</td>
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<tr>
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<td>-2.9337* (0.1354)</td>
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<td>-3.8478* (0.1476)</td>
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<td>Fifth year</td>
<td>-0.4039* (0.0257)</td>
<td>-3.9973* (0.1627)</td>
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<td>Socio-Econ index</td>
<td>-0.0079 (0.0067)</td>
<td>0.1272* (0.0537)</td>
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Table A15: The Benchmark Model, Including an additional income proxy III

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<th>ln(γ) equation</th>
<th>Additional Quantities</th>
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<td>-0.0509* (0.0235)</td>
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<td>5.30·10^{-4} (2.36·10^{-4})</td>
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<td>0.0055 (0.0100)</td>
<td>0.1966* (0.0801)</td>
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<td>Family</td>
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<td>0.2116* (0.1056)</td>
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<td>0.1120 (0.2216)</td>
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<td>omitted</td>
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<td>0.2585* (0.0914)</td>
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<td>-0.0316 (0.0951)</td>
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<tr>
<td>Emigrant</td>
<td>0.0039 (0.0100)</td>
<td>-0.0264 (0.0760)</td>
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<td><strong>Car Attributes:</strong></td>
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<td>Log(Value)</td>
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<td>0.7377* (0.1414)</td>
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<td>Car Age</td>
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<td>-0.0975 (0.1341)</td>
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<tr>
<td>Log(Engine size)</td>
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<td>-0.2519 (0.1993)</td>
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<td><strong>Driving:</strong></td>
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<td>-0.0353 (0.0935)</td>
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<td>“Any Driver”</td>
<td>0.0348* (0.0113)</td>
<td>0.3272* (0.0787)</td>
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<tr>
<td>Secondary Car</td>
<td>-0.0367* (0.0167)</td>
<td>0.0824 (0.1054)</td>
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<tr>
<td>Business Use</td>
<td>0.0569* (0.0141)</td>
<td>-0.3960* (0.1252)</td>
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<tr>
<td>History Length</td>
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<td>0.3080* (0.0592)</td>
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<tr>
<td>Claim History</td>
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<td>0.0556 (0.1810)</td>
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<td>omitted</td>
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<tr>
<td>Female</td>
<td>0.0302* (0.0062)</td>
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<tr>
<td>Age</td>
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<tr>
<td>17-19</td>
<td>omitted</td>
<td>-</td>
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<tr>
<td>19-21</td>
<td>-0.0385* (0.0129)</td>
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<tr>
<td>21-24</td>
<td>-0.0453* (0.0132)</td>
<td>-</td>
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<tr>
<td>&gt;24</td>
<td>0.0134 (0.0127)</td>
<td>-</td>
<td></td>
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<tr>
<td>Experience</td>
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<td>&lt;1</td>
<td>omitted</td>
<td>-</td>
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<tr>
<td>1-3</td>
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<tr>
<td>&gt;3</td>
<td>0.0774* (0.0128)</td>
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<td><strong>Company Year:</strong></td>
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<tr>
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<td>omitted</td>
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<td>-1.4502* (0.0942)</td>
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<td>-2.8965* (0.1251)</td>
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<td>-3.8267* (0.1400)</td>
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<td>-3.9800* (0.1548)</td>
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<td><strong>Income Proxy:</strong></td>
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<td>Matched income in tract</td>
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<td>-0.0365 (0.0471)</td>
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</tbody>
</table>

**Var-covar matrix (Σ):**

- \( \sigma_\lambda \) 0.1545 (0.0094)
- \( \sigma_r \) 3.2141 (0.0768)
- \( \rho \) 0.8168 (0.0296)

**Unconditional Stats:**

- Mean λ 0.2210 (0.0014)
- Median λ 0.2186 (0.0017)
- Std. Dev. λ 0.0492 (0.0017)
- Mean r 0.0020 (0.0002)
- Median r 6.76·10^{-6} (7.21·10^{-7})
- Std. Dev. r 0.0209 (0.0016)
- Corr(\( r, \lambda \)) 0.2079 (0.0098)

No. of Obs. 93,918
Table A16: The Benchmark Model, Including estimated mileage as a covariate

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<th>ln((r)) equation</th>
<th>Additional Quantities</th>
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<tr>
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<td>(3.06 \times 10^{-4}) ((3.19 \times 10^{-4}))</td>
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<td>0.1619 (0.1047)</td>
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<td>Log(Engine size)</td>
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<td>(1.92 \times 10^{-4}) ((3.85 \times 10^{-4}))</td>
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<td>0.3731* (0.1050)</td>
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<tr>
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<td>omitted</td>
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**Additional Quantities**

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<td>(\sigma_{r})</td>
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**Unconditional Stats:**

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No. of Obs. 60,422
Table A17: CARA Utility

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<th>$\ln(r)$ equation</th>
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19
Table A18: Imperfect Information - A Model of Learning about Own Risk Type

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Table A19: Risk Distribution with Thinner Tails

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<td>Other (NA)</td>
<td>-0.0224* (0.0076)</td>
<td>0.2875* (0.0776)</td>
<td></td>
</tr>
<tr>
<td>Emigrant</td>
<td>0.0072 (0.0069)</td>
<td>-0.0341 (0.0690)</td>
<td></td>
</tr>
<tr>
<td><strong>Car Attributes:</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Log(Value)</td>
<td>0.1633* (0.0123)</td>
<td>1.0013* (0.1604)</td>
<td></td>
</tr>
<tr>
<td>Car Age</td>
<td>0.0028 (0.0019)</td>
<td>-0.0161 (0.0213)</td>
<td></td>
</tr>
<tr>
<td>Commercial Car</td>
<td>-0.0822* (0.0144)</td>
<td>0.4207* (0.1485)</td>
<td></td>
</tr>
<tr>
<td>Log(Engine size)</td>
<td>0.1736* (0.0215)</td>
<td>-0.9890* (0.2608)</td>
<td></td>
</tr>
<tr>
<td><strong>Driving:</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>License Years</td>
<td>-0.0044* (0.0015)</td>
<td>0.0592* (0.0178)</td>
<td></td>
</tr>
<tr>
<td>License Years^2</td>
<td>2.41·10^{-5} (2.82·10^{-5})</td>
<td>-6.42·10^{-4} (2.92·10^{-4})</td>
<td></td>
</tr>
<tr>
<td>Good Driver</td>
<td>-0.0680* (0.0086)</td>
<td>-0.0012 (0.0956)</td>
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</tr>
<tr>
<td>“Any Driver”</td>
<td>0.0663* (0.0075)</td>
<td>0.1348* (0.0774)</td>
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</tr>
<tr>
<td>Secondary Car</td>
<td>-0.0503* (0.0086)</td>
<td>0.4231* (0.0798)</td>
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</tr>
<tr>
<td>Business Use</td>
<td>0.0603* (0.0126)</td>
<td>-0.7765* (0.1414)</td>
<td></td>
</tr>
<tr>
<td>History Length</td>
<td>0.0137* (0.0049)</td>
<td>0.5018* (0.0818)</td>
<td></td>
</tr>
<tr>
<td>Claim History</td>
<td>0.2579* (0.0182)</td>
<td>-1.6289* (0.2333)</td>
<td></td>
</tr>
<tr>
<td><strong>Young Driver:</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Young driver</td>
<td>0.1122* (0.0201)</td>
<td>-0.7575* (0.2531)</td>
<td></td>
</tr>
<tr>
<td>Gender</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>omitted</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>-0.0034 (0.0151)</td>
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<td></td>
</tr>
<tr>
<td>Age</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>17-19</td>
<td>omitted</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>19-21</td>
<td>-0.0198 (0.0264)</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>21-24</td>
<td>-0.0521 (0.0296)</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>&gt;24</td>
<td>0.0064 (0.0271)</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Experience</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt;1</td>
<td>omitted</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>1-3</td>
<td>-0.0319 (0.0229)</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>&gt;3</td>
<td>0.0448 (0.0274)</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td><strong>Company Year:</strong></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>First year</td>
<td>omitted</td>
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<tr>
<td>Second year</td>
<td>-0.1831* (0.0103)</td>
<td>-1.0366* (0.1071)</td>
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<tr>
<td>Third year</td>
<td>-0.3043* (0.0118)</td>
<td>-2.1374* (0.1385)</td>
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<tr>
<td>Fourth year</td>
<td>-0.4568* (0.0131)</td>
<td>-2.9919* (0.1745)</td>
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<tr>
<td>Fifth year</td>
<td>-0.7098* (0.0160)</td>
<td>-2.5040* (0.1665)</td>
<td></td>
</tr>
</tbody>
</table>

**Var-covar matrix ($\Sigma$):**

- $\sigma_{\lambda}$ 0.5326 (0.0069)
- $\sigma_r$ 3.8233 (0.1153)
- $\rho$ -0.9156 (0.0205)

**Unconditional Stats:**

- $\text{Mean } \lambda$ 0.2053 (0.0008)
- $\text{Median } \lambda$ 0.1708 (0.0014)
- $\text{Std. Dev. } \lambda$ 0.1545 (0.0028)
- $\text{Mean } r$ 0.0017 (0.0001)
- $\text{Median } r$ 1.94·10^{-6} (5.41·10^{-7})
- $\text{Std. Dev. } r$ 0.0204 (0.0013)
- $\text{Corr}(r, \lambda)$ -0.0763 (0.0021)

No. of Obs. 105,800