Investigating the buyers of electric vehicles in California 2012-2017

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Early adopters of electric vehicles

First buyers of electric vehicles in California and the US are:

- High income ($200,000)
- Highly educated (undergraduate or post graduate degree)
- Mostly male (c. 75%)
- Own a detached house/ single family home
- Middle to later aged
Method

- Survey data from 27,000 PEV buyers in California 2010-2017
  - Phase 1-1.5: Purchasers of electric vehicles from 2010-2015
  - Phase 2-2.5: Purchasers of electric vehicles from 2015-2016
  - Phase 3: Purchasers of electric vehicles from 2016-2017
  - Phase 4: Purchasers of electric vehicles from 2017-2018
- Email recruitment in collaboration with CARB and CVRP Project
- Surveys covers household information, impact of incentives, charging behaviour, attitudes towards sustainability etc.
- Latent class analysis used to generate classes/clusters of PEV buyers
### Electric vehicle buyer clusters

<table>
<thead>
<tr>
<th></th>
<th>High income families</th>
<th>Mid/high income old families</th>
<th>Mid/high income young families</th>
<th>Middle income renters</th>
<th>Tesla Owners</th>
</tr>
</thead>
<tbody>
<tr>
<td>N of PEV buyers</td>
<td>4676</td>
<td>2500</td>
<td>1786</td>
<td>425</td>
<td>1650</td>
</tr>
<tr>
<td>Household Income</td>
<td>$252,200</td>
<td>$127,500</td>
<td>$127,300</td>
<td>$71,100</td>
<td>$311,000</td>
</tr>
<tr>
<td>Age</td>
<td>43.5</td>
<td>53.5</td>
<td>30.7</td>
<td>47.2</td>
<td>46.5</td>
</tr>
<tr>
<td>Proportion of Females</td>
<td>24%</td>
<td>26%</td>
<td>33%</td>
<td>48%</td>
<td>22%</td>
</tr>
<tr>
<td>Proportion of home owners</td>
<td>92%</td>
<td>96%</td>
<td>55%</td>
<td>26%</td>
<td>93%</td>
</tr>
<tr>
<td>N of vehicles</td>
<td>2.60</td>
<td>2.44</td>
<td>2.15</td>
<td>1.56</td>
<td>2.53</td>
</tr>
<tr>
<td>N of people</td>
<td>3.23</td>
<td>2.54</td>
<td>2.79</td>
<td>1.74</td>
<td>2.89</td>
</tr>
<tr>
<td>N of Drivers</td>
<td>2.28</td>
<td>2.12</td>
<td>2.01</td>
<td>1.48</td>
<td>2.17</td>
</tr>
<tr>
<td>Education*</td>
<td>2.52</td>
<td>2.07</td>
<td>2.18</td>
<td>2.08</td>
<td>2.45</td>
</tr>
</tbody>
</table>

*1=High School Graduate, 2=College Graduate, 3=Postgraduate
Change in clusters over time

![Graph showing the proportion of each cluster over time between 2011 and 2017. The clusters include High income families, Mid/high income older families, Mid/high income young families, Middle income renters. The graph illustrates the changes in the proportion of each cluster across the years.](image-url)
Cumulative first time PEV purchases
Market saturation by cluster

- High income families
- Mid/high income older families
- Mid/high income young families
- Middle income renters

Year: 2011 to 2030
Summary and Conclusions

- Market is dominated by high income consumers
  - These people can only by so many PEVs
- Need to think more about supporting middle income consumers
  - What policy support do these consumers need?
  - Including incentives, infrastructure, etc.
Thanks

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Households purchasing 0 to 2+ new vehicles

- One: 37.5%
- Two: 13.6%
- Three or more: 2.8%

Purchased no new vehicles: 46%

Share of New Vehicles Purchased

- 0%
- 51%
- 37%
- 12%