Data Translation Challenge

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The intended use of this report is to find where to focus advertising. We want to learn more about when advertising for these products should be ramped up and where it should be focused. The audience for this report is Amazon product marketing managers.

With the limited data from 10 ZIP’s in domestic urban areas to work with we can narrow down our analysis to tech products in urban areas, although there are likely to be implications elsewhere.

I want to first focus my analysis on finding optimal times of the year to ramp up advertising:

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This graph has some expected and some surprising conclusions. The expected is the holiday season. Shown most in December -- having by far the most sales, and seeing some of that increase in October. Unexpected is the increase in April, could this be a possible second buying season in a calendar year? This could be leveraged in strategies to capitalize on the higher demand.

What next comes to mind is looking further at what composes the sales, is it the influx of sales of a certain product that’s driving the increase? Or just a general increase among the several products?

Here I’ve created a similar graph to the previous by exploring the sales over the course of the calendar year, but instead separating the products by category.

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From this we can see that product sales follow a similar trend, so rather than there being instances of certain products driving up that number we can infer it’s all of them. And confirms there’s an April consumer buying surge, this could be useful for planning advertising roll outs over the course of the year.

Having looked at the times of year that generate the most sales it’d be interesting to find out how sales vary over the course of day. When are consumers most/least active?

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There tend to be two major sales times, one at noon and one at 7pm, with a drop-off in between. This could be due to lunch breaks on a workday, and free time later on. But past speculation with what we have to work with – potentially the most important takeaway is that there are product buying surges during a day. This information can be used to plan ads at optimal times and guide further questions.

One question that arises when looking at this information and thinking about why that could be, is does this vary from weekday to weekend? Or on a Friday vs a Monday? This could most certainly matter when planning ad schedules over a week.

That’s when this graph comes in handy. It shows us average sales by hour, like the previous pattern, but instead broken up into each day of the week. So, we can see whether there’s a variation in sales by weekday.

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There doesn’t appear to be that variation. It follows a very similar path across each day, peak sales around 12 PM and 7 PM, with the lull in between. Like mentioned previously, this could help improve ad scheduling, and helps us get a better picture of buying patterns in a week.

Delving into target markets it’d be interesting to focus in on regional and demographic marketing strategies to see if there’s a correlation between sales and products purchased vs demographic variables like income and age.

The first question we’ll dive into is: Does average age and income affect how much the average person spends in an area? And can we create an optimal target demographic from this data?

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With the top 4 ZIP’s by average money spent following a similar trend we were able to narrow down a potential target demographic: individuals in their mid-thirties with an average to above average income. The data tells us they dish out the most money per year on Amazon tech products.

It’s massively helpful to know who spends the most money on our products, but without the added context of what products consumers are buying, there’s a missing piece to the story.

To help answer this question -- outlined are products and the share of total sales they each take up across income groups. This will be useful in finding out what income groups tend to spend their money on, and in turn, what should be marketed to them.

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As it turns out there’s very little variation in the types of products bought across income groups. Although it doesn’t mean they spend at the same rate, the data tells us somebody making $30,000 a year tends to be in the market for the same products as somebody making $100,000 a year. Even with items such as a new laptop or a phone.

But, of course, that’s only half of it. A customer may be browsing for a new laptop, but can we expect that they’re looking in the same price range as somebody making double their income? That would be something to investigate.

To answer this question, I’ve created a distribution with Income per capita and the average sale price of products bought in that area.

A graph with a red line and blue dots

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We can see that as income increases so does the average sale price of a product. It can reasonably infered that individuals with higher incomes buy more expensive products and vice versa. This can assist with the marketing of specific products.

All in all, with this report I expect that it serves as valuable information for consumer trends and buying patterns, albeit the limited sample, and hope it will be useful in guiding further marketing research at Amazon.