



# Apps for Autism: Identifying Trends in the App Market

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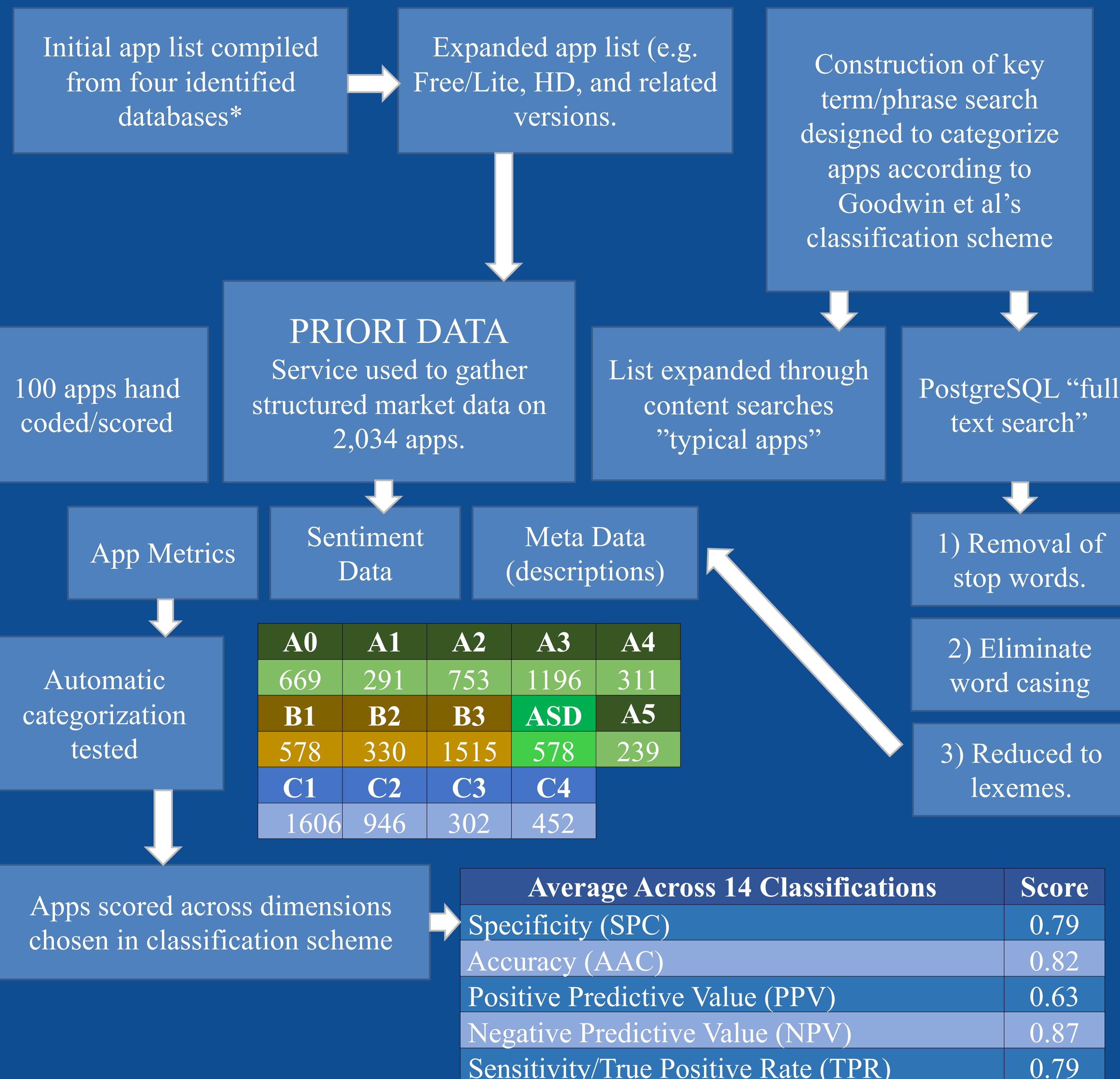
## BACKGROUND

- Within the last decade, the field of assistive technology and tools for autism has experienced a gradual shift from the “low-tech” to “high-tech strategies” (Shane et al., 2012). However, up until recently these high-tech solutions (e.g. the DyanaVox – roughly \$10,000) were often associated with high costs and possessed limited functionality.
- The multipurpose functionality of hardware such as tablets and touch-screen phones provide an inherent advantage for these assistive technologies in that they not only limit the cost of development for developers, but are also non-stigmatizing for the individuals that use them (Parrette & Scherer, 2004).
- The number of these applications has increased dramatically in recent years and while several online websites have taken up the task of creating databases to catalogue new and existing entrants into this market, the considerable growth in this area – an expected CAGR of 31.05 percent (Ellacott, 2015), not to mention the wider app market, makes keeping these up-to-date a daunting task.

## OBJECTIVE

To build an initial prototype of a system that will 1) aid in the automatic identification and categorization of new and existing apps for autism 2) Test the viability of this approach to characterizing “apps for autism” compared to more traditional methods 3) To conduct an initial characterization of the space with system.

## APP CHARACTERIZATION PROCESS



## ANALYSIS

### Price and Revenue:

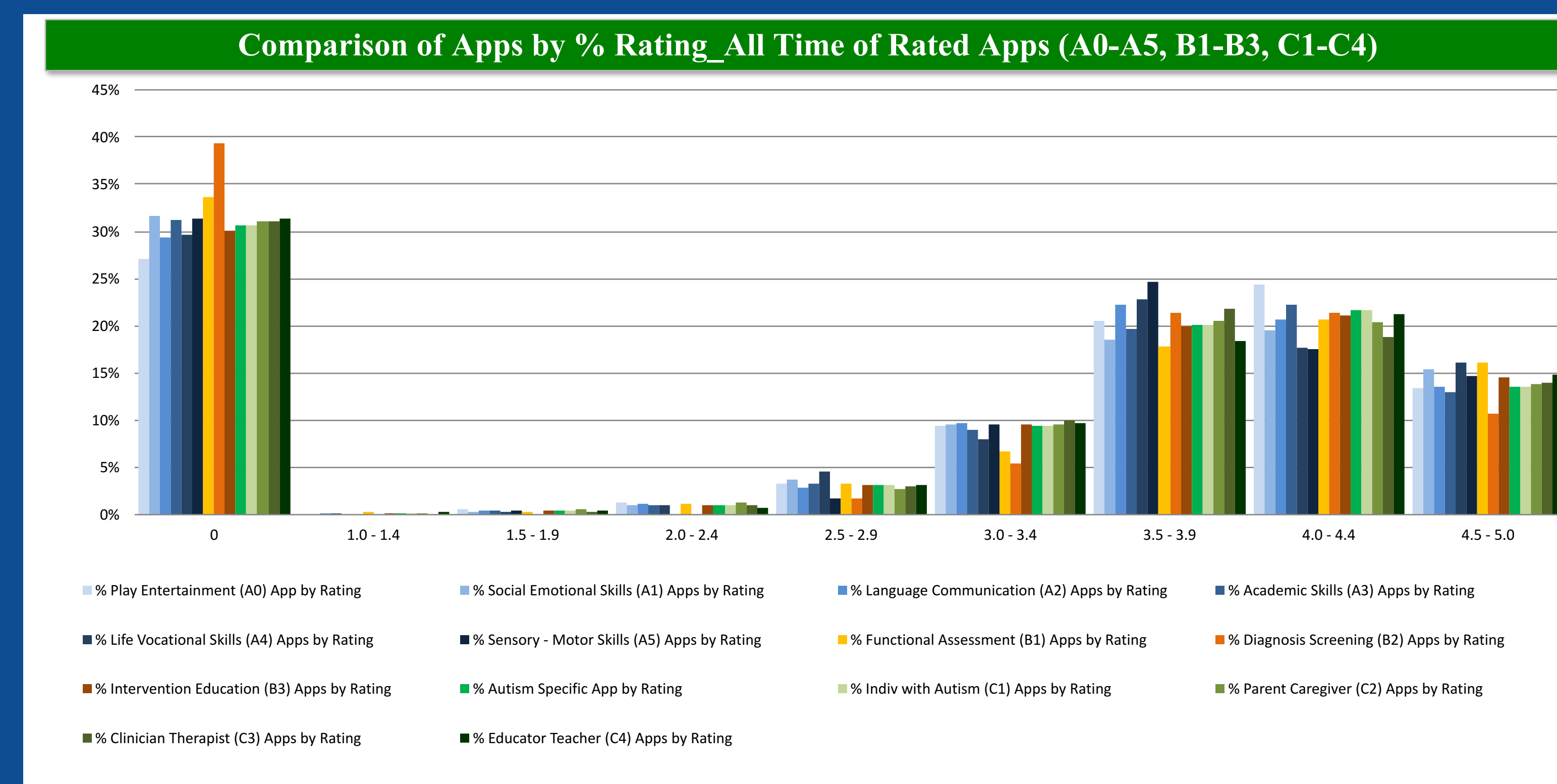
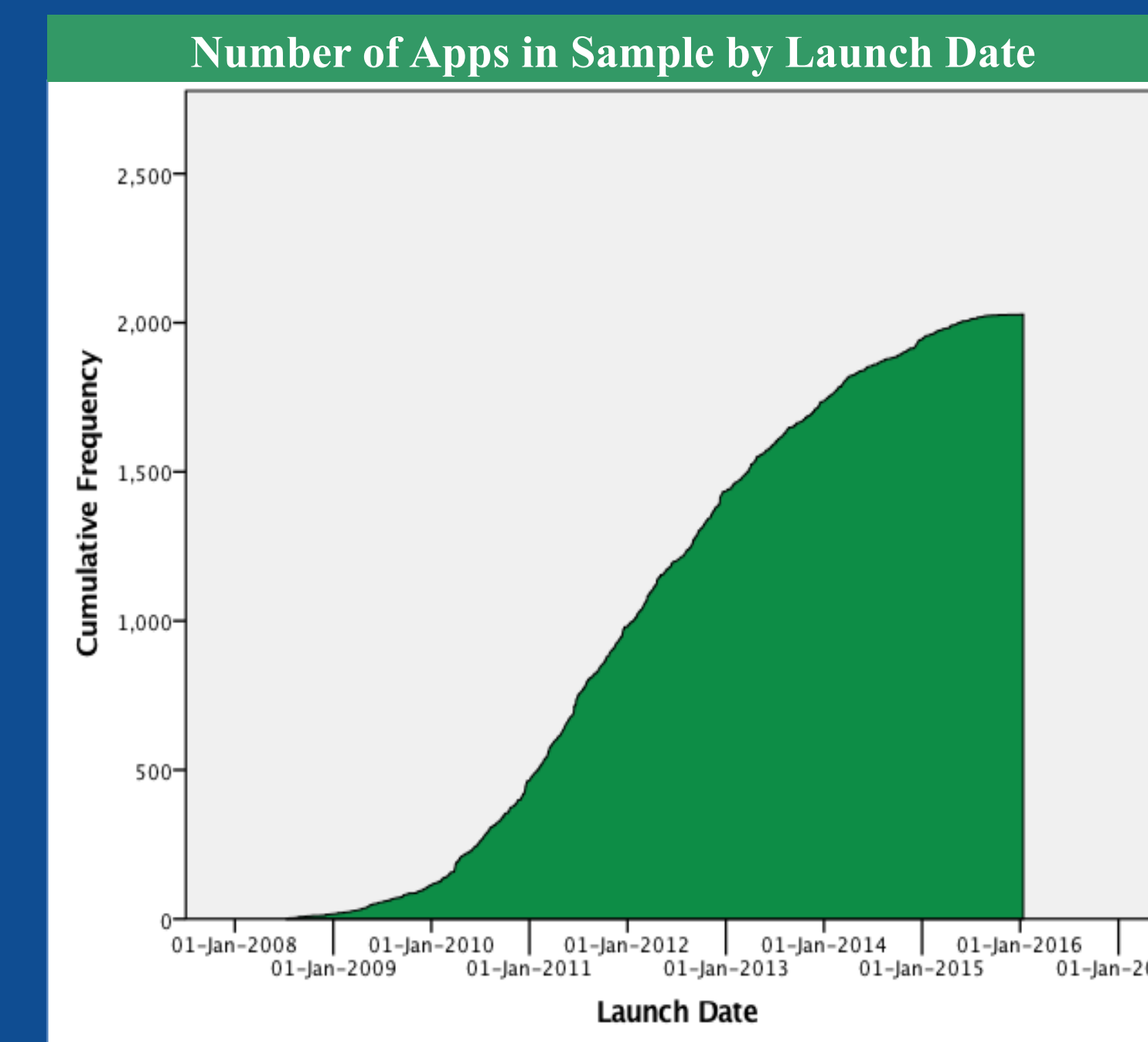
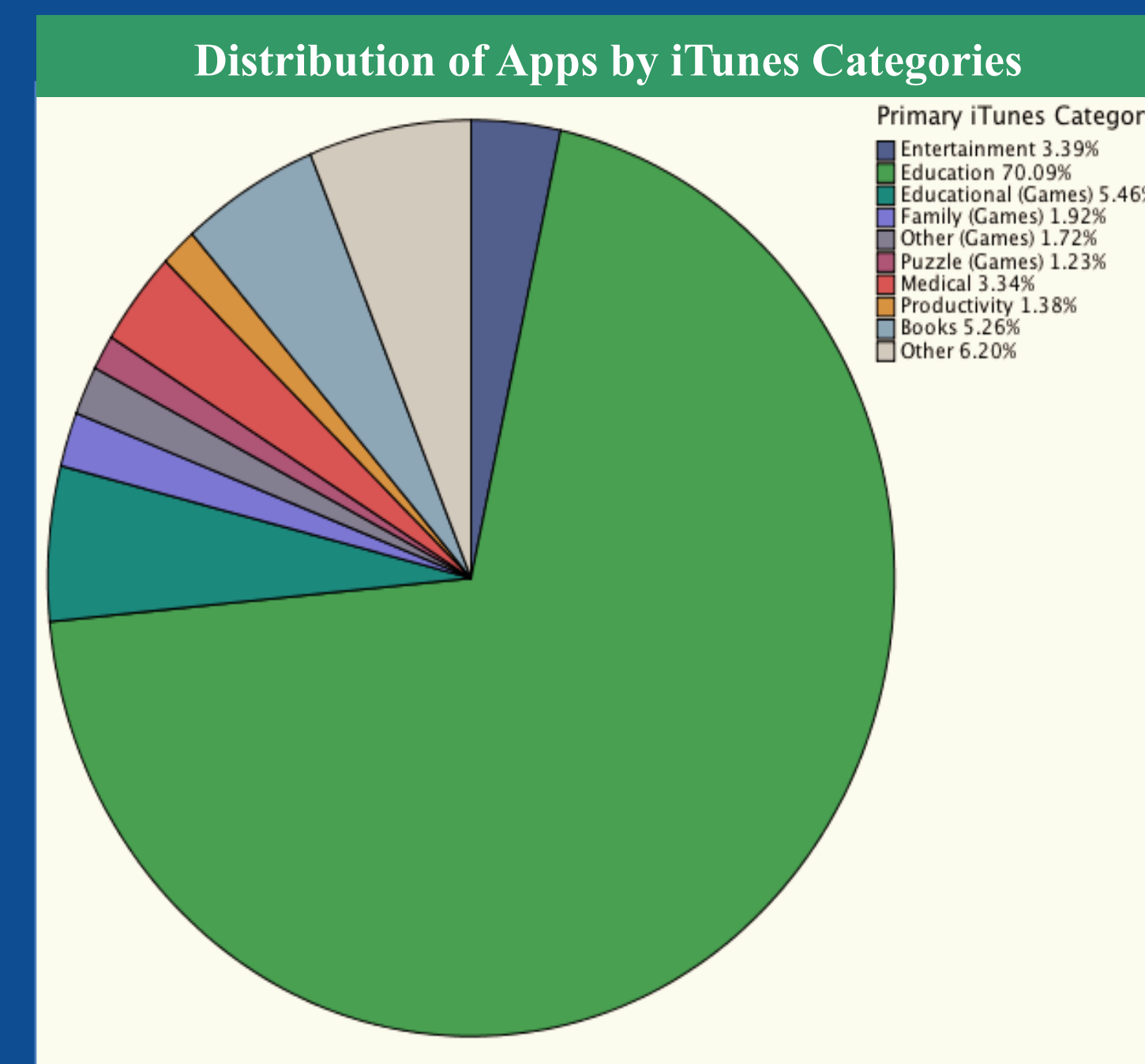
- For the total sample of apps, price was moderately to strongly correlated with sum revenue for the 12-month period, with an N = 1754,  $r_s = .507$ , 95% BCa CI [.467, .549],  $p < .000$ .
- For the sub sample of paid apps (global average price > \$0.00), price was weakly correlated with sum revenue for the 12-month period, with an N of 1,257,  $r_s = .184$ , 95% BCa CI [.131, .236],  $p < .001$ .

### Price and Downloads:

- Price also showed a weak negative association with total downloads for both the total and paid sub-samples, with  $r_s = -.269$ , 95% BCa [-.313, -.224],  $p < .001$ , for the total sample, and  $r_s = -.210$ , 95% BCa [-.266, -.154],  $p < .001$ , for the paid sub-sample respectively.

### All-Time Rating:

- Interestingly enough, for the total sample, all-time rating showed a very weak correlation with both total downloads and total revenue for the 12-month period, for revenue  $r_s = .091$ , 95% BCa CI [.039, .142],  $p < .001$ , and for downloads  $r_s = .079$ , 95% BCa CI [.032, .122],  $p = .001$ .



| Type            | App Title                         | Avg Global Price | Avg Global Revenue | Avg Downloads per month |
|-----------------|-----------------------------------|------------------|--------------------|-------------------------|
| AAC             | PROLOQUO2GO - SYMBOL-BASED AAC    | \$266            | \$650,667          | 2811                    |
| AAC             | TOUCHCHAT HD HEBREW               | \$257            | \$149,837          | 657                     |
| AAC             | TOUCHCHAT HD - AAC WITH WORDPOWER | \$320            | \$131,761          | 404                     |
| Life/vocational | DR. PANDA'S RESTAURANT            | \$2              | \$120,931          | 41393                   |
| Academic        | THE HUMAN BODY BY TINYBOP         | \$4              | \$110,680          | 20487                   |
| Life/vocational | THE PHOTO COOKBOOK - QUICK & EASY | \$4              | \$93,267           | 5944                    |
| Academic        | ENDLESS READER                    | \$0              | \$93,045           | 96785                   |
| Academic        | BRAINPOP FEATURED MOVIE           | \$0              | \$79,748           | 114000                  |
| Academic        | BAREFOOT WORLD ATLAS              | \$5              | \$78,715           | 10486                   |
| AAC             | LAMP WORDS FOR LIFE               | \$300            | \$68,932           | 230                     |
| Life/vocational | ITHOUGHTS (MINDMAP)               | \$13             | \$65,838           | 6403                    |

## CONCLUSIONS

- *The results of our initial exploratory analysis*
- Two distinct indicators of app success emerged within total downloads and revenue as metrics of success, one is characterized by highly specific apps (e.g. ACC apps or organizational apps) with a high initial install cost but relatively low overall downloads, the other a low install cost and less specialization (e.g. academics or entertainment).

| Global Price Data on 2,019 Apps |                 |
|---------------------------------|-----------------|
| # of Free apps                  | = 588 (29.12%)  |
| # of Paid apps                  | = 1431 (70.88%) |
| 25 <sup>th</sup> percentile     | = \$2.08        |
| 50 <sup>th</sup> percentile     | = \$3.16        |
| 75 <sup>th</sup> percentile     | = \$6.40        |
| 90 <sup>th</sup> percentile     | = \$31.31       |

- While not all apps were strictly associated with autism, the growth of apps in this area confirm previous statements that this is a rapidly growing area.
- All-time rating does not appear to greatly influence success, this is supported by a larger analysis of the general space by Pantanacce (2012). Patterns of reviewer score clusters (e.g. 4, 3, 4.5 and 3.5 rather than 3.7, 4.2) in combination with low total ratings might suggest that few users rate the apps they download.

### Limitations

- The key word/phrase search showed a tendency to score apps on multiple dimensions, while this accurately represented apps with more than one function, techniques that would further enhance this component of the system require further research.

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### \*Databases:

- 1) Autism speaks
- 2) Appy Autism
- 3) Touch Autism
- 4) Apps for autism – by Lois Jean Brady

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