

February 25, 2009

Actuarial Cost Estimate:
North Carolina Draft Bill
2009-LN-13 v2

An Act To Require Health
Benefit Plans to Provide
Coverage for Treatment of
Autism Spectrum Disorders

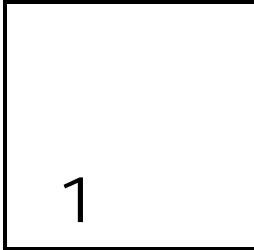
OLIVER WYMAN

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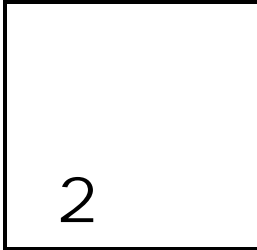


Background

Oliver Wyman Actuarial Consulting, Inc. (Oliver Wyman or We) has been engaged by Autism Speaks to develop a cost model in order to analyze and estimate the impact of mandated insurance benefits for Autism Spectrum Disorders (ASD) on insurance premiums. As part of this work, Oliver Wyman has developed a range of independent estimates of the impact on insurance premiums of the benefits mandated by North Carolina Draft Bill 2009-LN-13 v2 (Draft Bill 2009-LN-13 v2) dated January 15, 2009 which provides coverage for the diagnosis and treatment of autism spectrum disorders.

Oliver Wyman is a part of the Marsh & McLennan (MMC) family of companies. With over 60 members of the American Academy of Actuaries, Oliver Wyman is one of the largest actuarial practices in North America. Oliver Wyman's health practice, which has twelve credentialed actuaries, advises insurers, regulators, governments, interest groups, and others.

This report, along with its supporting analysis, was developed by Marc Lambright, a Principal and consulting health actuary in Oliver Wyman's Philadelphia office. Marc is a Fellow of the Society of Actuaries and a member of the American Academy of Actuaries and is professionally qualified to analyze the cost impact of Draft Bill 2009-LN-13 v2 and provide the estimates shown in this report. As part of Oliver Wyman's quality assurance process, the underlying analysis and this report were independently peer reviewed by another credentialed Oliver Wyman actuary.

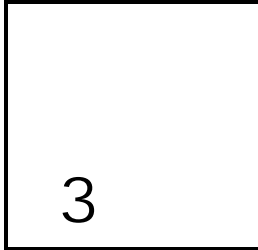


Scope and Limitations

The intent of this analysis is to provide a reasonable range of estimates for the insured costs of the mandated ASD benefits provided for in Draft Bill 2009-LN-13 v2 and the associated premium impact on the markets affected by Draft Bill 2009-LN-13 v2. This analysis makes no attempt to quantify potential offsetting cost savings associated with successful ASD treatment, nor does it include the any estimate of the potential reduction in other government expenditures associated with providing ASD services that might overlap with the benefits provided by this mandate. Therefore, the reader is cautioned that this report should only be considered a cost analysis, and not be misconstrued as a cost-benefit analysis when assessing the merit of Draft Bill 2009-LN-13 v2.

We note that cost estimates for autism mandates have varied widely state to state based on differences in the state specific mandates and the methods and assumptions used in estimating costs, though typically independent estimates show premium increases due to mandated autism benefits of less than 1%. The reason for this variability is that the largest component of the increase in costs under the Draft Bill 2009-LN-13 v2 mandated ASD benefits is for behavioral therapy, including Applied Behavior Analysis (ABA), which is almost universally excluded from health coverage, and therefore essentially no insured data exists for use in developing credible utilization and unit cost estimates for ABA.

The reader is cautioned that the ultimate cost of covering ABA benefits is uncertain; however, this analysis attempts to reflect the likely behavior of consumers, providers and insurers of ABA services in developing the assumptions underlying the cost estimates. Likewise, the additional costs for mandated medical services other than ABA are difficult to quantify. Insurance policies often cover some services for children diagnosed with an ASD, although the mandate could cause the costs for certain services to increase because ASD exclusions are common, and certain services that may have been denied or terminated following utilization review might be covered due to the mandate.



Description of Key Draft Bill 2009-LN-13 v2 Provisions and their Impact on Covered Benefits

Insurance Markets Covered by Mandate

The Bill states “*Every health benefit plan shall provide coverage for the diagnosis and treatment of autism spectrum disorders in individuals.*” In our modeling we are assuming that this means that the mandate applies to the individual, small group (2-50 employees) and large group (51+ employees) markets.

Covered Benefits

The mandate provides for the diagnosis and treatment of autism spectrum disorders, where treatment includes “... *the following care prescribed, provided, or ordered for an individual diagnosed with one of the autism spectrum disorders by a licensed medical doctor or a licensed psychologist who determines the care to be medically necessary:*

- a. Habilitative or rehabilitative care.*
- b. Pharmacy care.*
- c. Psychiatric care.*
- d. Psychological care.*
- e. Therapeutic care.”*

The inclusion of behavioral therapies, including applied behavioral analysis (ABA) in the definition of “*habilitative or rehabilitative care*” is especially important. The coverage of behavioral therapies, including ABA has the most significant impact on cost of any mandated service. For the purpose of this report, when referring to ABA, assume that this encompasses all behavioral therapies since ABA is the most widely accepted, and we would expect other approved behavioral programs to have similar costs.

ABA programs are marked by intensive therapy that may include 30-40 hours of therapy a week under the most intensive programs, though many programs would not utilize that level of resources. Key assumptions underlying our ABA cost estimates are outlined in Section 5.

Annual Maximum Behavioral Benefit of \$75,000

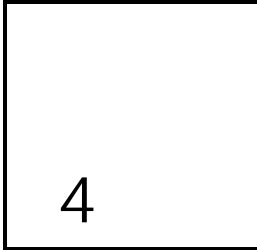
The annual coverage maximum is important as it has the effect of capping costs for the heaviest users of ASD services. From a practical standpoint, this would generally apply to children whose therapy includes an intensive ABA program.

Maximum Age for Benefits

The Bill does not contain any language that limits the ages of insureds that may receive covered ASD services.

Medical Necessity and Treatment Review

The bill does allow for utilization review by specifically stating: *“a health benefit plan shall have the right to request a review of that treatment not more than once every 12 months unless the insurer and the individual's licensed medical doctor or licensed psychologist agrees that a more frequent review is necessary.”* This is important as insurers will develop protocols to review treatments and manage care which will limit unnecessary treatments if reviews are done appropriately.



Modeling Methodology

The following outlines the general modeling methodology used to develop the cost estimates. Estimates were developed both on a per member per year basis, and as a percentage of average annual premiums as shown in Section 6. Details of key assumptions are discussed in Section 5 and illustrated graphically in the exhibits shown in Appendix 1.

Modeling Perspective

In general, the model was developed to produce costs under the assumption that sufficient providers would be available to meet the demand for autism services, especially with regard to ABA services. It also assumes that there would be sufficient awareness of autism and motivation (primarily by parents) to seek treatment so that the diagnosis and treatment of ASDs would be more in line with CDC prevalence estimates. We would expect that it would take at a minimum several years for both the supply of providers to meet the demand for mandated ASD services and for parents of autistic children to aggressively seek diagnosis and treatment of their children's disorders.

In spite of these real limitations that will likely limit short-term costs associated with mandated autism benefits, we feel that it is appropriate from a public policy perspective to look at the costs from a longer term perspective and assume that both awareness of ASDs will increase and that supply and demand for ASD services would eventually be in balance. We have developed our estimates with this in mind.

In the near term we would note that the supply of ABA service providers, specifically credentialed Board Certified Behavior Analysts (BCBAs) and Board Certified Associated Behavior Analysts (BCaBAs) would not be sufficient to meet the demand for ABA programs if ABA benefits are mandated. There are currently approximately 61¹ certified BCBAs and BCaBAs in North Carolina, which translates to about one certified

¹ BACB Certificant Registry: http://www.bacb.com/cues/frame_about.html. Accessed January 2009.

behavioral analyst per every 243 individuals 21 years old or younger treated for ASD in North Carolina. While it is true that not all autistic children will have an ABA program, it is also true that behavioral analysts provide services to individuals other than autistic children. It is reasonable to conclude that demand for ABA services, at least initially, would far exceed supply should health care coverage similar to that mandated by Draft Bill 2009-LN-13 v2 become typical.

It is also instructive to look at some of the limited evidence available related to actual costs of ABA mandated benefits in other states. Aetna noted in December 2008 that it had tracked the cost of the autism mandate in Texas for its first year of existence and found that it increased costs for policyholders who filed autism-related claims by \$379 a month. A total of 235 policy holders had filed autism claims in the state as of the time the data was released. At that time, the company had not decided whether to pass those costs on to the policyholders because the cost of the mandate might change after the first year.² While this is only first year experience for a single insurer, it illustrates that initial mandate costs are likely low. Aetna's Texas block of business is quite large (approximately \$1.5 - 2.0 billion in premium³), so the statistics provided indicate a mandate cost of less than 0.1% of premium.

General Modeling Process

The modeling process employed to develop our cost estimates was as follows:

1. Assumed treated prevalence for the United States is 1 in 150 based on the CDC's estimate of ASD prevalence in the United States.
2. Prevalence rates by diagnostic subtype (autistic disorder, PDD-NOS, Asperger's Syndrome) were estimated separately as diagnosis patterns and service utilization could reasonably be expected to vary by diagnostic subtype.
3. The percentage of children diagnosed by age for each diagnostic subtype was estimated so that the average ages of diagnosis implicit in the modeling are consistent with publicly available age at diagnosis statistics⁴.
4. The percentage of diagnosed children who could be expected to have an ABA program was estimated for each age based on assumptions regarding how many children would start a program and typical program continuance.
5. A distribution of the number of annual hours for ABA by age was developed based on ABA provider input and an assumption that utilization review by insurers would impact utilization to some degree.
6. Based on the assumed treatment prevalence, likelihood of having an ABA program, assumed distribution of ABA program hours, and estimated ABA program cost per

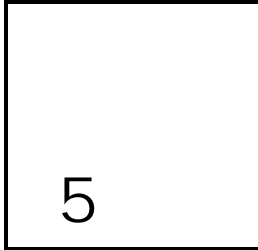
² Lawmaker: Oklahoma autism bill has momentum. Associated Press. December 4, 2008. <http://newsok.com/article/3327594> accessed January 2009.

³ NAIC Annual Statements for 2007.

⁴ IAN database. <http://dashboard.ianexchange.org/StateStatsAdvanced.aspx?A1=VA&ADU=T>. Accessed January 2009.

hour of therapy, ABA cost estimates by age were developed and adjusted to reflect the impact of the annual \$75,000 cap.

7. Non-ABA costs were estimated based upon studies of medical costs for ASD children and judgment regarding the increase in costs that could be expected due to the mandated benefits.
8. Based on Census demographic data and the cost estimates for mandated ASD services by age as outlined in 1-7 above, an annual cost per covered individual was developed.
9. The cost of services was increased to reflect administrative and other insurer costs or profit charges.
10. The estimated size of the covered market was developed based on Census, Medical Expenditure Panel Survey (MEPS) enrollment and premium information for North Carolina, and Kaiser Family Foundation coverage data. These assumptions are further documented in the following section.
11. The cost of the mandated services per covered person and as a percentage of premiums were calculated based on the model cost estimates and market data.



Summary of Key Assumptions

Key assumptions underlying the cost estimates for the mandated benefits are summarized in this section. Appendix 1 further illustrates these assumptions.

Treated Prevalence and Age at Diagnosis

Overall treated prevalence is based on the 2007 CDC⁵ study estimating United States ASD prevalence of 1 in 150. Prevalence by diagnostic subtype estimated based on an academic study published in the American Journal of Psychiatry⁶.

As noted in the previous section, the percentage of children diagnosed by age for each diagnostic subtype was estimated so that the average age of diagnosis implicit in the modeling is consistent with publicly available age at diagnosis statistics.

The base model treated prevalence and age at diagnosis assumptions for North Carolina are shown below:

<u>North Carolina Prevalence</u>		
<u>Diagnostic Subtype</u>	<u>Ultimate Prevalence</u>	<u>Average Age of Diagnosis</u>
Autistic Disorder	1 in 450	3
PDD-NOS	1 in 300	3
Asperger's	1 in 900	6
All ASD	1 in 150	

⁵ Centers for Disease Control. Morbidity and Mortality Weekly Report. February 9, 2007.

⁶ Fombonne, E. and S. Chakrabarti. American Journal of Psychiatry. June 2005.

ABA Program Utilization and Cost

ABA Program Utilization by Age

ABA programs require a significant commitment from affected children, as well as their families. It is likely that a significant number of ASD children will not have an ABA program regardless of the availability of a provider. For this reason, we have assumed that two-thirds of diagnosed children will begin an ABA program. ABA programs are generally geared towards addressing deficits in younger children and are generally not intended to be continued indefinitely. For this reason, we have assumed that no programs would terminate prior to school age, that a large percentage of ABA programs would terminate at ages six and seven when an autistic child could be expected to enter elementary school, and thereafter programs would terminate gradually until only a small percentage of children have ABA programs in their teenage years. Programs could be expected to terminate if a child has experienced sufficient progress so that a program is no longer necessary, or if the insurer or family sees no progress, as well as for other reasons.

The assumed percentage of children diagnosed with ASD that have an ABA program is shown in the table below:

% of Diagnosed Children w/ ABA	
Under 6	66.7%
6	50.0%
7	33.3%
8	22.2%
9	14.8%
10	9.9%
11	6.6%
12	4.4%
Ages 13 to 21	3.3%

ABA Program Annual Number of Hours

In developing the assumed annual ABA program hours, we discussed typical ABA programming with ABA providers, and reviewed some benefit materials from one of the few large self-insured employers who offers ABA benefits. For three age bands, we developed a distribution of expected hours that resulted in the annual averages shown in the table below.

Average ABA Program Hours	
Ages Under 8	1,500
Ages 8 to 12	671
Ages 13 to 21	401

The general assumption is that pre-school aged children will have programs for 20 to 40 hours a week, averaging about 30 hours a week. This time will be reduced by roughly half by age eight when children would be expected to be in school and the school system would be required to provide services during the school day, and then would be reduced again at age 13 as the child ages and ABA programs would be expected to be less time consuming and address a smaller number of behavioral deficits.

Cost per Hour of ABA Service

In developing the costs per hour, we reviewed ABA program staffing information and ABA provider wage and overhead cost assumptions. We developed an average cost for the entire United States and then adjusted this for North Carolina, based on Bureau of Labor Statistics⁷ health care wage data. The resulting average cost per hour of ABA therapy in North Carolina is \$44.52.

Other (than ABA) Medical Costs

Based on several studies⁸, we estimated that children with ASDs had costs approximately three times the average for non-inpatient medical services under current benefit programs. It is also clear that the mandate would mean that services that an insurer could currently deny or exclude would now be covered. In our base estimate, we assumed that the mandate would result in additional insured medical costs equal to the current level of covered non-inpatient costs for services to children under 23 diagnosed with an ASD. We also noted that ASD costs typically decrease as children age, so we reduced costs for covered dependents ages 23 and over which would also take into account that many children with an ASD can become independent adults and would cease to be covered by their parents' insurance policies.

Administrative Costs

Typically, medical claims costs could be expected to be 80 to 90% of premiums, meaning 10 to 20% of premiums are available for administration, profit, or other costs, often collectively referred to as "retention." We have estimated the incremental retention charge to be 15% of premium under our base assumptions.

North Carolina Market Data

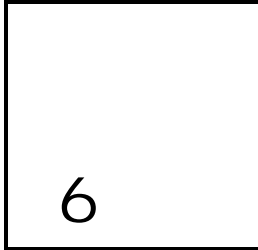
The MEPS survey provides average premiums, enrollees, offer rates, take-up rates, and self-insured percentages by employer size for healthcare coverage sponsored by privately insured employers. From this data we can estimate the size of the privately insured small group, insured large group, and self-insured markets. State specific premium data for North Carolina was available for 2006⁹, so we trended this based on average recent employer premium increases provided from the Kaiser Family Foundation HRET¹⁰ survey to estimate the 2009 average annual premium per member necessary to compute the cost of mandated benefits as a percentage of annual premiums.

⁷ BLS wage data. <http://www.bls.gov/guide/geography/wages.htm> accessed January 2009.

⁸ Mandell, Cao, Ittenbach, & Pinto-Martin, 2006. Croen, Najjar, Ray, Lotspeich, & Bernal, 2006. Liptak, Stuart, & Auinger, 2006.

⁹ MEPS state survey data. http://www.meps.ahrq.gov/mepsweb/data_stats/state_tables.jsp?regionid=-1&year=-1. Accessed January 2009.

¹⁰ Kaiser Family Foundation and Health Research Educational Trust. Employer Health Benefits- 2008 Annual Survey.



Cost Estimates

Base Cost Estimate

The table below summarizes the mandate costs and impact on small and large group premiums under the base assumptions outlined in Section 5. The base estimate is that the long-term cost of the mandated benefits provided by Draft Bill 2009-LN-13 v2 would be about 0.99% of insured premiums, though this cost would likely initially be lower in the years immediately following the passage of the mandate due to a limited supply of ABA therapy providers.

	Market			
	Individual	Small Group	Large Group	All
Covered Persons	431,000	652,000	879,000	1,962,000
Average Premium per Person	\$3,100	\$4,000	\$3,600	\$3,623
Annual Mandate Claim Cost per Covered Person	\$30.60	\$30.60	\$30.60	\$30.60
Claim Cost as a Percentage of Premium	0.99%	0.77%	0.85%	0.84%
Estimated Premium Increase with Admin @ 15%	\$36.00	\$36.00	\$36.00	\$36.00
Premium Increase as a Percentage of Premium	1.16%	0.90%	1.00%	0.99%

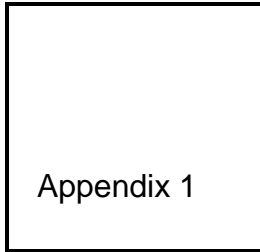
Scenario Estimates

As discussed in Section 1, very little insurance data exists that can be used to directly estimate the costs of ABA benefits mandated by Draft Bill 2009-LN-13 v2. This causes uncertainty in developing actuarial assumptions and cost estimates. Due to this uncertainty, it is useful to develop cost estimates for additional scenarios. The cost estimate outlined in this report is long-term and assumes that ABA programs will be undertaken by a larger percentage of children than experience for current programs has indicated. It is reasonable to conclude that this would be a conservative assumption, and on the high-end of what might be expected. A reasonable range of the long-term impact of the mandated Draft Bill 2009-LN-13 v2 benefits is that premiums would increase 0.60% to 1.00%. Based on experiences in other states, it is also reasonable to assume that the short-term costs would be lower.

Individual Market Comments

In developing the individual market cost estimates, we reviewed North Carolina rating rules and did not note any specific regulations where the mandated benefits could be expected to lead to a significant change in the risks insured in the individual market. Due to the limited rating restrictions, coverage would likely be expensive for families that have a member with ASD.

Carrier pricing strategies and the manner in which the insurance department would regulate rates for ASD coverage is difficult to ascertain at this time, however, it is reasonable to assume that insurers would price individual insurance coverage for applicants with ASD conservatively to mitigate the financial risk associated with covering individuals with high expected medical costs.



Cost Assumptions – Illustrative Exhibits

EXHIBIT I - SUMMARY OF BILL DRAFT 2009-LN-13 v2 ASSUMPTIONS AND COSTS

State	North Carolina	Key Assumptions:		
		United States Prevalence		% of Diagnosed Children w/ ABA
Mandate Market		Diagnostic Subtype	Ultimate Prevalence	Average Age of Diagnosis
Individual	Yes	Autistic Disorder	1 in 450	3
Small Group	Yes	PDD-NOS	1 in 300	3
Large Group	Yes	Asperger's	1 in 900	6
Self-Insured (ERISA)	No	All ASD	1 in 150	
State and Local Govt	No			
Age Limits for Autism Benefits		North Carolina Prevalence Adjustment:	1.00	
Minimum	0			
Maximum	40			
Additional Annual Medical Costs for Non ABA Services		North Carolina Prevalence		
All Ages \$	3,700	Diagnostic Subtype	Ultimate Prevalence	Average Age of Diagnosis
Ages 23 and over \$	1,850	Autistic Disorder	1 in 450	3
		PDD-NOS	1 in 300	3
		Asperger's	1 in 900	6
		All ASD	1 in 150	
Annual Limits by Covered Service				
	Hours Limit	Max Hours	Dollar Limit	Max \$s
ABA	No	-	Yes	\$75,000
				Cost per ABA Hour: \$44.52

Market	Coverage Estimates			Costs Excluding Administrative Expense			Premium Increase including Admin @ 15%		
	Number of Persons Covered	Premium (Per Person)	Total Premium	Costs	Costs (% of Premium)	Cost (Per Covered Person)	Incremental Premium	Premium Increase %	Annual Increase per Covered Person
Individual	431,000	\$ 3,100	\$ 1,336,100,000	\$ 13,188,600	0.99%	\$ 30.60	\$ 15,516,000	1.16%	\$ 36.00
Small Group	652,000	4,000	2,608,000,000	19,951,200	0.77%	30.60	23,472,000	0.90%	36.00
Large Group	879,000	3,600	3,164,400,000	26,897,400	0.85%	30.60	31,644,000	1.00%	36.00
Self-Insured (ERISA) State, Local and Federal									
Total	1,962,000	\$ 3,623	\$ 7,108,500,000	\$ 60,037,200	0.84%	\$ 30.60	\$ 70,632,000	0.99%	\$ 36.00

Exhibit II - Treated Prevalence by Age

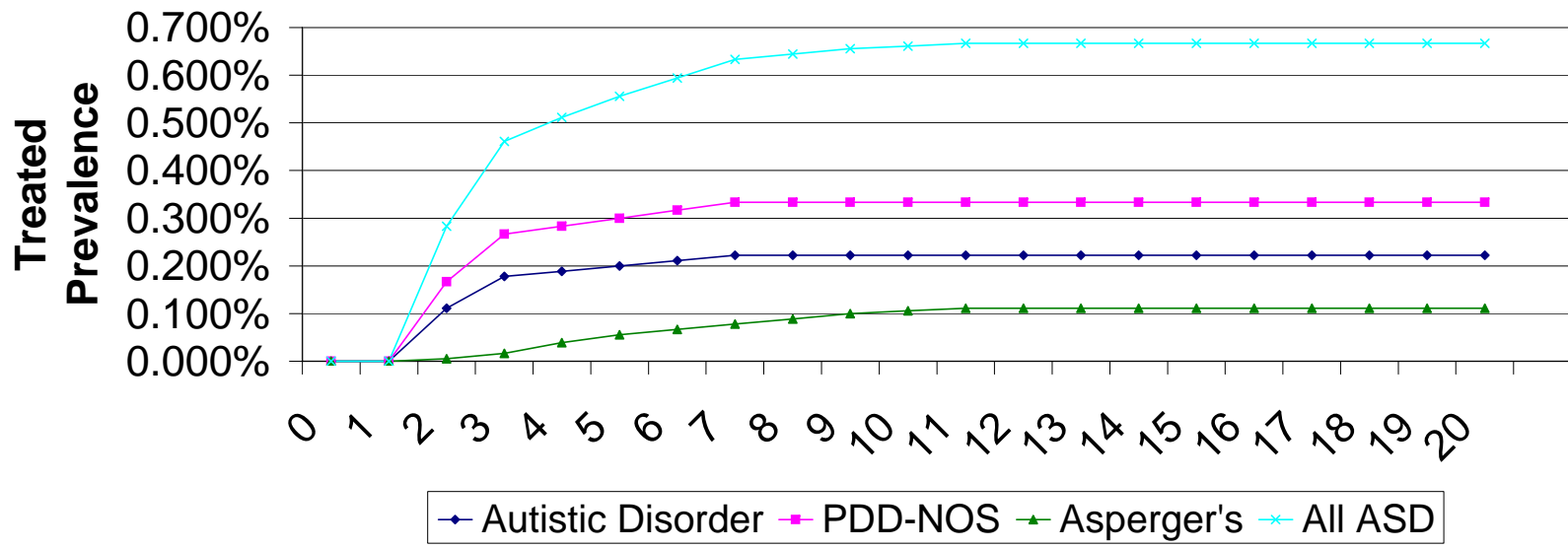


Exhibit III - Annual Cost Per Diagnosed/Treated Child

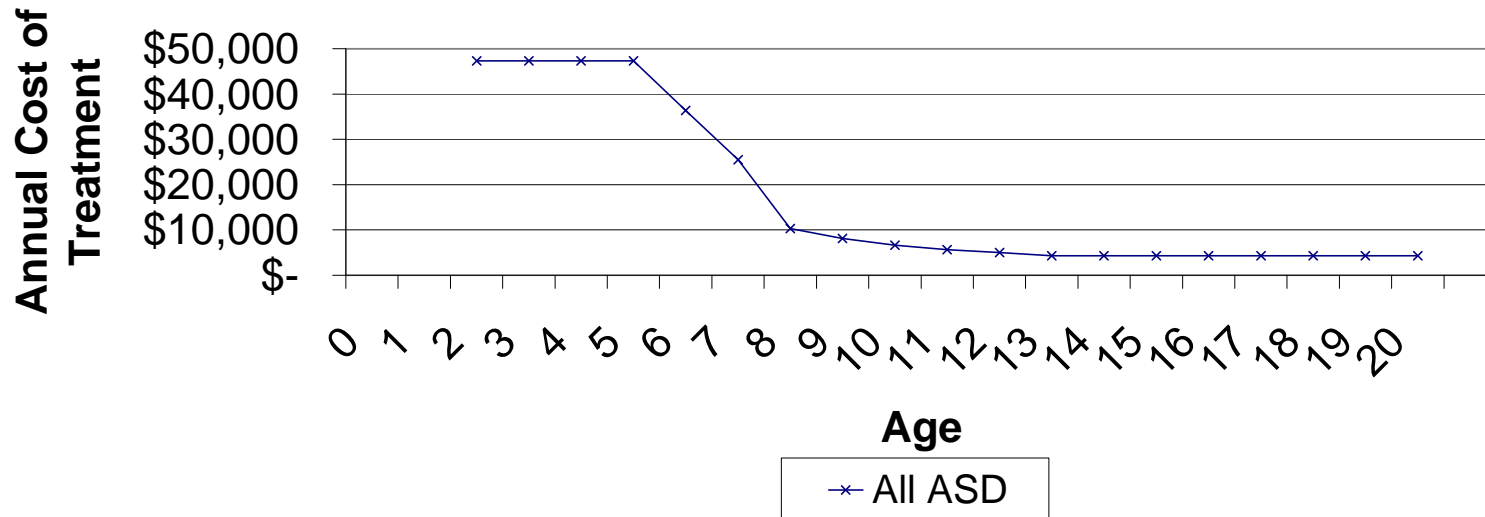


Exhibit IV - Annual Cost Per Autistic Child

(Includes both Diagnosed and Undiagnosed Children)

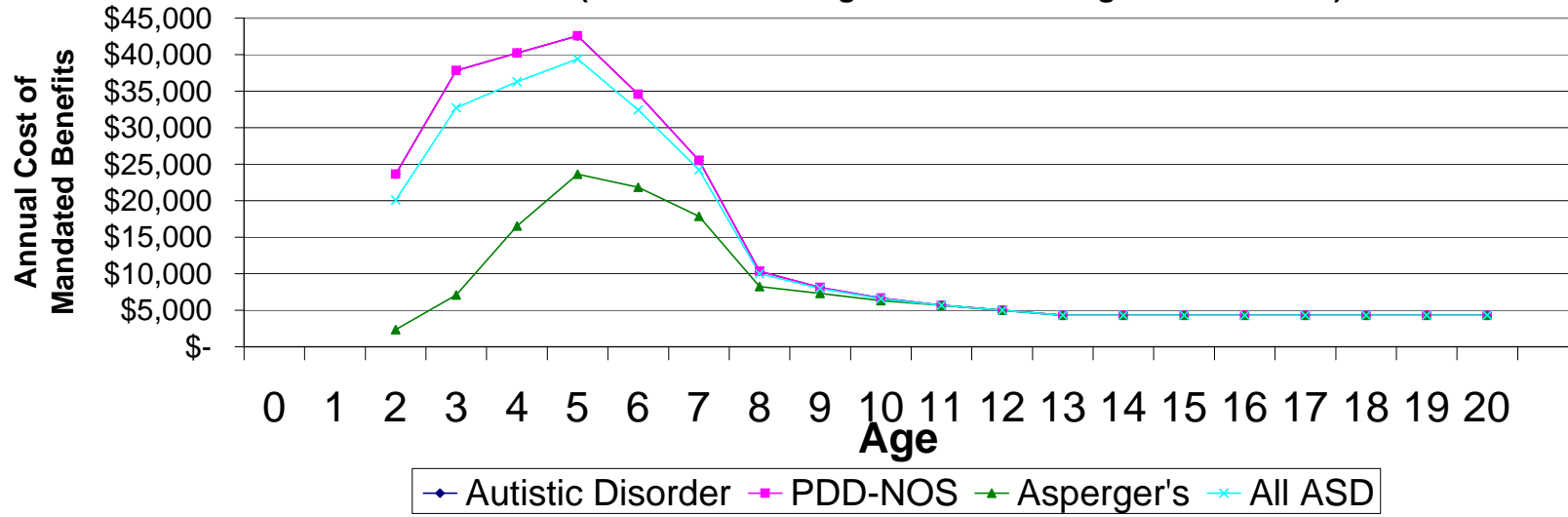


Exhibit V - ABA Utilization vs. Treated Prevalence

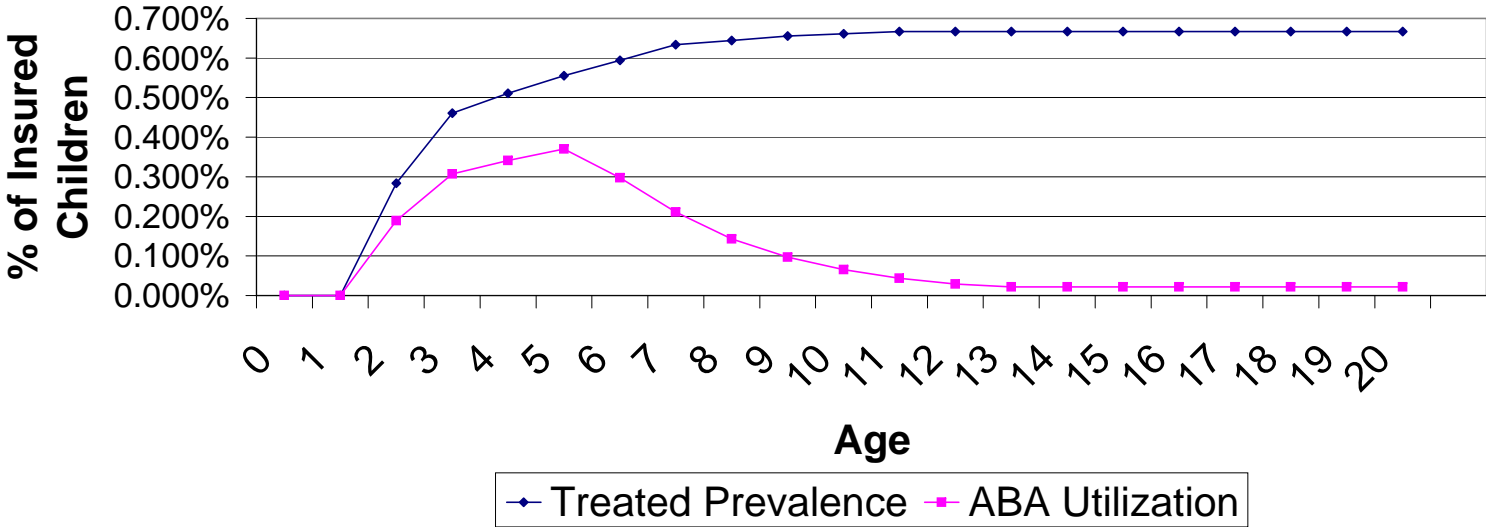
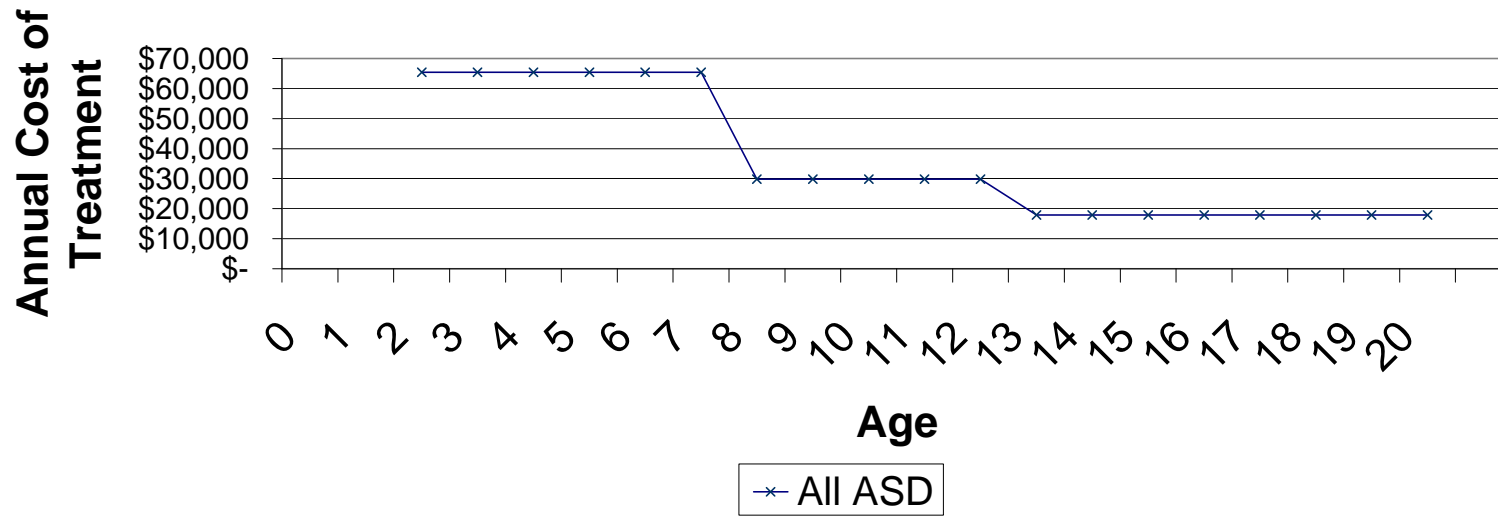


Exhibit VI - Annual Cost per Child With ABA Program



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