



Lyra Health Cost Efficiency Analysis

The Impact of Lyra EAP Services on Employer Medical Plan Spend in 2018 and 2019

September 2021

Preparation of This Report

This report has been prepared to present Aon's analysis of Lyra Health (Lyra)'s impact on its customers' medical plan spend related to treating mental health conditions and conditions other than mental health. The analysis was commissioned by Lyra Health.

In conducting the analysis, Aon has relied on detailed medical and pharmacy claims, membership, and EAP session information provided by Lyra. While we cannot verify the accuracy of all this information, the supplied information was reviewed for consistency and reasonability. As a result of this review, we have no reason to doubt the substantial accuracy of the information and believe that it has produced appropriate results. Please refer to the last section of the report for data limitation disclosures.

Aon's professional services to no in any case include legal, investment, or accounting services and Aon is not a fiduciary to your plans. This analysis has been conducted in accordance with generally accepted actuarial principles and practices, including the applicable Actuarial Standards of Practice as issued by the Actuarial Standards Board. The methods used in this report are described in the Data Sources and Methodology sections of this report.

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September 2021

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Executive Summary

Aon conducted an actuarial analysis of four Lyra customers' medical and prescription drug spend incurred in 2018 and 2019 representing approximately 40,000 Lyra Employee Assistance Program (EAP) eligible members. The analysis utilized Aon's member-level Cost Efficiency Measurement (CEM) methodology comparing the experience of members who utilized Lyra services (Lyra-engaged members) to that of a control group composed of Lyra-eligible members with matching geography, demographics and medical and mental health comorbidities for the same time periods.

In 2018 and 2019, 7.0% and 9.2% of eligible members engaged with Lyra via EAP sessions, respectively. Compared to the matched control group of members not utilizing EAP services, Lyra-engaged members had \$2,297 lower medical and prescription drug spend per-participant-per-year (PPPY) in 2018, and \$2,301 lower spend PPPY in 2019. Matched control group members have identical mental health conditions diagnosed via the medical benefit as the Lyra-engaged members, whose mental health conditions were identified via both Lyra EAP therapy session impressions and the medical benefit.

Table 1: Per Participant Per Year Spend Comparison by Service Categories

Service Categories	2018			2019		
	Lyra Utilizer PPPY	Non-Utilizer PPPY	Utilizer – Non-Utilizer	Lyra Utilizer PPPY	Non-Utilizer PPPY	Utilizer – Non-Utilizer
Medical Non-Mental Health Claims	\$3,663	\$4,398	-\$735	\$4,509	\$5,095	-\$585
Prescription Drug Claims	\$1,180	\$1,476	-\$296	\$1,262	\$1,574	-\$312
Facility Mental Health Claims	\$275	\$289	-\$13*	\$166	\$360	-\$194
<i>Mental Health Spend in Inpatient Facility</i>	\$81	\$136	-\$55*	\$70	\$174	-\$104
<i>Mental Health Spend in Outpatient Facility</i>	\$194	\$152	\$42*	\$96	\$186	-\$89
Professional Mental Health Claims	\$258	\$1,511	-\$1,253	\$284	\$1,495	-\$1,211
Total Allowed Claims	\$5,377	\$7,674	-\$2,297	\$6,222	\$8,523	-\$2,301

* Indicated differences in cost between Lyra utilizers and the control group not statistically significant

Approximately half of the total cost reduction (\$1,211 in 2019) was contributed by therapy services shifting from the medical benefit to Lyra's EAP services. Lyra-engaged members utilized 11.9 Lyra sessions per member per year, compared to 6.9 mental health office visits per member per year for control group members under their medical benefit (see Table 2). The remaining claims reductions were driven by improvements in mental health-related facility spend, non-mental health-related medical spend, and prescription drug spend.

Table 2: Utilization Per Member Per Year by Mental Health Visit Type

Mental Health Visit Type	2018			2019		
	Lyra Utilizer	Non-Utilizer	Utilizer – Non-Utilizer	Lyra Utilizer	Non-Utilizer	Utilizer – Non-Utilizer
Medical Benefit Mental Health-Related Visits	1.2	7.4		1.4	6.9	
Lyra EAP Sessions	12.7	0.0		11.9	0.0	
Total Mental Health Visits	13.9	7.4	6.5	13.3	6.9	6.4

Key findings based on the measurement include:

- Lyra-engaged members incurred significantly lower professional mental health claims under the health plan with these services shifting to EAP by \$1,253 PPPY and \$1,211 PPPY in 2018 and 2019 respectively.
- In 2018 and 2019, non-mental health related medical spend was lower for Lyra-engaged vs non-engaged patients by \$735 PPPY and \$585 PPPY , respectively.
- In 2019, additional cost reduction of \$104 PPPY and \$89 PPPY can be observed for mental health-related inpatient and outpatient facility claims spend among Lyra-engaged members.
 - o Lyra-engaged members had lower spend on all-cause Emergency Department (ED) visit by \$29 PPPY in 2018 and by \$49 PPPY in 2019, driven by less frequent utilization.
- In 2019, Lyra-engaged members had lower pharmacy spend by \$312 PPPY, driven by lower utilization.
- Lyra-engaged members utilized Lyra EAP services more frequently than non-engaged members utilized mental health office visits under their medical benefit. In 2019, Lyra users had 11.9 EAP sessions per member, compared to 6.9 visits per member under the medical benefit. Similar trend can be observed in 2018.

This study evaluated the impact of the medical and pharmacy plan claims only. Aon did not analyze the costs of Lyra EAP services. A detailed description of the results, data and methodology used is included in this report.

Description of Customers Measured and Data Sources

Lyra Customer Data

Aon utilized detailed medical and pharmacy claims experience and corresponding eligibility data from four (4) Lyra customers for the following periods:

- 2018 incurred claims data with three (3) months runout.
- 2019 incurred claims data with three (3) months runout.

In addition, Lyra provided EAP sessions information for these customers during the experience period, which identifies:

- Members who have utilized Lyra EAP services and number of visits each member incurred.
- Diagnostic impressions for these Lyra-engaged members during EAP sessions, mapped to ICD-10 diagnosis codes. This was used to identify members' mental health conditions, in addition to their medical plan claims.

All records were fully de-identified and no personally-identifiable information or employer-identifiable information was received by Aon. The four Lyra customers included in this study are large multi-state employers with member counts ranging from 6,000 to 17,000. Customers represent different industries, including technology, manufacturing, consumer goods, and transportation. All four customers implemented Lyra EAP services prior to or at the start of the study's experience period of January 2018. The services Lyra provided included therapy, mental health coaching, and personalized medication prescribing.

Measurement Eligibility Restrictions

Eligibility restrictions were equally applied at the member level for all Lyra and control group members. To achieve robust matching and measurement, eligibility was restricted to:

- Members under age 65
- Members with at least eight (8) months of enrollment within a calendar year

Catastrophic Member Exclusion

Catastrophic claimants exceeding \$200,000 in allowed cost (medical and pharmacy combined) in a single year were excluded from the analysis in that year. Aon performed sensitivity testing evaluating higher and lower catastrophic limits. Higher limits were not supported by the available control population sample size resulting in incomplete cohort matching, while lower limits eliminate significant portions of eligible members and claims.

Establishing Control Group

Aon performed the CEM analysis using the following treatment and control groups:

- **Treatment group:** Lyra-engaged members (or Lyra Utilizers) – members with at least one recorded Lyra session in a given year.

- **Control group:** members of Lyra customers who did not utilize Lyra services (Non-Utilizers) with matching eligibility, geography, demographics, and exactly matched medical and mental health comorbidities for the same time periods.

The matched cohort comparison of the two groups allows for observational measurement of Lyra’s impact on employer healthcare spend, controlling for confounders observed in the medical plan and plan eligibility data. In 2018, 7.0% of Lyra-eligible members utilized Lyra services. Participation increased to 9.2% in 2019.

Table 3 summarizes key demographics comparisons between Lyra-engaged members and the non-utilizers prior to matching.

Table 3: Demographics Comparison (pre-matching)

Demographics	2018		2019	
	Lyra Utilizer	Non-Utilizer	Lyra Utilizer	Non-Utilizer
% Female	52.7%	42.6%	56.0%	43.0%
Average Age	31.1	27.3	31.4	27.2
Member Count	2,990	40,027	4,182	41,437
Engaged Members as % of Total Eligible	7.0%		9.2%	

Lyra-engaged members were on average four years older than those who did not engage with Lyra. A higher proportion of Lyra-engaged members were female, compared to those who did not utilize Lyra. Post-matching, the control group had identical demographic profiles to Lyra-engaged members.

Detailed Results

Lyra Utilizers (Treatment Group): Lyra customer members with at least one recorded Lyra session in a given year.

Non-Utilizers (Matched Control Group): matched members in the Lyra customer population who did not utilize Lyra services during a calendar year.

PPPY (Per-Participant-Per-Year) differences in this report are on a per-Lyra-engaged member basis. These members accounted for 7% and 9.2% of total eligible members in 2018 and 2019, respectively.

PPPY Comparison by Benefit Component

Table 4 shows the cost comparison between Lyra-engaged members and their matched controls. In both years, Lyra-engaged members had significantly lower health plan claims costs in both medical and prescription drugs with a portion of services shifting to the EAP.

Table 4: PPPY Comparison by Benefit Components

Benefit Components	2018			2019		
	Lyra Utilizer PPPY	Non-Utilizer PPPY	Utilizer – Non-Utilizer	Lyra Utilizer PPPY	Non-Utilizer PPPY	Utilizer – Non-Utilizer
Medical	\$4,197	\$6,198	-\$2,001	\$4,959	\$6,949	-\$1,990
<i>Mental Health Spend</i>	\$534	\$1,800	-\$1,266	\$450	\$1,855	-\$1,405
<i>Non Mental Health Spend</i>	\$3,663	\$4,398	-\$735	\$4,509	\$5,095	-\$585
Prescription Drug	\$1,180	\$1,476	-\$296	\$1,262	\$1,574	-\$312
Total	\$5,377	\$7,674	-\$2,297	\$6,222	\$8,523	-\$2,301

Breaking down the medical spend, Lyra-engaged members saw lowered claims cost in mental-health related claims, as well as general medical claims. In 2018 and 2019, Lyra-engaged members had \$735 and \$585 lower cost in non-mental health related spend, respectively; the differences in both years were statistically significant.

Within the mental health-related spend, the majority of the cost reduction was driven by therapy services shifting from the health insurance’s professional mental health spend to Lyra’s EAP benefits. However, in 2019, additional cost reduction was observed for mental-health related facility spend in both inpatient and outpatient settings. 2018 results also showed Mental Health facility claims cost reduction, but results were not statistically significant. See table 5 for details.

Table 5: Mental Health Spend Detail

Service Categories	2018			2019		
	Lyra Utilizer PPPY	Non-Utilizer PPPY	Utilizer – Non-Utilizer	Lyra Utilizer PPPY	Non-Utilizer PPPY	Utilizer – Non-Utilizer
Professional Mental Health Spend	\$258	\$1,511	-\$1,253	\$284	\$1,495	-\$1,211
Mental Health Spend in Inpatient Facility	\$81	\$136	-\$55*	\$70	\$174	-\$104
Mental Health Spend in Outpatient Facility	\$194	\$152	\$42*	\$96	\$186	-\$89
Total Mental Health Spend	\$534	\$1,800	-\$1,266	\$450	\$1,855	-\$1,405

* Indicated differences in cost between Lyra utilizers and the control group not statistically significant

Comparisons by Mental Health Visit Type

Lyra-engaged members utilized therapy services more frequently under the EAP than non-engaged members did under the medical benefit. In 2019, Lyra participants completed 11.9 total EAP sessions per member, compared to 6.9 visits per member under the medical benefit. Similar trend can be observed in 2018.

Table 6: Utilization Per Member Per Year by Mental Health Visit Type

Mental Health Visit Type	2018			2019		
	Lyra Utilizer	Non-Utilizer	Utilizer – Non-Utilizer	Lyra Utilizer	Non-Utilizer	Utilizer – Non-Utilizer
Medical Benefit Mental Health -Related Visits	1.2	7.4		1.4	6.9	
Lyra EAP Sessions	12.7	0.0		11.9	0.0	
Total Mental Health Visits	13.9	7.4	6.5	13.3	6.9	6.4

Comparisons for Emergency Department Utilization

Lyra-engaged members had significantly lower claim spend for Emergency Department in 2019, driven by reduced member utilization. Results in 2018 were similar but not statistically significant.

Table 7: Emergency Department (ED) Spend and Utilization Detail

Emergency Department Detail	2018			2019		
	Lyra Utilizer	Non-Utilizer	Utilizer - Non-Utilizer	Lyra Utilizer	Non-Utilizer	Utilizer - Non-Utilizer
Mental Health ED PPPY Spend	\$9	\$27	-\$18	\$10	\$19	-\$9*
Non-Mental Health ED PPPY Spend	\$152	\$163	-\$11*	\$169	\$209	-\$40*
Total ED PPPY Spend	\$162	\$190	-\$29*	\$179	\$227	-\$49
Mental Health ED Utilization per 1,000 Mbrs	5.6	20.2	-14.6	6.7	11.5	-4.8
Non-Mental Health ED Utilization per 1,000 Mbrs	115.4	136.0	-20.6*	118.4	144.4	-26.0
Total ED Utilization per 1,000 Mbrs	121.0	156.2	-35.2	125.1	155.9	-30.8

* Indicated differences in cost between Lyra utilizers and the control group not statistically significant

Comparisons for Prescription Drugs

Lyra-engaged members had significantly lower generic drug spend in both years. Utilization across drug types contributed towards the cost reduction for Lyra-engaged members on prescription drug spend.

Table 8: Prescription Drug Spend and Utilization Detail

Prescription Drug Detail	2018			2019		
	Lyra Utilizer	Non-Utilizer	Utilizer - Non-Utilizer	Lyra Utilizer	Non-Utilizer	Utilizer - Non-Utilizer
Generic Drug PPPY Spend	\$188	\$284	-\$97	\$221	\$296	-\$75
Brand Drug PPPY Spend	\$388	\$457	-\$70*	\$313	\$346	-\$34*
Specialty Drug PPPY Spend	\$605	\$734	-\$130*	\$728	\$931	-\$203*
Total Prescription Drug PPPY Spend	\$1,180	\$1,476	-\$296	\$1,262	\$1,574	-\$312
Generic Drug Scripts per 1,000 Members	3,719.2	4,770.8	-1,051.6	4,034.6	5,067.6	-1,033.0
Brand Drug Scripts per 1,000 Members	792.1	815.2	-23.1*	489.7	530.8	-41.1*
Specialty Drug Scripts per 1,000 Members	73.8	74.2	-0.4*	108.3	125.8	-17.5*
Total Scripts per 1,000 Members	4,585.1	5,660.2	-1,075.1	4,632.6	5,724.2	-1,091.6

* Indicated differences in cost between Lyra utilizers and the control group not statistically significant

Comparison by Age Group

Table 9: PPPY Comparison by Age Group

Age Groups	2018				2019			
	Lyra Utilizer Count	Lyra Utilizer PPPY	Non-Utilizer PPPY	Utilizer - Non-Utilizer	Lyra Utilizer Count	Lyra Utilizer PPPY	Non-Utilizer PPPY	Utilizer - Non-Utilizer
1-18	164	\$2,848	\$6,899	-\$4,051	191	\$3,164	\$5,001	-\$1,836
19-29	1,122	\$3,990	\$5,723	-\$1,733	1,540	\$4,626	\$7,333	-\$2,707
30-39	1,162	\$6,127	\$8,886	-\$2,759	1,685	\$7,372	\$9,438	-\$2,066
40-64	343	\$8,535	\$8,818	-\$283*	467	\$8,506	\$9,580	-\$1,074*
Total	2,791	\$5,377	\$7,674	-\$2,297	3,883	\$6,222	\$8,523	-\$2,301

* Indicated differences in cost between Lyra utilizers and the control group not statistically significant

All age groups showed lower claim spend among Lyra-engaged members compared to the matched control group. Cost differences for members in age groups under 40 were statistically significant.

Methodology

This report compares the cost profiles between Lyra EAP service utilizers to that of a control group composed of eligible non-utilizing members at the same employers with closely matched geography, demographics and health and mental health comorbidities for the same time periods.

Member Matching and Control Group Derivation

Each member from the Lyra-engaged population for each Lyra customer was matched to the most similar member who did not utilize Lyra's EAP services for each year. The matching was based on the demographic, geographic and exact matching of diagnosed medical condition profile for each individual compared to eligible control members across each dimension.

- Members were matched by Age and Gender to the nearest available controls. Members ages 0 and 1 were always exactly matched on age, and a caliper of (+/-) 3 years was applied for other members.
- Members were only matched to other members with the exact same diagnosed medical conditions and combinations of conditions present. Members with no chronic conditions were always matched to controls with no chronic conditions present.
- The chronic condition indicators for each member were based on primary medical diagnostic codes according to the Chronic Condition Indicator and Clinical Classifications Software (CCS) developed by the AHRQ Healthcare Cost and Utilization Project (HCUP). Diagnostic Laboratory and Imaging claims were excluded from the development of the indicators. The set of chronic conditions used for member matching were selected based on the highest ranked explanatory power with respect to member allowed medical and pharmacy claims costs.

Health condition indicators used for patient matching:

- | | |
|--|---|
| ○ Asthma / COPD | ○ Metabolic and Nutritional Disorders |
| ○ Blood Disorders | ○ Migraine |
| ○ Cancer excluding skin cancer | ○ Multiple Sclerosis |
| ○ Diabetes | ○ Neurological Disorders |
| ○ Diabetes with Complications | ○ Osteoarthritis |
| ○ Esophageal / Upper GI Diseases | ○ Pregnancy and Labor Categories |
| ○ HIV infection | ○ Rheumatoid Arthritis and related diseases |
| ○ Cardiovascular Disease | |
| ○ Lower Back / Disc Diseases (including spondylosis) | |

- For Lyra-engaged members, mental health conditions were identified via both Lyra sessions and medical benefit claims; while non-utilizers had conditions identified via medical claims only.

The following mental health condition indicators were used in patient matching (in addition to the conditions listed on the previous page):

- Alcohol Abuse and Substance Abuse Disorders
- Anxiety and Adjustment Disorders
- Attention Deficit Disorders
- Mood Disorders

In identifying mental health conditions, a hierarchy at the member level was applied in order to minimize diagnostic coding overlap with members classified in the more severe condition only, when both were present: Mood disorders > Anxiety and Adjustment disorders, Mood disorders > Attention Deficit disorders.

- Members were matched to the closest geographical controls using the following proximity hierarchy:
 - 1st Preference: Within same Metropolitan Statistical Area (MSA) or Combined-MSA level: 69.2% of the members were matched locally in 2019.
 - 2nd Preference: Within same State: an additional 9.1% members were matched outside their MSA but within the same state in 2019.
 - 3rd Preference: National: Remaining 14.6% members where local MSA or State controls were not found were matched at the national level in 2019.

Similar geography matching results were observed for 2018. Select smaller MSAs were combined with adjacent large MSAs to improve local sample sizes.

Overall, 93.3% of all members were fully matched with high-quality controls in 2018 and 92.9% of all members were matched in 2019. The remaining members were dropped from the measurement due to insufficient data overlap and support where no appropriate controls could be identified in the non-engaged members. The unmatched members were typically patients with rare combinations of demographics and multiple chronic conditions. For members where multiple identical matches were found, the controls were selected at random from the identical match candidates.

Pre-and post-matching testing was performed on all matching variables confirming that post-matching standardized mean differences were minimized and confirming appropriate balance of the covariates between the Lyra-engaged members and the derived control groups.

Cost and Utilization Metrics

All measurements of cost and utilization metrics were derived from the detailed claims and Lyra session records of the matched members and calculated using identical methods for Lyra-engaged members and the matched controls. Pharmacy rebate data was not available and was not incorporated.

The costs of Lyra EAP services and EAP sessions was not available to Aon for this measurement.

Mental Health Claim Spend was classified as claims with a primary diagnostic code in the ICD10 F-series at the claim-line level.

All differences in cost between Lyra-engaged members and control groups were tested for statistical significance at the 95% confidence level using two-sample unequal variances t-tests. Unless otherwise noted in this report, results were statistically significant.

Limitations and Disclosures

The results in this study are based on observational data contributed by four of Lyra's employer customers. Results for other employers may differ due to socioeconomic, geographic, demographic, vendor, benefit level or other differences.

While member engagement with Lyra was not randomized, the member-level matching algorithms of this study present a rigorous normalization for risk exposure within a given plan year that avoids the use of external assumptions such as trend, geographical and demographic factors, while capturing the unique characteristics of Lyra members such as demographics, industry, and benefits offered within the control group.

Aon did not evaluate the costs of Lyra EAP services and EAP sessions.

Factors that could positively or negatively impact the cost comparisons that could not be controlled for in this study include:

- Unobserved confounders such as socioeconomic or cultural differences or job type differences that may impact outcomes or likelihood to engage in mental health therapy.
- Unobserved causes of engagement preference for mental health therapy services with Lyra vs Health Plan providers.
- Unobserved indications of a members' condition severity.
- Differences in claims administration, coding or quality of data provided.
- Differences in diagnostic rates and quality between Lyra providers and traditional mental health providers.

This study attempts to provide objective cost and utilization comparisons of Lyra customers compared to controls. Due to the small size of the individual customers and cohorts, some comparisons were limited in credibility as noted in the report.