

Enhancing Human Services Delivery Through Business Intelligence: A Comprehensive Review

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ABSTRACT

Social agencies focus on addressing the needs of vulnerable populations. To achieve this goal, they need to process applications and determine eligibility across programs accurately and on time. This paper covers how business intelligence tools and techniques can assist social agencies in enhancing the efficiency of social benefits delivery.

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Introduction

Business Intelligence (BI) includes tools and technologies for data collection, analysis, and presentation. Human services provide individuals and communities with healthcare, social assistance, housing, and employment benefits. In this data-driven world, BI can assist social agencies in improving service delivery and better decision-making, which will further help the agencies achieve better outcomes for Citizens.

This paper will cover how BI can help Health and Human Services gain valuable insight into clients' needs, program effectiveness, and operational efficiencies.

What is Business Intelligence

The key components of business intelligence can be categorized into three broad areas, collecting and storing data, analyzing the data, and presenting the data in an informative way.

- **Data Collection:** This cover collecting and storing different types of data (i.e., structured and unstructured) and from various sources (i.e., external and internal) in a centralized data warehouse. Stored data is then mapped to a standard schema and transformed to remove any conflicts.
- **Data Analysis:** Once clean data is available, it is used for data analysis. BI facilitates various types of data analytics. This enables the organization to drive information from the data, e.g., how many clients renew the benefits and when most renewals will be due. Is there a better way to manage renewals for clients due around the same time? etc. Data analysis helps in risk mitigation, innovation, and setting SMART goals for the organization.

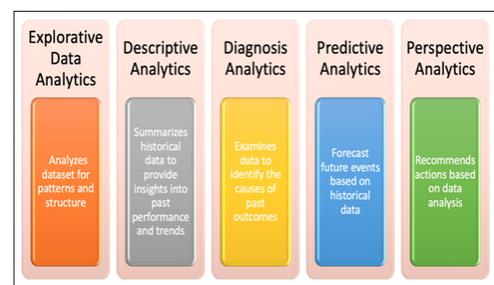


Figure 1: Data Analysis Types

- **Data Visualization:** BI provides an interactive dashboard for monitoring Key performance indicators (KPIs). This is a crucial component of BI as it allows management to see what is happening under the many data layers. Data visualization provides information in an easy-to-digest format through graphs and charts [1]. An interactive dashboard further enables the user to explore the different dimensions of the data. For instance, how many households are due for Medicaid renewal in a given month, and how many are due for SNAP and TANF renewal around the same time?

How BI can Help Human Services

BI can enable Human Services by providing deeper insight into Overall workload management and case processing.



Figure 2: Use of BI in Human Services

Case Processing

Social agencies need to determine program eligibility accurately and in a timely manner. Regulatory authorities like FNS audit and monitor performance based on factors like case and procedural error rates, application timeliness, etc.

Business intelligence can help provide opportunities to leverage centralized data gathered from external and internal sources. For instance, one common error is not correctly collecting wages and income data from all required sources. BI can enable the caseworker by providing a centralized repository of this data. With the help of machine learning and other emerging technologies, real-time assistance can be provided to caseworkers to validate the discrepancies in the available data. This centralized data will further help in auditing.

Workload Dashboard

BI provides an interactive dashboard, allowing managers and executives to understand the performance of social agencies, programs, service centers, and users [2]. Managers can view (graphical view) the movement/progress of the workload and delays, if any, across service centers. BI can further enable the PMs/Section chiefs if there is a diversion from configured standard paths/KPIs. For example, A service center is underperforming compared to other service centers and set KPIs.

Fraud and Risk Management

BI predictive analysis with machine learning can help social agencies proactively measure fraud and other risks associated with a case. For instance, how frequently has the client requested a reissue of benefit cards? Is the client part of more than one household and receives multiple benefits, etc?

Resource Management

Social agencies are assisting the vulnerable population, and the demand for social assistance fluctuates. Forecasting will help the management gain deeper insight into the upcoming workload. BI can assist executives and managers in predictive analysis of the workload, e.g. comparative analysis of last year's workload with the current year, the Prediction of a High workload period based on the past 2-3 years' data.

Who Gains from BI within Human Services

BI supports various levels of management in enhancing routine operations and strategic decisions.

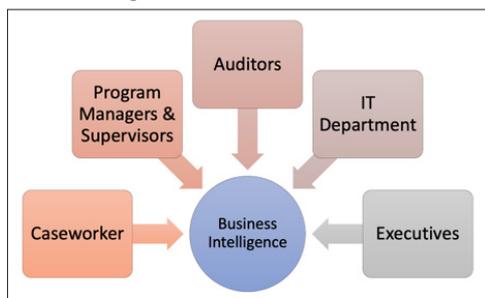


Figure 3: Beneficiaries of Business Intelligence in Human Services

The caseworker and supervisor can check the accuracy of the case processing. BI combined with machine learning can assist them in complex case processing. BI can help identify high-priority, high-risk cases based on past trends. And assist Auditors in case reviews.

Program managers and supervisors can generate ad-hoc reports using the interactive dashboard. There is no or less dependency on technical staff, enabling the IT department to invest resources in more complex projects.

Conclusion

In conclusion, Business intelligence helps optimize social agency operations and enables the better management of social benefits. It provides insight into the data layers to help drive decision-making, resource allocation, Fraud, and risk management.

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