* Describe the deployment and feedback phases of the data science methodology.
* Judge when a model is ready to deploy.
* Devise a plan to elicit feedback from stakeholders involved in the data analysis process.
* Examine how feedback helps to refine a model.
* Assess the performance and impact of a data model.
* Explain why deployment and feedback should be an iterative process.
* Devise a business problem to be solved with data related to either email, hospitals, or credit cards.
* Demonstrate your understanding of data science methodology by applying it to a given problem. Construct responses that address each phase of the CRISP-DM based on a chosen business problem.
* Evaluate your peers’ final projects using the given rubric. Provide constructive feedback and offer ideas and suggestions that fellow learners can apply right away.

Deployment

Welcome to Data Science Methodology 101 From Deployment to Feedback - Deployment!

While a data science model will provide an answer, the key to making the answer relevant

and useful to address the initial question, involves getting the stakeholders familiar

with the tool produced.

In a business scenario, stakeholders have different specialties that will help make

this happen, such as the solution owner, marketing, application developers, and IT administration.

Once the model is evaluated and the data scientist is confident it will work, it is deployed

and put to the ultimate test.

Depending on the purpose of the model, it may be rolled out to a limited group of users

or in a test environment, to build up confidence in applying the outcome for use across the board.

So now, let's look at the case study related to applying Deployment"

In preparation for solution deployment, the next step was to assimilate the knowledge

for the business group who would be designing and managing the intervention program to reduce

readmission risk.

In this scenario, the business people translated the model results so that the clinical staff

could understand how to identify high-risk patients and design suitable intervention

actions.

The goal, of course, was to reduce the likelihood that these patients would be readmitted within

30 days after discharge.

During the business requirements stage, the Intervention Program Director and her team

had wanted an application that would provide automated, near real-time risk assessments

of congestive heart failure.

It also had to be easy for clinical staff to use, and preferably through browser-based

application on a tablet, that each staff member could carry around.

This patient data was generated throughout the hospital stay.

It would be automatically prepared in a format needed by the model and each patient would

be scored near the time of discharge.

Clinicians would then have the most up-to-date risk assessment for each patient, helping

them to select which patients to target for intervention after discharge.

As part of solution deployment, the Intervention team would develop and deliver training for

the clinical staff.

Also, processes for tracking and monitoring patients receiving the intervention would

have to be developed in collaboration with IT developers and database administrators,

so that the results could go through the feedback stage and the model could be refined over

time.

This map is an example of a solution deployed through a Cognos application.

In this case, the case study was hospitalization risk for patients with juvenile diabetes.

Like the congestive heart failure use case, this one used decision tree classification

to create a risk model that would serve as the foundation for this application.

The map gives an overview of hospitalization risk nationwide, with an interactive analysis

of predicted risk by a variety of patient conditions and other characteristics.

This slide shows an interactive summary report of risk by patient population within a given

node of the model, so that clinicians could understand the combination of conditions for

this subgroup of patients.

And this report gives a detailed summary on an individual patient, including the patient's

predicted risk and details about the clinical history, giving a concise summary for the

doctor.

This ends the Deployment section of this course.

Thanks for watching!

(Music)

# Feedback

Welcome to the Data Science Methodology 101 From Deployment to Feedback - Feedback!

Once in play, feedback from the users will help to refine the model and assess it for

performance and impact.

The value of the model will be dependent on successfully incorporating feedback and making

adjustments for as long as the solution is required.

Throughout the Data Science Methodology, each step sets the stage for the next.

Making the methodology cyclical, ensures refinement at each stage in the game.

The feedback process is rooted in the notion that, the more you know, the more that you'll

want to know.

That's the way John Rollins sees it and hopefully you do too.

Once the model is evaluated and the data scientist is confident it'll work, it is deployed

and put to the ultimate test: actual, real-time use in the field.

So now, let's look at our case study again, to see how the Feedback portion of the methodology is

applied.

The plan for the feedback stage included these steps:

First, the review process would be defined and put into place, with overall responsibility

for measuring the results of a "flying to risk" model of the congestive heart failure

risk population.

Clinical management executives would have overall responsibility for the review process.

Second, congestive heart failure patients receiving intervention would be tracked and

their re-admission outcomes recorded.

Third, the intervention would then be measured to determine how effective it was in reducing

re-admissions.

For ethical reasons, congestive heart failure patients would not be split into controlled

and treatment groups.

Instead, readmission rates would be compared before and after the implementation of the

model to measure its impact.

After the deployment and feedback stages, the impact of the intervention program on re-admission

rates would be reviewed after the first year of its implementation.

Then the model would be refined, based on all of the data compiled after model implementation

and the knowledge gained throughout these stages.

Other refinements included: Incorporating information about participation

in the intervention program, and possibly refining the model to incorporate

detailed pharmaceutical data.

If you recall, data collection was initially deferred because the pharmaceutical data was

not readily available at the time.

But after feedback and practical experience with the model, it might be determined that

adding that data could be worth the investment of effort and time.

We also have to allow for the possibility that other refinements might present themselves

during the feedback stage.

Also, the intervention actions and processes would be reviewed and very likely refined

as well, based on the experience and knowledge gained through initial deployment and feedback.

Finally, the refined model and intervention actions would be redeployed, with the feedback

process continued throughout the life of the Intervention program.

This is the end of the Feedback portion of this course.

Thanks for watching!

(Music)

# Course Summary

Welcome to Data Science Methodology 101 Course Summary!

We've come to the end of our story, one that we hope you'll share.

You've learned how to think like a data scientist, including taking the steps involved

in tackling a data science problem and applying them to interesting, real-world examples.

These steps have included:

forming a concrete business or research problem, collecting and analyzing data,

building a model, and understanding the feedback after model deployment.

In this course, you've also learned methodical ways of moving from problem to approach, including

the importance of

understanding the question, the business goals and objectives, and

picking the most effective analytic approach to answer the question and solve the problem.

You've also learned methodical ways of working with the data, specifically,

determining the data requirements, collecting the appropriate data,

understanding the data, and then preparing the data for modeling!

You've also learned how to model the data by using the appropriate analytic approach,

based on the data requirements and the problem that you were trying to solve Once the approach

was selected, you learned the steps involved in

evaluating and deploying the model, getting feedback on it, and

using that feedback constructively so as to improve the model.

Remember that the stages of this methodology are iterative!

This means that the model can always be improved for as long as the solution is needed, regardless

of whether the improvements come from constructive feedback, or from examining newly available

data sources.

Using a real case study, you learned how data science methodology can be applied in context,

toward successfully achieving the goals that were set out in the business requirements

stage.

You also saw how the methodology contributed additional value to business units by incorporating

data science practices into their daily analysis and reporting functions.

The success of this new pilot program that was reviewed in the case study was evident

by the fact that physicians were able to deliver better patient care by using new tools to

incorporate timely data-driven information into patient care decisions.

And finally, you learned, in a nutshell, the true meaning of a methodology!

That its purpose is to explain how to look at a problem, work with data in support of

solving the problem, and come up with an answer that addresses the root problem.

By answering 10 simple questions methodically, we've taught you that a methodology can

help you solve not only your data science problems, but also any other problem.

Your success within the data science field depends on your ability to apply the right

tools, at the right time, in the right order, to the address the right problem.

And that is the way John Rollins sees it!

We hope you've enjoyed taking the Data Science Methodology course and found it to be a valuable

experience one that you'll share with others!

And of course, we also hope that you will review and take other Data Science courses

in the Data Science Fundamentals Learning Path. Now, if you ready and upto the challenge,

please take the final exam.

Thanks for watching!

(Music)