United States of America, et al. v. UnitedHealth Group Inc. & Change Healthcare Inc.

Dr. Benjamin Handel

Department of Economics, University of California at Berkeley

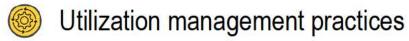
Assignment

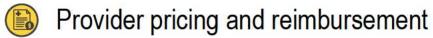
- To explain the information that is contained in healthcare claims data
- To assess how the de-identified healthcare claims data that would be available to United after its proposed acquisition of Change could be used to infer valuable information about United's commercial health insurance rivals that offer insurance to large group employers

Summary of Opinions



United could use Change's healthcare claims data to learn important insights about its competitors:





Provider network design

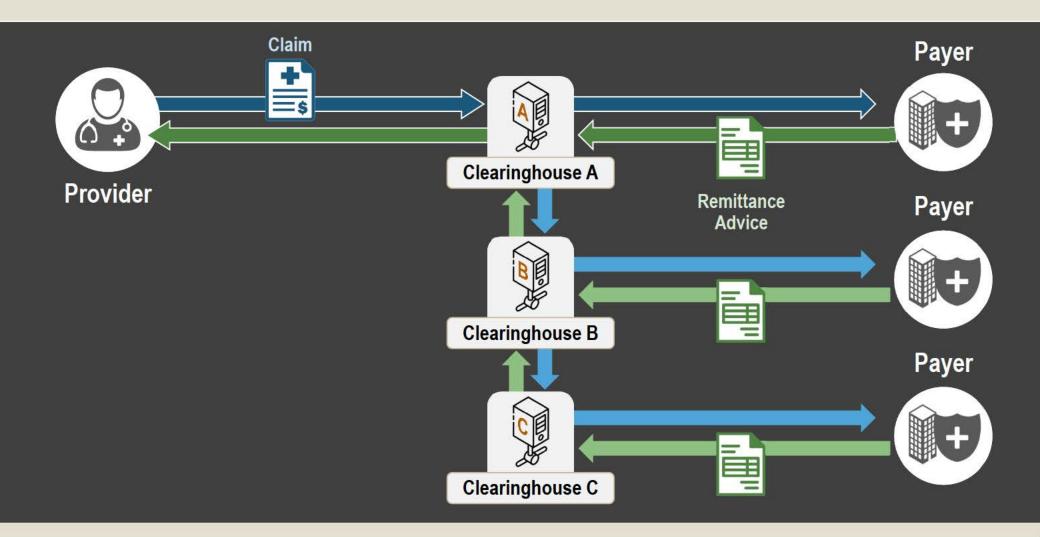
Claims adjudication policies

Underwriting

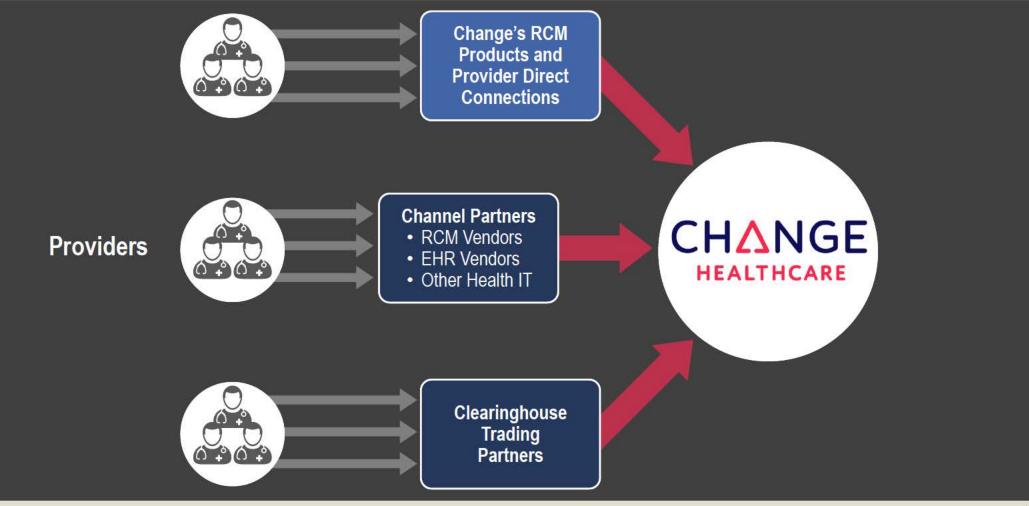


Public or commercial data sources could not replicate Change's healthcare claims data

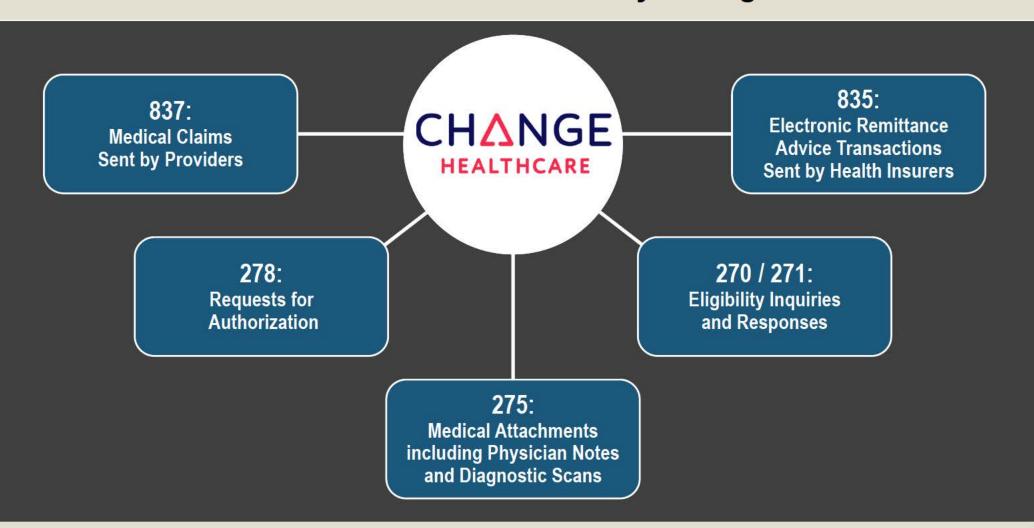
Transmission Paths of Claims



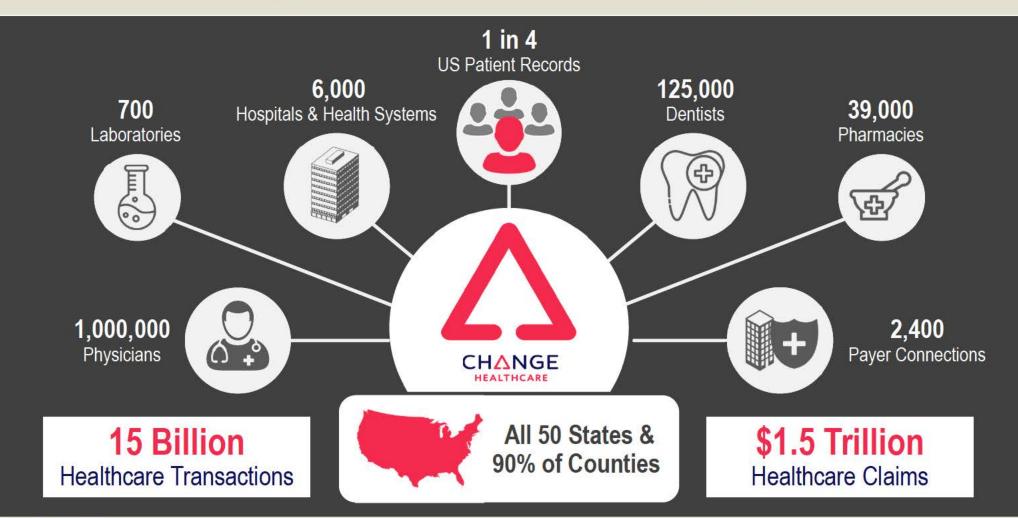
Overview of Channel and Trading Partners



Claims Data Transmitted by Change



Change is at the "Center of the Ecosystem"



Based on PX250, PX047.

Change's Claims Data Can Be Accessed As Soon as Claims Are Submitted







Data Asset Today:

- Nearly 3B deidentified claims annually, representing 211M unique patients
- Secondary de-identified use rights in roughly 60% of claims data we transact
- 48% of data is received within 1 week of treatment event, 75% within 21 days
- De-identified history going back to 2012
- Rights across medical, dental, and pharmacy claims as well as ERA

PX141 at 4

Change's Data Rights



Standard Data Rights Clause in our BAA

- 2.3 <u>Data Aggregation</u>. Change Healthcare may use PHI to provide Data Aggregation services for the Health Care Operations of the Customer as permitted by 45 C.F.R. § 164.504(e)(2)(i)(B).
- 2.4 <u>De-identified Data</u>. Change Healthcare may de-identify PHI in accordance with 45 C.F.R. § 164.514(b) and may Use or Disclose such de-identified data unless prohibited by applicable law.



Example Information Available In Claims Data





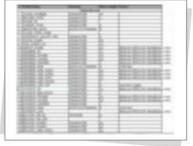


Pa	tient Information
Na	me
Co	ntact Information
De	mographic Information
He	alth Insurance Member ID
Ins	urance Information
Ins	urer Name
Un	ique Insurer ID
Se	condary Insurer Information
Em	ployer Group Name or Client Name
He	alth Plan Name or ID
Не	althcare Services or Procedure Information
Со	des Identifying Relevant Services (CPT or DRG
Da	tes of Service
Но	spital Admission and Release Date
Dia	gnosis Information
Pri	mary Diagnosis (ICD 10 codes)
Se	condary Diagnoses (ICD 10 codes)

Provider Information
Health Provider Identification Number (NPI)
Facility Where Service was Conducted
Facility Name and Address
Facility Type
Financial Information
Billed Amount ("list price")
Allowed Amount
Amount Paid by Insurer
Amount Paid by Secondary Insurer
Amount Paid by Patient
Information from the Life Cycle of Claims
Requests to Fix Errors
Rejections of Claims
Explanation for Rejection
Resubmissions of Claims
Additional Information
Prior Authorization
Attachments

Example Information Available In Claims Data: Patients







Na	ame
Co	ontact Information
De	emographic Information
Не	ealth Insurance Member ID
In	surance Information
In	surer Name
Ui	nique Insurer ID
Se	econdary Insurer Information
Er	mployer Group Name or Client Name
He	ealth Plan Name or ID
H	ealthcare Services or Procedure Information
Co	odes Identifying Relevant Services (CPT or DRG
Da	ates of Service
Н	ospital Admission and Release Date
Di	agnosis Information
Pr	rimary Diagnosis (ICD 10 codes)
Se	econdary Diagnoses (ICD 10 codes)

Provider Information
Health Provider Identification Number (NPI)
Facility Where Service was Conducted
Facility Name and Address
Facility Type
Financial Information
Billed Amount ("list price")
Allowed Amount
Amount Paid by Insurer
Amount Paid by Secondary Insurer
Amount Paid by Patient
Information from the Life Cycle of Claims
Requests to Fix Errors
Rejections of Claims
Explanation for Rejection
Resubmissions of Claims
Additional Information
Prior Authorization
Attachments

Example Information Available In Claims Data: Insurer





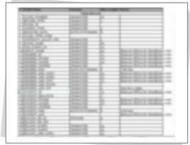


Patie	ent Information
Nam	e
Cont	act Information
Dem	ographic Information
Heal	th Insurance Member ID
Insu	rance Information
Insu	er Name
Uniq	ue Insurer ID
Seco	ondary Insurer Information
Emp	loyer Group Name or Client Name
Heal	th Plan Name or ID
Heal	thcare Services or Procedure Information
Code	es Identifying Relevant Services (CPT or DRG
Date	s of Service
Hosp	ital Admission and Release Date
Diag	nosis Information
Prim	ary Diagnosis (ICD 10 codes)
Seco	ondary Diagnoses (ICD 10 codes)

Provider Information
Health Provider Identification Number (NPI)
Facility Where Service was Conducted
Facility Name and Address
Facility Type
Financial Information
Billed Amount ("list price")
Allowed Amount
Amount Paid by Insurer
Amount Paid by Secondary Insurer
Amount Paid by Patient
Information from the Life Cycle of Claims
Requests to Fix Errors
Rejections of Claims
Explanation for Rejection
Resubmissions of Claims
Additional Information
Prior Authorization
Attachments

Example Information Available In Claims Data: Treatment & Diagnoses







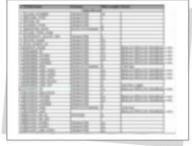
Pa	atient Information
Na	ame
C	ontact Information
De	emographic Information
Н	ealth Insurance Member ID
ln	surance Information
ln	surer Name
Ui	nique Insurer ID
Se	econdary Insurer Information
Er	mployer Group Name or Client Name
Н	ealth Plan Name or ID
Н	ealthcare Services or Procedure Information
C	odes Identifying Relevant Services (CPT or DRG
Da	ates of Service
Н	ospital Admission and Release Date
Di	agnosis Information
Pr	rimary Diagnosis (ICD 10 codes)
Se	econdary Diagnoses (ICD 10 codes)

Provider Information
Health Provider Identification Number (NPI)
Facility Where Service was Conducted
Facility Name and Address
Facility Type
Financial Information
Billed Amount ("list price")
Allowed Amount
Amount Paid by Insurer
Amount Paid by Secondary Insurer
Amount Paid by Patient
Information from the Life Cycle of Claims
Requests to Fix Errors
Rejections of Claims
Explanation for Rejection
Resubmissions of Claims
Additional Information
Prior Authorization

Attachments

Example Information Available In Claims Data: Providers





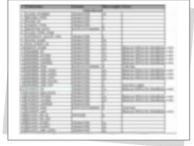


Pati	ent Information
Nan	ne
Con	tact Information
Den	nographic Information
Hea	Ith Insurance Member ID
Inst	rance Information
Insu	rer Name
Unic	que Insurer ID
Sec	ondary Insurer Information
Emp	oloyer Group Name or Client Name
Hea	Ith Plan Name or ID
Hea	Ithcare Services or Procedure Information
Cod	es Identifying Relevant Services (CPT or DRG
Date	es of Service
Hos	pital Admission and Release Date
Diag	gnosis Information
Prim	nary Diagnosis (ICD 10 codes)
Sec	ondary Diagnoses (ICD 10 codes)

Provider Information
Health Provider Identification Number (NPI)
Facility Where Service was Conducted
Facility Name and Address
Facility Type
Financial Information
Billed Amount ("list price")
Allowed Amount
Amount Paid by Insurer
Amount Paid by Secondary Insurer
Amount Paid by Patient
Information from the Life Cycle of Claims
Requests to Fix Errors
Rejections of Claims
Explanation for Rejection
Resubmissions of Claims
Additional Information
Prior Authorization
Attachments

Example Information Available In Claims Data: Financial Information





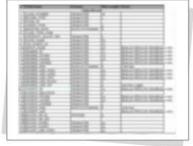


Patie	nt Information
Name	n
Conta	ct Information
Demo	graphic Information
Health	Insurance Member ID
Insur	ance Information
Insure	r Name
Uniqu	e Insurer ID
Secor	dary Insurer Information
Emplo	yer Group Name or Client Name
Health	Plan Name or ID
Healt	ncare Services or Procedure Information
Codes	Identifying Relevant Services (CPT or DRG
Dates	of Service
Hospi	tal Admission and Release Date
Diagn	osis Information
Prima	ry Diagnosis (ICD 10 codes)
Secor	idary Diagnoses (ICD 10 codes)

Provider Information
Health Provider Identification Number (NPI)
acility Where Service was Conducted
acility Name and Address
acility Type
inancial Information
Billed Amount ("list price")
Allowed Amount
Amount Paid by Insurer
Amount Paid by Secondary Insurer
Amount Paid by Patient
nformation from the Life Cycle of Claims
Requests to Fix Errors
Rejections of Claims
Explanation for Rejection
Resubmissions of Claims
Additional Information
Prior Authorization
Attachments

Example Information Available In Claims Data: Life Cycle of Claims







Pati	ent Information
Nam	e
Con	act Information
Dem	ographic Information
Hea	th Insurance Member ID
Insu	rance Information
Insu	rer Name
Unio	ue Insurer ID
Sec	ondary Insurer Information
Emp	loyer Group Name or Client Name
Hea	th Plan Name or ID
Hea	thcare Services or Procedure Information
Cod	es Identifying Relevant Services (CPT or DRG
Date	s of Service
Hos	pital Admission and Release Date
Diag	nosis Information
Prim	ary Diagnosis (ICD 10 codes)
Seco	ondary Diagnoses (ICD 10 codes)

Provider Information
Health Provider Identification Number (NPI)
Facility Where Service was Conducted
Facility Name and Address
Facility Type
Financial Information
Billed Amount ("list price")
Allowed Amount
Amount Paid by Insurer
Amount Paid by Secondary Insurer
Amount Paid by Patient
Information from the Life Cycle of Claims
Requests to Fix Errors
Rejections of Claims
Explanation for Rejection
Resubmissions of Claims
Additional Information
Prior Authorization
Attachments

Example Information Available In Claims Data: Additional Information







Pa	atient Information
Na	ame
Co	ontact Information
De	emographic Information
Не	ealth Insurance Member ID
ln	surance Information
In	surer Name
Ur	nique Insurer ID
Se	econdary Insurer Information
Er	nployer Group Name or Client Name
Н	ealth Plan Name or ID
He	ealthcare Services or Procedure Information
Co	odes Identifying Relevant Services (CPT or DRG
Da	ates of Service
Ho	ospital Admission and Release Date
Di	agnosis Information
Pr	imary Diagnosis (ICD 10 codes)
Se	econdary Diagnoses (ICD 10 codes)

Provider Information
Health Provider Identification Number (NPI)
Facility Where Service was Conducted
Facility Name and Address
Facility Type
Financial Information
Billed Amount ("list price")
Allowed Amount
Amount Paid by Insurer
Amount Paid by Secondary Insurer
Amount Paid by Patient
Information from the Life Cycle of Claims
Requests to Fix Errors
Rejections of Claims
Explanation for Rejection
Resubmissions of Claims
Additional Information
Prior Authorization
Attachments

Deidentification of Data



45 C.F.R. § 164.514(a)

"Standard: De-identification of protected health information. Health information that does not identify an individual and with respect to which there is no reasonable basis to believe that the information can be used to identify an individual is not individually identifiable health information."

Minimum Necessary Requirements Are Not Relevant to Deidentified Data



45 C.F.R. § 164.514(d)

"Standard: minimum necessary requirements. In order to comply with § 164.502(b) and this section, a covered entity must meet the requirements of paragraphs (d)(2) through (d)(5) of this section with respect to a request for, or the use and disclosure of, protected health information."

Deidentified data is not "protected health information."

Deidentification of Data: Safe Harbor Method



45 C.F.R. § 164.514(b)(2)

"The following identifiers of the individual or of relatives, employers, or household members of the individual, are removed:"

- Names
- Detailed geographic information
- Elements of date except year
- Telephone numbers
- Fax numbers
- Email addresses
- Social Security numbers
- Medical record numbers
- Health plan beneficiary numbers

- Account numbers
- Certificate/license numbers
- Numbers that identify vehicles
- Device-identifying information and numbers
- URLs
- IP address numbers
- Biometric identifiers
- Full face or comparable images
- Other unique numbers, characteristics, or codes

Deidentification of Data: Expert Method



45 C.F.R. § 164.514(b)(1)

"A person with appropriate knowledge of and experience" ... "determines that the risk is very small that the information could be used, alone or in combination with other reasonably available information" to identify an individual.

Deidentification of Data: Flexibility Under the Expert Method



45 C.F.R. § 164.514(b)(1)

The expert method allows flexibility to include information that must be removed under the safe harbor method such as employer ID, five-digit zip code, or date of service.

Deidentification of Data: Retained Information

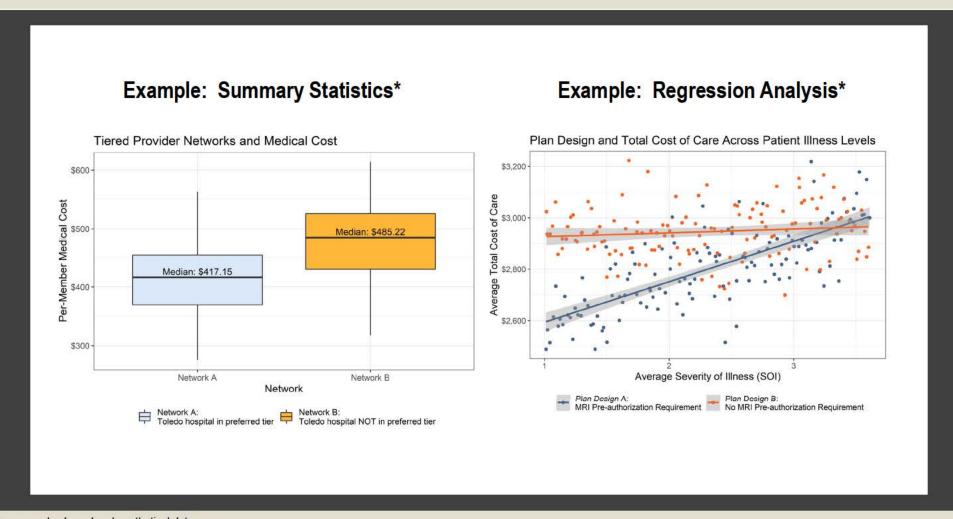


45 C.F.R. § 164.514(b)

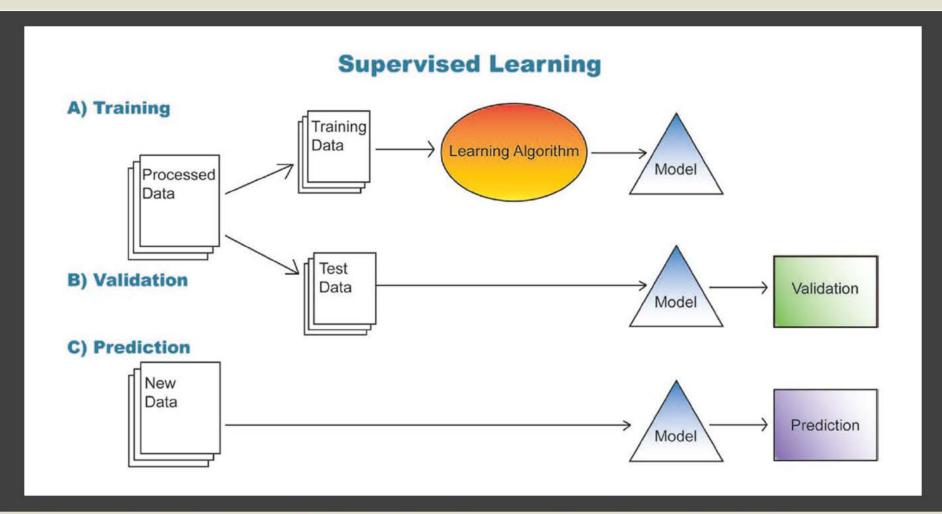
Neither method requires fields such as the following to be removed:

- Insurer information
- Provider Information
- Treatments and Diagnoses
- Financial information
- Three-digit zip code if it contains more than 20,000 people

Traditional Analytic Techniques



Machine Learning



United's Analytics Capabilities



Optum today has over 500 data scientists globally developing advanced analytics used across our business in several key ways



Optum Enterprise Analytics (OEA)

OEA will manage Optum's analytic capabilities to position Optum as THE leader in advanced analytics.

Opton

PX267; PX261

Examples of Machine Learning at United

Deepen Data and Analytics Technology & Expertise

- <u>Al Surveillance</u>: Using Al to traverse multiple layers of data (IHR, real-time IoT, claims, etc) to monitor, predict and provide high quality real-time insights.
- Actuarial/Underwriting Augmenting classic underwriting analytics with machine learning to predict future medical expense

Deliver Distinctive Client and Consumer Experience

- <u>Benefit Clarity</u>: The Benefit Clarity solution leverages NLP service to understand a constituents' question and provide an accurate, complete and easy to understand answer on their preferred communication channel thus driving up NPS while driving down AHT.
- <u>Claims Auto-adjudication</u>: Applying Al/machine learning in a claims transaction environment to increase auto-adjudication and reduce rework.
- <u>Workbasket Optimization</u>: Applying Optical Character Recognition (OCR) to document locating and routing. Develop an end-to-end chart ecosystem.

Streamline Healthcare Operations and Administration

- <u>Detecting and Prioritizing Fraud, Waste, Abuse and Error</u>—Using machine learning and deep learning to augment or replace rules for Payment Integrity
- Automating Medical Coding for Risk Adjustment and Quality Applying deep learning model to prioritize charts for 6M Medicare Advantage members for which we code for risk adjustment





PX267

Use Cases for Change's Deidentified Claims Data

- Utilization management practices
- Provider pricing and reimbursement
- Provider network design
- Claims adjudication policies
- Underwriting

Use Cases for Change's Deidentified Claims Data



Utilization management practices



Provider pricing and reimbursement



Provider network design

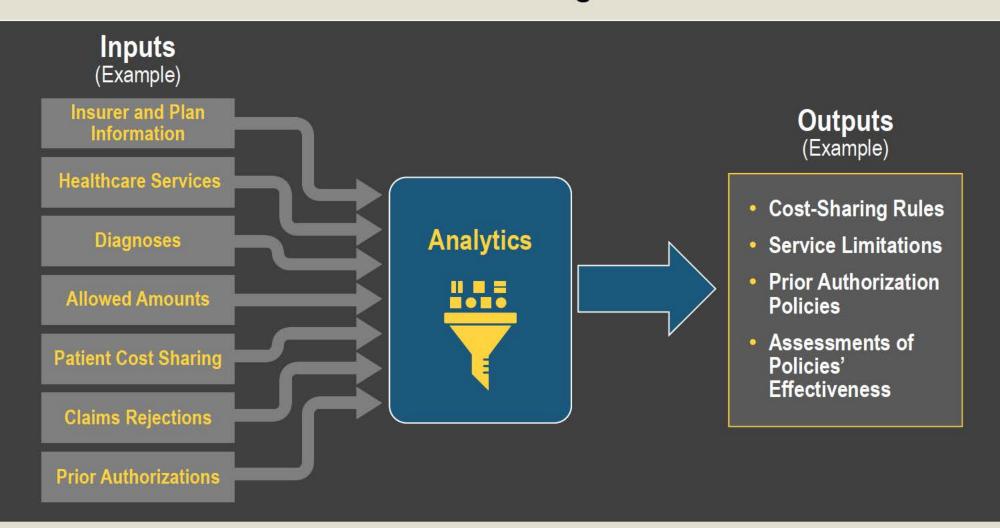


Claims adjudication policies



Underwriting

Use Case: Utilization Management Practices



Claims Data Reveal Utilization Management Practices







- Cross-Optum and/or UHG Opportunities
 - Long-term
 - Medical Policy and Benefit Design: Cost and quality information from Cambridge multi-payer claims data sets can be used to improve medical policy and benefits design.

What's in it for UHC?

- Improved provider experience/economics (e.g., fast track prior auth, straight through adjudication, greater patient retention, less bad-debt, etc.)
- · Admin cost reduction with less manual intervention
- Enhanced member experience (e.g., more accurate understanding of OOP expenses, improve POS payment options, etc.)

31

- Insights to optimize benefit design: Utilize transactions intelligence (i.e., clinical utilization) from multiple providers / payers to optimize benefit design
- · Accelerate transition to value-based care

PX027; PX095

Claims Data Reveal Utilization Management Practices





Additional Opportunities								
Opportunity	Opportunity Description	Value-Added Description	De-ID or PHI	Assumed Cambridge Rights	Path to secure data rights	Additional HIPAA Considerations		
Improved Medical Policy and Benefit Design	Aligned cost and quality information from broad, multipayer claims and clinical data sets to improve policy and benefit design.	Multipayer claims data.	De-Id	Assume right to de-identify claims data AND commercial use rights after such de-identification. (Cambridge currently monetizes some de-identified claims data).	Covered Entity (payer or provider customer) consent.	N/A		

Opportunity	Opportunity	Value-Added	De-ID or
	Description	Description	PHI
Improved Medical Policy and Benefit Design	Aligned cost and quality information from broad, multipayer claims and clinical data sets to improve policy and benefit design.	Multipayer claims data.	De-Id

PX944

Use Cases for Change's Deidentified Claims Data



Utilization management practices



Provider pricing and reimbursement



Provider network design

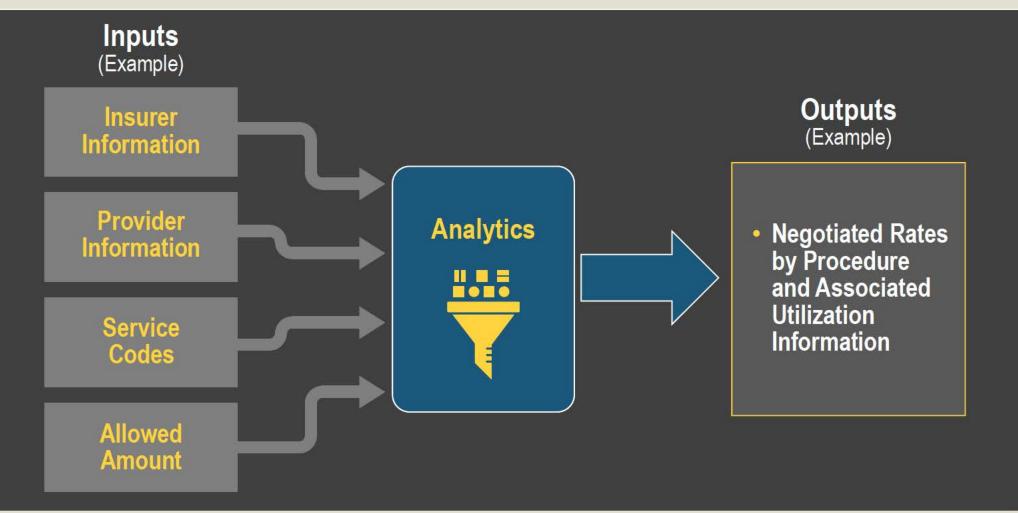


Claims adjudication policies

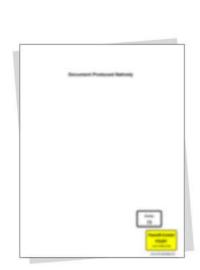


Underwriting

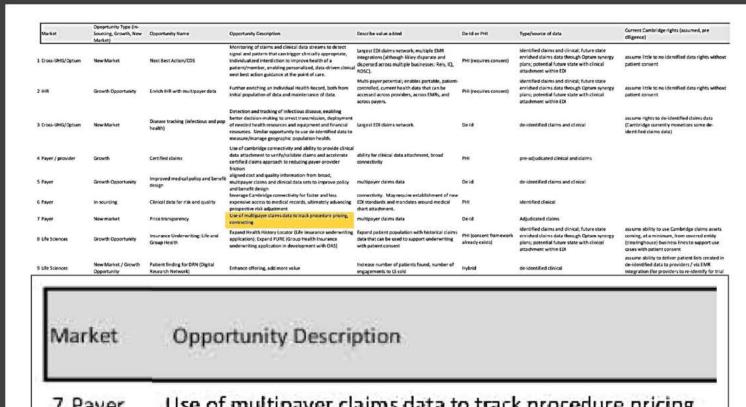
Use Case: Provider Pricing and Reimbursement



Claims Data Reveal Provider Pricing and Reimbursement







7 Payer Use of multipayer claims data to track procedure pricing, contracting

PX207

Use Cases for Change's Deidentified Claims Data



Utilization management practices



Provider pricing and reimbursement



Provider network design

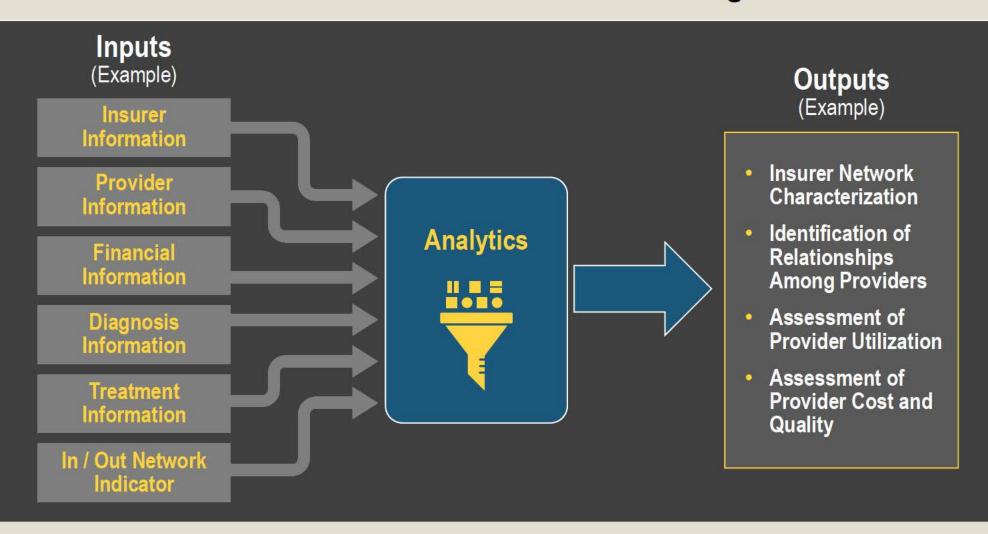


Claims adjudication policies



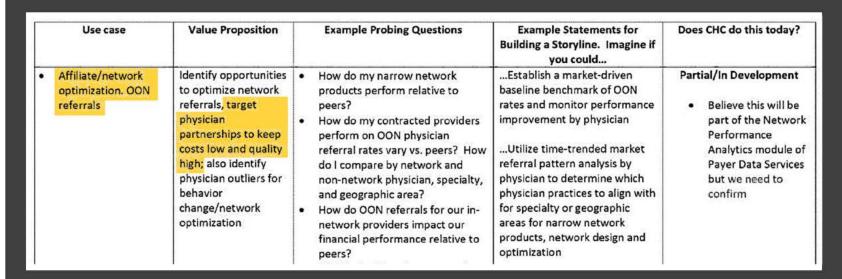
Underwriting

Use Case: Provider Network Design



Claims Data Reveal Provider Network Design





Affiliate/network optimization, OON referrals

Identify opportunities to . . . target physician partnerships to keep costs low and quality high

38



Claims Data Reveal Provider Network Design





In the example above, we examined the costs for atrial fibrillation and flutter among these clusters. We found the best performing cluster had an average episode cost of ______, while the worst performing cluster had an average episode cost of ______.6 The market average was ______ per episode.

If we estimate a consistent impact across all cardiology episodes in the E&I businesses across US, this could result in the cardiology episodes alone.

Use Cases for Change's Deidentified Claims Data



Utilization management practices



Provider pricing and reimbursement



Provider network design

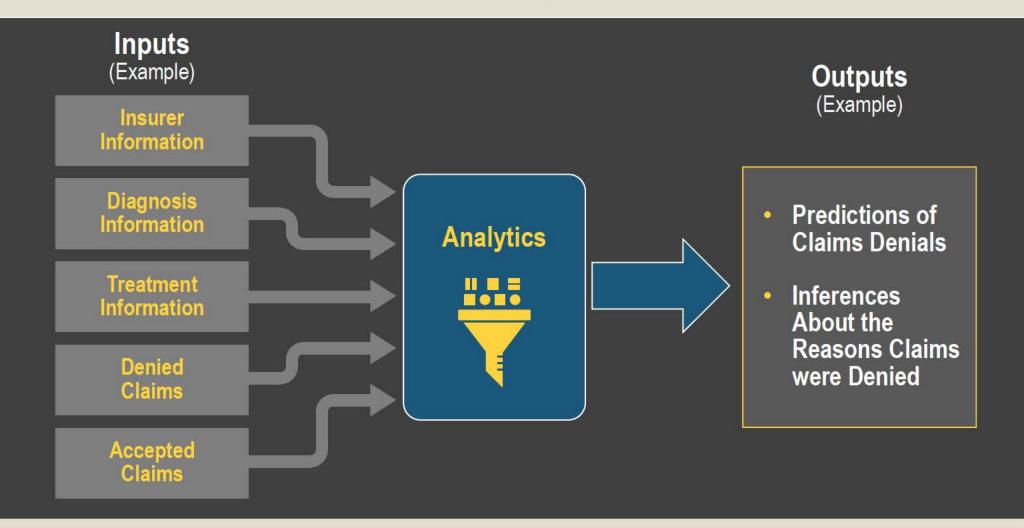


Claims adjudication policies



Underwriting

Use Case: Claims Adjudication Policies



Claims Data Reveal Proprietary Adjudication Policies



Lynn Garbee
Former
Managing Director,
Provider Enterprise
Strategy



- Q. Based on your experience with Cigna, could postadjudicated claims data have shown Cigna's applied edits?
- A. The post-adjudicated claims data would have those remark codes and, with the remark codes and the claims data together, you could definitely figure out the edits that were applied to the claim.

Use Cases for Change's Deidentified Claims Data



Utilization management practices



Provider pricing and reimbursement



Provider network design

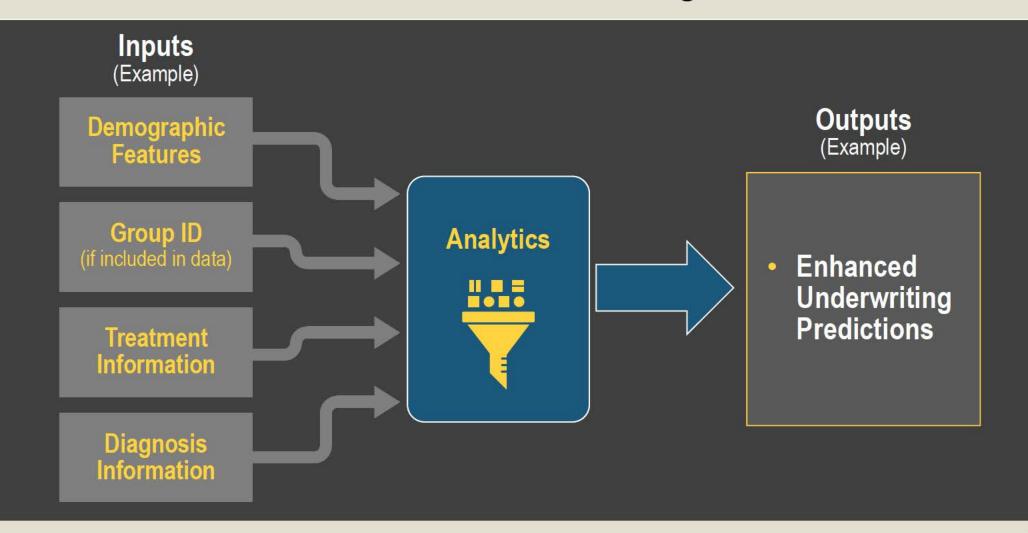


Claims adjudication policies



Underwriting

Use Case: Underwriting



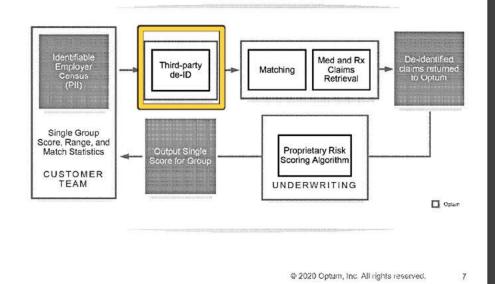
Claims Data Inform Underwriting

Introducing Group Risk Analytics: Secure, simple, streamlined

Our Optum solution uses de-identified third-party data and proprietary risk scoring to enable payers to better assess the risk of prospective employer group customers.

- Leverages Optum industry-leading Symmetry Risk Engine predictive models
- · Fully HIPAA-compliant
- · Returns results and analysis in minutes
- Calibrates results based on renewal underwriting manuals and formulas
- Provides the variance of a group's risk score to better inform pricing decisions
- · Detailed operational reporting





UHG-2R-0000062425

45

Limitations on Data from Commercial Vendors

- Does not identify insurer
- Not full claims life cycle
- Tokenized provider identity
- No data on preauthorization



- Does not identify insurer
- Not full claims life cycle
- Will not disclose provider information if actual financial information is provided

- No financial information
- Limited to specific project descriptions
- Does not license Payer ID to United
- Limited financial information
- Data challenges

- No denied claims
- Does not currently license transaction-level data to insurers
- Data cannot be used in the insurance market
- Does not identify insurer
- Other limits on usage
- Does not license financial information to United

- Does not license transactionlevel data to United
- Relies on data from Change
- Data can only be used for approved products
- Relies on data from Change, but is limited in how Change's data can be used
- Requires specific approval to license data to insurers
- Obtains data from Change, but is prohibited from licensing that data to insurers
- Does not license transactionlevel data to United
- Limited financial information
- Blinds data for broader comparative purposes

Data Limitations Reduce the Value of the Data for Use Cases

Utilization Management	Provider Reimbursement	Provider Network Design	Claims Adjudication	Underwriting
 No payer ID No prior authorization information 	No payer ID Tokenized provider information	No payer ID Tokenized provider information	No payer ID No claims life cycle information	 No employer ID No payer ID Cannot be linked to other datasets

Limitations on All Payer Claims Databases

All Payer Claims Databases are limited in a number of ways:

- Available in only a minority of states
- Lack of data from ASO and self-insured group plans due to Gobeille v. Liberty Mutual
- Typically exclude denied claims entirely
- Often lack or aggregate variables in datasets available to insurers
- Restrictions on providing data to insurers
- Significant delay in data

Limitations on Transparency Rules

Transparency Rules Information	Information	Change's Healthcare Claims Data
	Negotiated rates for many services	(
	List of providers by plan	
8	Utilization	Ø
8	Treatment guidelines	Ø
8	Historical cost of care	Ø
8	Diagnoses	Ø
⊗	Claims adjudication decisions	Ø
8	Referral relationships among providers	
8	Other information reflecting benefit design, utilization management, or adjudication logic	

United Protects its Data from Being Used To Compete Against It





Restricted Transactions

The following types of Data Transactions (each, a "Restricted Transaction") require prior approval by the Committee:

- Entry into a new line of business, or expansion of an existing business, that involves the license or sale of Enterprise Data;
- A Data Transaction that is primarily for the benefit of a significant competitor of the enterprise;

EDGP [Enterprise Data Governance Program] Guiding Principles:

- Ensure data is not being shared with or enabling competitors
- Maximize the value UHG derives from data
- Data provided to partners/clients should only be what is minimally necessary
- Preventing it from being used to compete with UHG.

PX079; PX653

United Protects its Data from Being Used To Compete Against It



William Golden
CEO,
UnitedHealthcare
Employer &
Individual



- Q. And Mr. Gehlbach is speaking with respect to the post-adjudicated claims data?
- A. Well, that could be pre, also. So if the data is going to be used in any way to compete with us, that's a red line. If it's post-adjudicated and they want to use that, obviously that's a huge concern, but even preadjudicated you can't take that information and then design programs to compete around UnitedHealthcare.
- Q. And what is kind of the red line difference specific to post-adjudicated data?
- A. Well, post-adjudicated data has way more information regarding our proprietary information. So it goes through our claim engine, it has our prior authorization, utilization management, and it has our unit cost information attached to it, and that's information we deem proprietary.

United's Policies Confirm Claims Data Contain Valuable Information



Policy Definitions

Competitively Sensitive Information ("CSI"): any non-public information that could be used to obtain a commercial advantage over a competitor, customer, or supplier. Examples of CSI may include:

- Provider reimbursement rates, fee schedules, discounts, billed amounts, allowed amounts, paid amounts, or reimbursement methodologies;
- Subscriber, member, or health plan premiums, prices, administrative fees, discounts, cost share amounts, or plan or benefit design;
- Data, including claims data, financial data (profit, margin, revenue, and cost information), utilization data, discharge data, or subscriber or member data;
- Bids or proposals for new accounts or customers and the geographic regions, products, and customers in which companies sell
 or market their products or services;

52

- Proprietary business plans, strategies, policies, or guidelines related to sales and marketing; new, non-public innovations, products, services, markets; claims and payment accuracy, risk management and quality performance, or revenue cycle performance;
- Proprietary medical, clinical, or coverage guidelines or policies that impact benefit design, insurance coverage, or reimbursement eligibility or amount; and



United's Policies Confirm Claims Data Contain Valuable Information



You must not discuss or exchange information with a competitor of your Business Unit with respect to the following topics, unless the discussion or exchange has been approved in advance by an attorney or compliance officer assigned to your Business Unit:

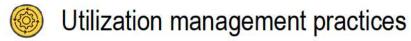
- Rates UHG's current or proposed provider reimbursement rates;
- Pricing UHG's current or proposed prices or premiums, including any actual or proposed increase, decrease or
 discount in prices or premiums, charged to current or potential customers for UHG's managed care, insurance
 products, or other services or products;
- Customers Premiums charged to another customer; the allocation of customers, geographic sales territories, or sales of UHG's services or products:
- Providers Provider reimbursement rates and provider networks;
- Refusals to Deal UHG's decisions on whether to contract with a provider or group of providers or with a customer
 or group of customers;
- Competitively Sensitive Information Includes UHG's business strategies, market shares, profits, margins, costs,
 reimbursement levels and methodologies, and coverage terms.



Conclusion



United could use Change's healthcare claims data to learn important insights about its competitors:



Provider pricing and reimbursement

Provider network design

Claims adjudication policies

Underwriting



Public or commercial data sources could not replicate Change's healthcare claims data