ETM538HW5

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February 27, 2019

1. List 10 questions you want to be able to answer using the Hospitals Data Warehouse (10%).

- Which departments/procedures generate the most revenue (overall), the most revenue per patient, and most revenue per quarter(or month)?
    - Which procedures can be scaled up to generate more revenue?
- What are the biggest expenses and can they be minimized?

- What are the drivers of length of hospital stay? E.g. doctor, patient, health record attributes, department, procedure, etc.?

- Which patients have the most complications, and which doctors/departments see patients with the highest rates of complications?

- Which complications are covered by insurance (i.e. someone else pays) versus ones the hospital is responsible for (i.e. the hospital loses money)?

- Which services are the most popular?

- Which services are most correlated (if a patient uses one, they're likely to use the other)?

- What are the sources of revenue (e.g. insurance, government, private pay, other)?

- What services/treatments/patients require involvement from multiple departments?

- What is the average fill rate for the hospital beds?

2 Entities we should include:

- Patients
- Physicians
- Departments
- Visits
- Conditions
- Accounts
- Transactions
- Treatments

3 Relationships between entities:

- Patients should link to:
    - Visits
    - Accounts
    - Transactions
    - Conditions
    - Treatments
- Physicians should link to:

- – Visits
- – Treatments
- – Departments
- Departments should link to:
  - – Physicians
  - – Visits
  - – Conditions
- Visits should link to:
  - – Patients
  - – Physicians
  - – Conditions
  - – Treatments
  - – Departments
- Conditions should link to
  - – Patients
  - – Visits
  - – Departments
  - – Treatments
- Accounts should link to
  - – Patients
  - – Transactions
- Transactions should link to
  - – Accounts
  - – Patients
  - – Visits
- Treatments should link to
  - – Patients
  - – Visits
  - – Physicians
  - – Conditions
  - – Transactions

4 Draw a diagram of the entities above and their relationships

*Please refer to Figure 1: dataWarehouseMap

5 Attributes for each entity

- Patients should include
  - – unique identifier/account number
  - – name
  - – date of birth
  - – date of first visit
  - – date of last visit (wouldn't this have to autoupdate from Visits?)
- Physicians should include
  - – unique identifier
  - – physician name
  - – department
  - – specialty
- Visits should include
  - – dates/times
  - – patient ID
  - – physician ID
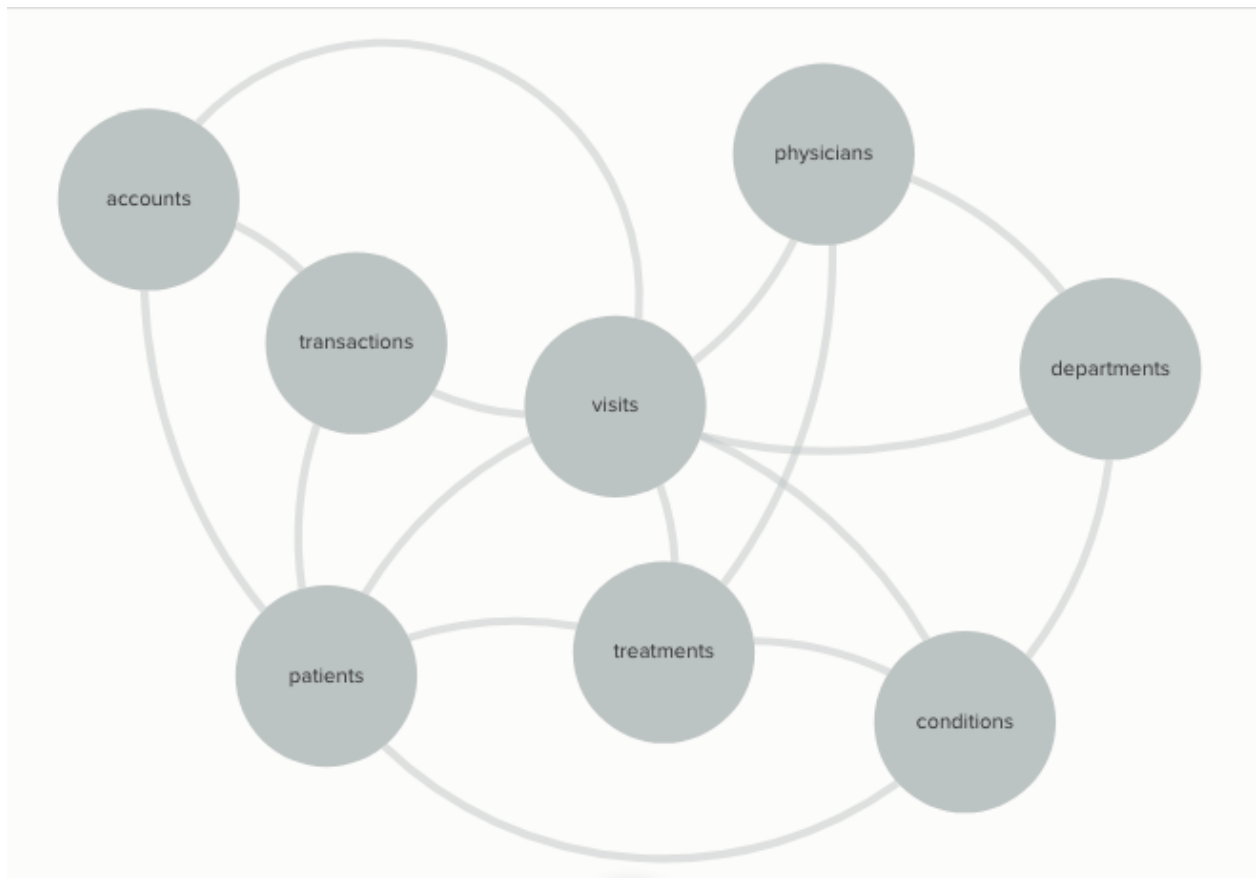 - – diagnostic code / condition

Figure 1: dataWarehouseMap

- treatment
    - notes/follow up
- Accounts should include
    - patient name
    - patient date of birth
    - patient address + zip
    - unique identifier/account number
    - insurance carrier + info
    - Primary Care Physician info
- Transactions should include
    - account number
    - patient name
    - patient address + zip
    - insurance carrier + info
    - physician name
    - visit date
    - diagnostic code / condition

6 Primitive vs Derived attributes

The following attributes must be primitive (raw data):

- All date and time information (including birthdates)
- patient/physician/facility/insurance carrier names
- addresses and contact information
- unique identifiers/account numbers
- diagnosis condition

The following attributes would be derived from raw data figures: + Yearly/Quaterly/Monthly cost of each patient (derived from patients and transactions) + Yearly/Quaterly/Monthly visits of each patient (derived from patients and visits) + Yearly/Quaterly/Monthly visits for each doctor (derived from physicians and visits) + Any growth, trend, ratio, or percentage comparison must be derived from other measures

7 Expand your design to include the entities, relationships, and attributes (both primitive and derived) needed to answer the second set of 5 questions. +10