

## Background

The use of real world data gathered from healthcare databases to conduct research related to pharmacoepidemiology and pharmacoeconomics has expanded over the past decade due to the wealth of readily available information they provide and the cost-effectiveness of performing such studies.[1] The use of “real world” data has been endorsed, in addition to the use of the “gold standard” clinical trials, by professional scientific societies to help inform coverage and payment decisions.[2] Humana, a national insurance company, has a large administrative claims database, which can serve as a resource contributing to real world data based pharmacoepidemiology research of which leading researchers should be aware.

## Objectives

- ❖ To describe the Humana database, including its capabilities, strengths and limitations as they pertain to pharmacoepidemiologic research.
- ❖ To characterize the demographic and basic clinical characteristics among the population comprising the Humana administrative claims data
- ❖ To describe the available linkages between the Humana administrative claims data and other available data sources relevant to pharmacoepidemiologic research

## Methods

- ❖ The capabilities and data elements available in the Humana administrative claims database were examined and characterized
- ❖ The database was queried regarding the time period of January 1, 2007 to December 31, 2011 for examination of member characteristics including:
  - Enrollment by coverage type (Commercial or Medicare)
  - Age
  - Gender
  - Frequency of diagnostic codes related to specific disease states
- ❖ Previous, and potential, linkages of internal and external data sources to Humana’s administrative claims data were assessed and described
- ❖ All data were accessed in a manner compliant with HIPAA regulations

## Results

Table 1. Description of Humana data by Data Type	
Data Type	Content
Member enrollment data	Member demographics, coverage start and end dates, child/parent linkage
Medical claims data	Utilization (frequency of use) and cost (including Humana allowed amounts and member out of pocket expenses) information on outpatient physician visits, test and procedures, and emergency room and hospital inpatient stays. Data on movement into a long-term care facility and mortality can be accessed. Information includes, but is not limited to, ICD9 codes, CPTs and HCPCS for tests and procedures, and J-codes for medications that require administration at a physician’s office.
Pharmacy claims data	Detailed information on each members prescription fill, including the specific medication filled (NDC and GPI codes), prescription fill date, quantity dispensed, days’ supply, member out-of-pocket costs for the prescription, the amount Humana paid for the prescription (allowed amount). Both speciality pharmacy and mail-order pharmacy claims are available.
Lab results data	Lab result data is available for a percentage of patients who use laboratories contracted with Humana as their laboratory provider. This data includes the LOINC code for the test, as well as the actual lab result. Lab results are available for roughly 30% of the population, which varies by disease state.

### The Humana Unique Patient Identifier

- ❖ Information from disparate data sources within Humana can be linked reliably for each member using a unique member identifier
  - Patients who dis-enroll and re-enroll keep the same unique identifier allowing linkage of all historical data
  - Patients who transition from Commercial to Medicare coverage are able to be tracked using this unique identifier

### Table 2. Patient Counts by Coverage Type

7.1 Million Current Humana Members
<div>❑ 4.3 Million Medicare Members</div> <div>2.4 Million with Prescription Drug Plan insurance coverage</div> <div>1.9 million with Medicare Advantage Prescription Drug Plan insurance with integrated claims</div>
<div>❑ 2.8 Million Commercial Members</div> <div>1.5 Million Fully-insured with integrated data</div>

### Uses of the Humana Data for Pharmacoepidemiologic Research

- ❖ Humana data has been utilized for numerous pharmacoepidemiologic research studies such as:
  - Retrospective studies on pharmacoepidemiologic topics such as comparative effectiveness, disease prevalence, healthcare costs and identifying at-risk populations
  - The mini-sentinel project, which seeks to create a scalable, efficient, extensible, and sustainable system leveraging existing electronic healthcare data from multiple sources to actively monitor the safety of regulated medical products.[3]
  - Mixed-methods research studies starting with analysis of administrative claims data followed by survey or interview of members and the linkage of the claims data to the survey or interview data.
  - Prospective interventions, including both passive educational intervention and active comparative effectiveness interventions.

## Membership Characteristics

Table 3: Length of Continuous Enrollment – Membership from 1/1/2007 to 12/31/2011 by Coverage Type		
Continuous Enrollment	Medicare n (%)	Commercial n (%)
<12 months new members	430,923 (22.70)	572,172 (35.51)
12 - 23 months	457,916 (24.12)	310,873 (19.29)
24 - 35 months	228,106 (12.01)	198,172 (12.30)
36 - 48 months	126,986 (6.69)	138,595 (8.60)
48 - 60 months	654,818 (34.49)	391,593 (24.30)

Table 4. Age and Gender Distribution of the Medicare Population

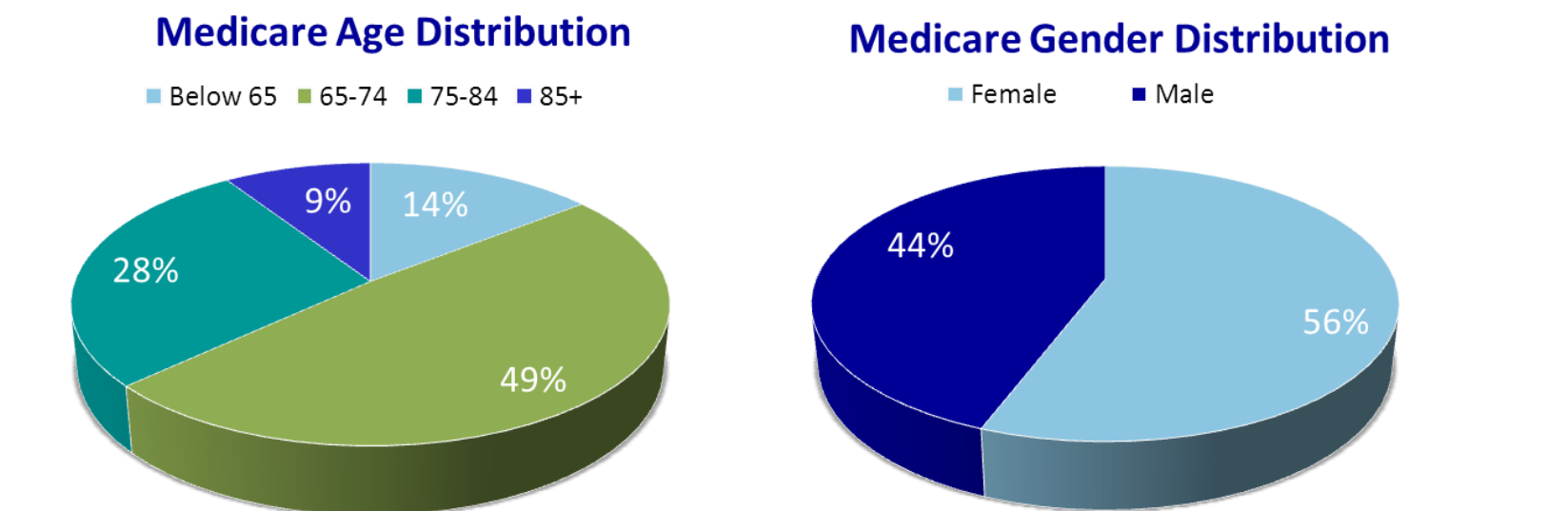
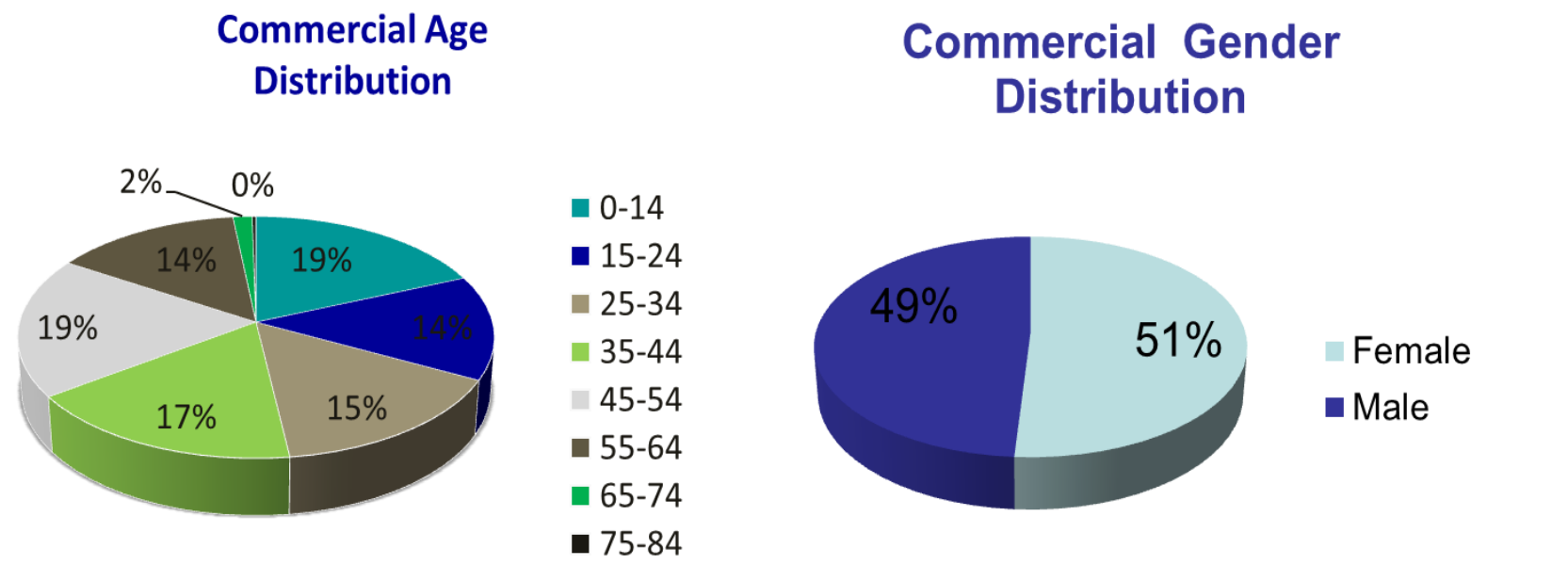


Table 5. Age and Gender Distribution of the Commercial Population



- ❖ The majority of Medicare members are between 65-74 years old, while the age distribution of the Commercial members varies.
- ❖ Humana data has limited numbers of children (<18 years of age).
- ❖ While roughly even within the Commercial population, gender distribution in the Medicare population is weighted towards females.

Table 6. Primary Disease State Counts Among Medicare and Commercial Members from 7/1/2008 to 6/30/2011			
Disease State	Medicare	Commercial	Total
COPD (490.xx - 492.xx/496.xx)	444,477	103,856	548,333
Breast Cancer (174.xx, 175.xx)	91,815	22,729	114,544
Prostate Cancer (185.xx)	82,228	7,229	89,457
Multiple Sclerosis (340.0)	10,979	3,957	14,936
Alzheimer’s Dx (331.xx)	45,090	732	45,822
Cardiovascular Dx (410.xx – 429.xx)	2,401,174	240,934	1,735,292
Diabetes (250.xx)	1,380,371	210,534	1,590,905
Osteoporosis (733.0x)	210,066	23,537	233,603
Asthma (493.xx)	168,222	110,553	278,775
Rheumatoid Arthritis (714.xx)	65,868	16,587	125,345
Essential Hypertension (401.xx)	1,714,897	358,966	2,073,863

### Linkages of Humana Data to Internal and External Data Sources

- ❖ Humana data can be linked to several internal and external data sources to fill gaps in knowledge due to the limitation of the administrative claims data. These sources include:
  - Marketing data – such as household income and education level
  - Clinical data – such as electronic medical records and/or chart review
  - Behavioral data – such as health priorities and self-reported adherence
  - Cause of death data

## Conclusion

The Humana database, and the membership that forms its basis, represent a rich and valuable source of data for many areas of pharmacoepidemiology research. With data that can be linked to internal and external data resources, gaps in knowledge can be filled in as necessary. Humana’s large Medicare population, from which members are able to be contacted and recruited for surveys and interventions, form the core of a substantial research resource.

### References

1. Hall, G.C., et al., Guidelines for good database selection and use in pharmacoepidemiology research. Pharmacoepidemiol Drug Saf, 2012. 21(1): p. 1-10.
2. Garrison, L.P., Jr., et al., Using real-world data for coverage and payment decisions: the ISPOR Real-World Data Task Force report. Value Health, 2007. 10(5): p. 326-35.
3. About Mini-Sentinel. [cited 2012 July 12, 2012]; Available from: [http://www.mini-sentinel.org/about\\_us/default.aspx](http://www.mini-sentinel.org/about_us/default.aspx).