

Conflict of Interest Statement

The authors of this research project have no conflict of interest to disclose.

Background

RA is one of the most common autoimmune disorders, affecting approximately 1% of the population worldwide.¹ Medical and pharmacological costs associated with the condition are extremely high.² In Puerto Rico, the epidemiology and pharmacoepidemiology of RA remains poorly understood.

Objective

- Demonstrate how the prevalence estimates of RA change as a function of the capturing methods of cases.
- Determine the prevalence of RA among beneficiaries of the Puerto Rico GSHCP during 2016, and describe it by age, geographic region, gender, and primary care provider.
- Describe RA health care utilization in the context of ACR guidelines and cost.

Methods

- This study follows a cross-sectional study design.
- All RA medical and pharmacy claims submitted to GSHCP during 2016 were extracted for the analysis. ICD-10 codes starting with M05 or M06 were used to positively identify claims for beneficiaries 20 years of age and older.
- RA prevalence was estimated per benchmark criteria recommended by Kim et al. as ≥ 3 RA medical claims and ≥ 1 RA pharmacy claim during the study period.³ The overall prevalence was reported and stratified by age, gender, geographic region, and primary care provider. The number of beneficiaries of the GSHCP ≥ 20 years of age during June 2016 was used as the denominator to estimate the prevalence.
- Health care utilization and costs for RA beneficiaries was described using the primary care providers they visited and the RA pharmacotherapies they used during the study period.

Results

- The total number of beneficiaries of the Puerto Rico GSHCP ≥ 20 years of age during June 2016 was 1,075,023.
- Applying the inclusion criteria to the GSHCP claims database produced 69,688 RA medical claims from 28,560 unique beneficiaries. When only claims from the 4 main physician specialties (i.e., rheumatology, internal, family, and general medicine) were used, 22,616 RA medical claims were identified from 8,787 beneficiaries. Out of the 8,787 beneficiaries 2,036 fulfilled the benchmark definition of RA.

Benchmark Prevalence of RA Using all Types of Claims

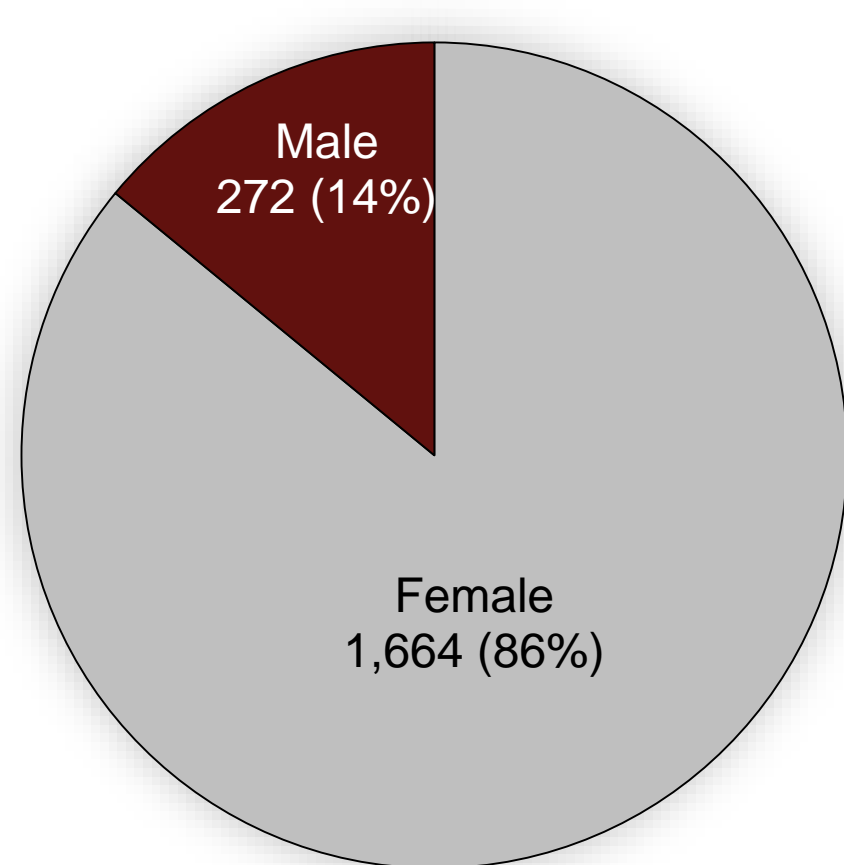
- ≥ 3 medical claims
 - 6,823 cases
 - 6 cases per 1,000 beneficiaries
- ≥ 1 pharmacy claim
 - 6,595 cases
 - 6 cases per 1,000 beneficiaries
- ≥ 3 medical claims and ≥ 1 prescription claim
 - 3,693 cases
 - 3 cases per 1,000 beneficiaries

Benchmark Prevalence of RA Using Claims from 4 Physician Specialties

- ≥ 3 medical claims
 - 3,294 cases
 - 3 cases per 1,000 beneficiaries
- ≥ 1 pharmacy claim
 - 6,222 cases
 - 6 cases per 1,000 beneficiaries
- ≥ 3 medical claims and ≥ 1 prescription claim
 - 2,036 cases
 - 2 cases per 1,000 beneficiaries

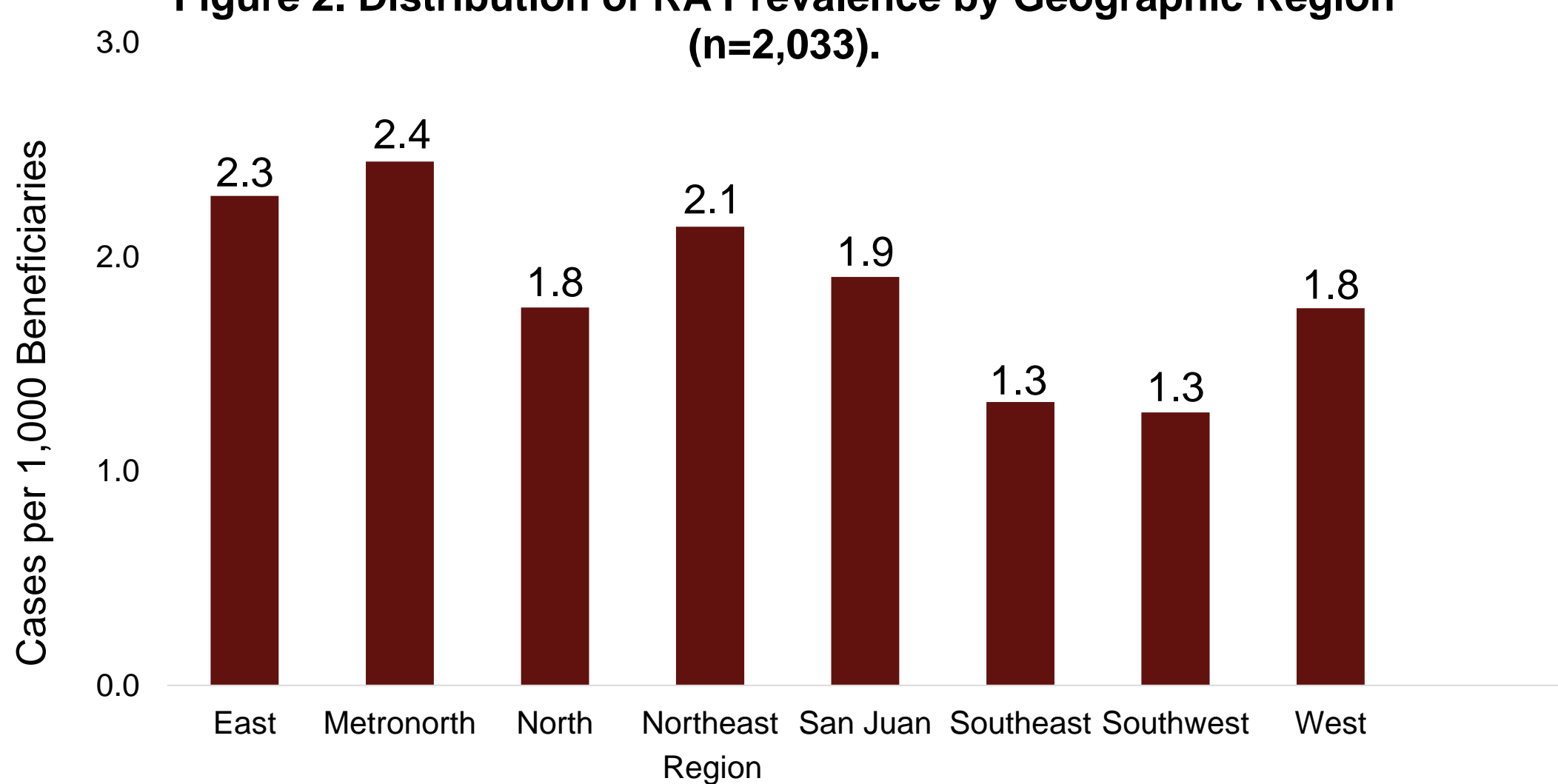
- The prevalence of RA was over 6 times higher for females than for males.

Figure 1. Distribution of RA Prevalence by Gender (n=1,936).



- The prevalence of RA is similarly distributed across regions in Puerto Rico, ranging from 1.3 to 2.4 cases per 1,000 GSHCP beneficiaries.

Figure 2. Distribution of RA Prevalence by Geographic Region (n=2,033).



- Prevalence of RA is higher among older beneficiaries and peaked in the age group 65 to 69.

Figure 3. Distribution of RA Prevalence by Age Group (n=2,036).

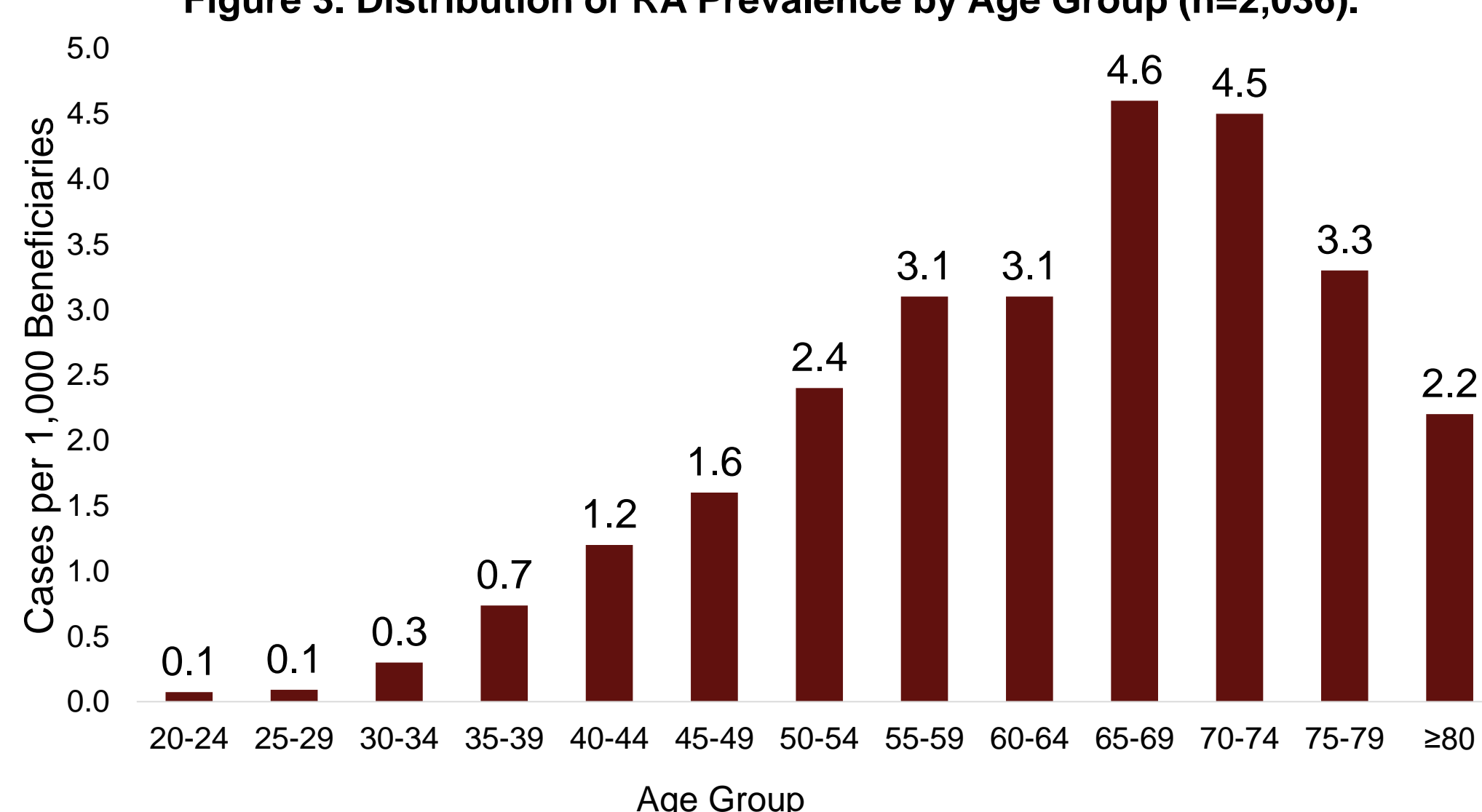


Figure 4. Utilization of Biologics, Non-biologics, and Combinations by Beneficiaries

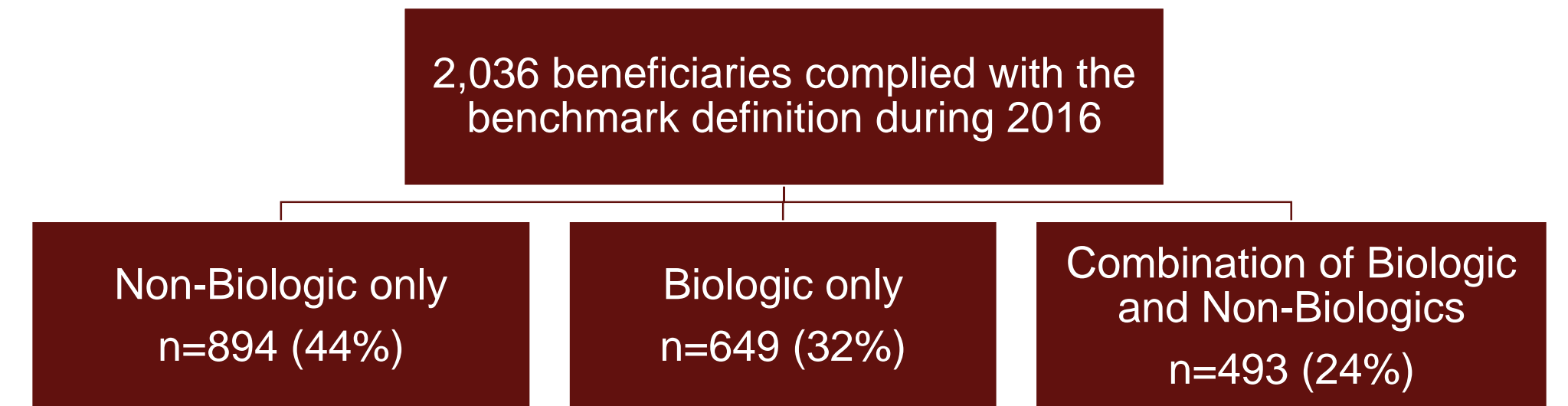


Table 1. Top RA Pharmacotherapies Prescribed (n=2,036 beneficiaries ; n=18,953 pharmacy claims)

Product Name	Frequency (%)
ACTEMRA® (tocilizumab)	78 (0.41)
AZULFIDINE	2 (0.01)
CIMZIA® (certolizumab)	278 (1.47)
ENBREL® (etanercept)	3,122 (16.47)
HUMIRA® (adalimumab)	4,613 (24.34)
HYDROXYCHLOROQUINE SULFATE	4,326 (22.82)
METHOTREXATE	3,371 (17.79)
LEFLUNOMIDE	426 (2.25)
METOLAZONE	1 (0.01)
ORENCIA® (abatacept)	1340 (7.07)
REMICADE® (infliximab)	14 (0.07)
RITUXAN® (rituximab)	9 (0.05)
SIMPONI® (golimumab)	835 (4.41)
SULFASALAZINE	1 (0.01)
TREXALL® (methotrexate)	12 (0.06)
XELJANZ® (tofacitinib)	525 (2.77)

Figure 5. Number and Type of Pharmacotherapy Prescribed by Physician Specialty (n=18,853 pharmacy claims).

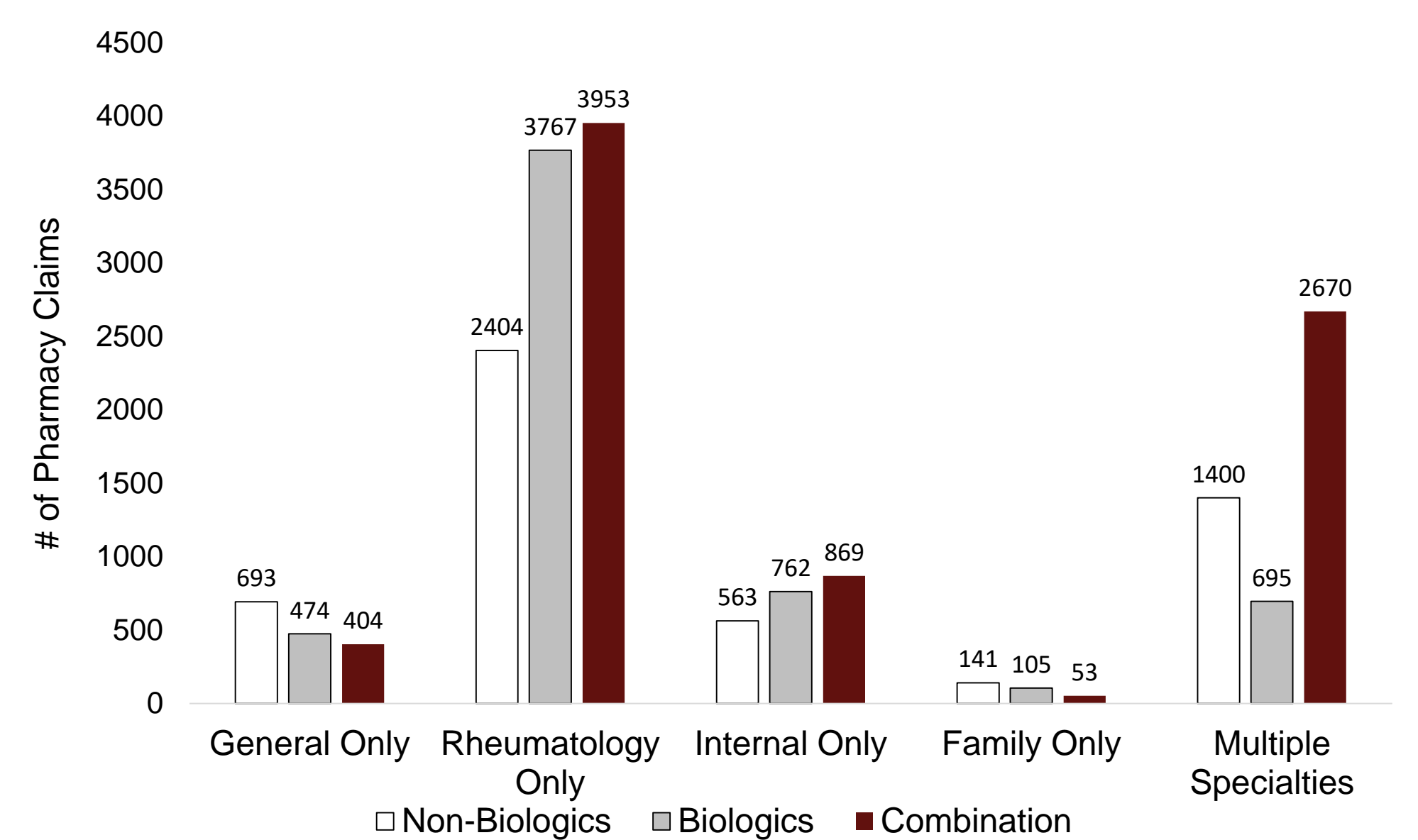


Table 2. Frequency, Median Cost, and Total Cost of Physician Visits for RA by Physician Specialty (n=22,616 medical claims).

Specialty Visited	Median Number of Claims	Median Payment per Claim	Median Total Payment
General Only	1	\$31	\$47
Rheumatology Only	2	\$60	\$110
Internal Only	1	\$42	\$60
Family Only	1	\$18	\$24
Multiple Specialties	4	\$58	\$237

Table 3. Frequency, Median Cost, and Total Cost of Pharmacy Prescriptions for RA by Physician Specialty (n=18,853 pharmacy claims).

Specialty Visited	Median Number of Claims	Median Payment per Claim	Median Total Payment
General Only	8	\$1,609.02	\$13,051.50
Rheumatology Only	14	\$3,066.23	\$40,937.30
Internal Only	10	\$2,891.75	\$30,794.20
Family Only	8	\$1,845.30	\$6,954.42
Multiple Specialties	14	\$2,049.94	\$36,072.20

Conclusion

Prevalence

- Puerto Rico RA prevalence of 0.19% calculated by this study is lower than United States prevalence calculated by Hunter et al. (0.53% - 0.54%).⁴
- Calculated prevalence more closely matches the prevalence of RA in Korea (0.28% - 0.32%), as determined by a similar algorithm which included at least one medication claim.⁵
- Prevalence did not change much (0.34% to 0.19%) before and after less relevant specialties (e.g., cardiology, dermatology) were excluded, implying specificity of benchmark definition.

Medication Frequency

- Patients who saw multiple specialties were more likely to be prescribed combination therapy than patients who saw any other specialty alone.
- ACR guidelines recommend monotherapy before combination therapy; therefore, more research should be conducted to explain this trend or encourage alternate prescribing patterns.

Cost Analysis

- Patients visiting multiple specialties procured higher medical cost than patients visiting any one specialty.
- RA patients should be encouraged to seek treatment from only rheumatologists before seeing multiple specialties, with the objective of both lowering cost and optimizing treatment.
- Patients may be visiting multiple specialties due to a new diagnosis of RA requiring referral from a primary care provider to a specialist. Further incidence studies could reveal more about newly diagnosed RA patients.

References

1. Hayter SM, Cook MC. Updated assessment of the prevalence, spectrum and case definition of autoimmune disease. *Autoimmun Rev* 2012;11:754-65.
2. Nurmohamed MT, Dijkmans BA. Efficacy, tolerability and cost effectiveness of disease-modifying antirheumatic drugs and biologic agents in rheumatoid arthritis. *Drugs* 2005;65:661-94.
3. Kim SY, Servi A, Polinski JM, et al. Validation of rheumatoid arthritis diagnoses in health care utilization data. *Arthritis Res Ther* 2011;13:R32.
4. Hunter TM, Boytsov NN, Zhang X, et al. Prevalence of rheumatoid arthritis in the United States adult population in healthcare claims databases, 2004-2014. *Rheumatol Int*. 2017;37(9):1551-1557.
5. Won S, Cho SK, Kim D, et al. Update on the prevalence and incidence of rheumatoid arthritis in Korea and an analysis of medical care and drug utilization. *Rheumatol Int*. 2018;38(4):649-656.