Replication of Effects of the angiotensin-receptor blocker telmisartan on cardiovascular events in high-risk patients intolerant to angiotensin-converting enzyme inhibitors: a randomised controlled trial (TRANSCEND trial)

May 13, 2020

1. RCT Details

This section provides a high-level overview of the RCT that the described real-world evidence study is trying to replicate as closely as possible given the remaining limitations inherent in the healthcare databases.

1.1 Title

Effects of the angiotensin-receptor blocker telmisartan on cardiovascular events in high-risk patients intolerant to angiotensin-converting enzyme inhibitors: a randomised controlled trial (TRANSCEND trial)

1.2 Intended aim(s)

The primary objective of the study is to determine if treatment with telmisartan 80mg daily is superior to placebo reducing the composite endpoint in patients who are intolerant to Angiotension Converting Enzyme inhibitors.

1.3 Primary endpoint for replication and RCT finding

Cardiovascular Death, Non-fatal Myocardial Infarction, Non-fatal Stroke and Hospitalization for Congestive Heart Failure

1.4 Required power for primary endpoint and noninferiority margin (if applicable)

An overall sample size of 6000 patients was expected to have 94% power to detect a hazard ratio of 0·81 for telmisartan compared with placebo at a two-sided alpha of 0·05.

1.5 Primary trial estimate targeted for replication

HR = 0.92 (95% CI 0.81–1.05) comparing telmisartan to placebo (Yusuf et al., 2008, Lancet)

2. Person responsible for implementation of replication in Aetion

Ajinkya Pawar, Ph.D. implemented the study design in the Aetion Evidence Platform. S/he is not responsible for the validity of the design and analytic choices. All implementation steps are recorded and the implementation history is archived in the platform.

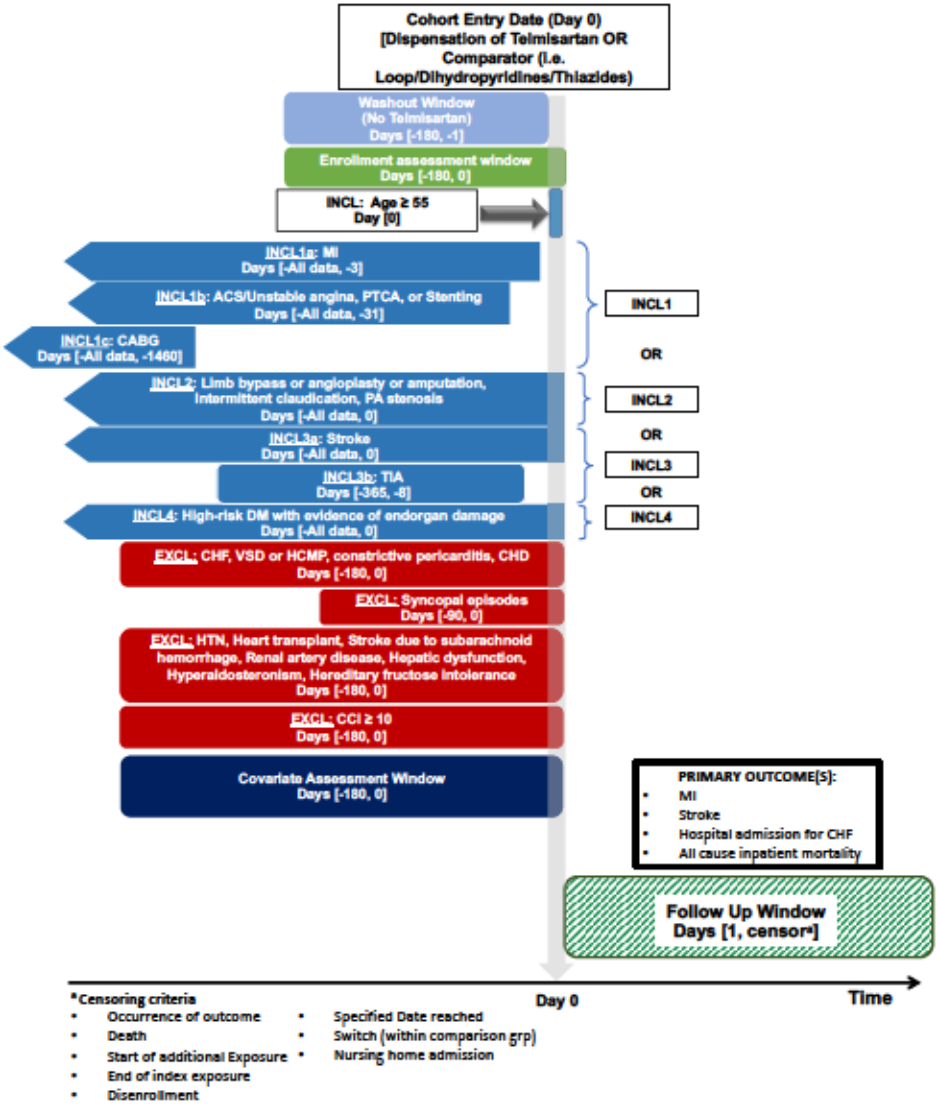
3. Data Source(s)

United/Optum, MarketScan

4. Study Design Diagram

The study design diagram visualizes key aspects of the longitudinal study design for expedited review.

Design Diagram – TRANSCEND TRIAL REPLICATION



5. Cohort Identification

5.1 Cohort Summary

This study will involve a new user, parallel group, propensity score-matched, retrospective cohort study design comparing telmisartan to other antihypertensives, including loop diuretics, thiazides, and dihydropyridines. Although the trial compared telmisartan with placebo added to usual care, we selected an active comparator for this study because non-user comparator groups are known to often lead to confounding by indication and biased treatment effect estimates. This group of other antihypertensives were selected as the primary comparator because intolerance to ACEi was a primary inclusion criteria for the trial. Therefore, patients in both arms were on a mix of non-ACEi and non-ARB antihypertensives as background therapy.

The patients will be required to have continuous enrollment during baseline period of 180 days before initiation of telmisartan or a comparator drug (cohort entry).

5.2 Important steps for cohort formation

New users (defined as no use in 180 days prior to index date) of an exposure and a comparator drug will be identified.

5.2.1 Eligible cohort entry dates

Market availability of telmistartan in the U.S. started on November 10, 1998, however, the Marketscan and Optum data are available at BWH only from Jan 1, 2003 and Jan 1, 2004, respectively.

- For Marketscan: Jan 1, 2003 -Dec 2017 (end of data availability).
- For Optum: Jan 1, 2004-June 30, 2019 (end of data availability).

5.2.2 Specify inclusion/exclusion criteria for cohort entry and define the index date

Inclusion and exclusion criteria were adapted from the trial as closely as possible. Definitions for all inclusion/exclusion are provided in **Appendix A** and are summarized in the flowcharts below.

5.3 Flowchart of the study cohort assembly

	Optum		MarketScan	
	Less Excluded Patients	Remaining Patients	Less Excluded Patients	Remaining Patients
All patients in the database		75,524,500		191,990,035
Did not meet cohort entry criteria	-75,483,721	40,779	-191,937,915	52,120
Final cohort		40,779		52,120

6. Variables

6.1 Exposure-related variables:

Study drug:
The study exposure of interest is initiation of telmisartan. Initiation will be defined by no use of telmisartan or a comparator in the prior 6 months before treatment initiation (washout period).

Comparator agents-

- Initiators of telmisartan will be compared to initiators of-
    - Loop/Dihydropyridines/Thiazides

6.2 Preliminary Covariates:

- Age
- Sex
- Combined Comorbidity Index (CCI), measured over the default baseline covariate assessment period, defined as 180 days prior to and including index date

Covariates listed above represent only a small subset of covariates that will ultimately be controlled for in the design and analysis. We use the covariates above only for initial feasibility analyses to judge whether there is likely to be sufficient overlap between treatment groups to proceed with the study. Remaining covariates are defined only after the study has passed the initial feasibility analysis and the initial power assessment and are listed in Table 1 (**Appendix B**). These covariates are based on those used by Patorno et al. (2019).

6.3 Outcome variables and study follow-up:

6.3.1 Outcome variables

Effectiveness outcomes of interest (definitions provided in **Appendix A**):

- **Primary outcome**: Composite of non-fatal myocardial infarction, non-fatal stroke, or CV mortality, hospital admission for heart failure
- Secondary outcomes: Individual components:
    - Hospital admission for heart failure
    - Hospital admission for MI (for purposes of this individual component, fatal MI is included)
    - Hospital admission for stroke (for purposes of this individual component, fatal stroke is included)
    - All-cause mortality/CV mortality:
        - Information on CV mortality through data linkage with the National Death Index (NDI) will only be available for Optum Clinformatics.
        - All-cause inpatient mortality identified using discharge status codes will be used as a proxy for "CV mortality" in commercial databases

6.3.2 Study follow-up

Both as-treated (AT) and intention-to-treat (ITT) analyses will be conducted with treatment defined as the index drug on day of cohort entry. Because adherence in the real world databases is expected to be much worse than in the trial, the AT analysis is the **primary** analysis, as it targets the relative hazard of outcomes on treatment.

For the AT analyses, the follow-up will start the day after initiation of telmisartan and comparator and will continue until the earliest date of the following events:

- The first occurrence of the outcome of interest, unless otherwise specified for selected outcomes,
- The date of end of continuous registration in the database,
- End of the study period,
- Measured death event occurs,
- Nursing home admission

  - Nursing home admissions are considered a censoring event because the data sources utilized typically provide little to no data on a patient, particularly on drug utilization, after admission. We will utilize this as an exclusion reason for cohorts for the same reason.
- The date of drug discontinuation, defined as the date of the last continuous treatment episode of the index drug (telmisartan and comparator) plus a defined grace period (i.e., 30 days after the end of the last prescription's days' supply in main analyses).
- The date of augmentation or switching from the comparator group to the exposure group (initiation of telmisartan in the comparator group).

For the intention-to-treat (ITT) analyses, the censoring based on the augmentation/switching and treatment discontinuation will be replaced with a maximum allowed follow-up time of 365 days.

7. Initial Feasibility Analysis

Aetion report name:

Optum- https://bwh-dope.aetion.com/projects/details/868/results/52960/result/14
MarketScan- https://bwh-dope.aetion.com/projects/details/853/results/52961/result/14

Date conducted: 04/27/2020

Complete Aetion feasibility analysis using age, sex, and CCI as the only covariates and the primary endpoint (Section 6.3.1) as the outcome. No measures of association will be computed nor will incidence rates stratified by treatment group.

- Complete study flowchart from Section 5.3
- Report patient characteristics by treatment group
- Report summary parameters of study population
- Report median follow-up time by treatment group
- Report reasons for censoring in the overall study population

8. Initial Power Assessment

Aetion report name:

Optum- https://bwh-dope.aetion.com/projects/details/868/results/37656/result/0
MarketScan- https://bwh-dope.aetion.com/projects/details/853/results/37657/result/0

Date conducted: 08/04/2019

In order to complete the initial power analysis, the dummy outcome of a 90-day gap in database enrollment will be used. This outcome is used to ensure that no information on the comparative risks of the outcomes of interest are available at this stage. Complete a 1:1 PS-matched comparative analysis using this outcome. PS should include only 3 covariates: age, sex, and combined comorbidity index. Power calculations are based on the formulas from Chow et al. (2008).

- Stop analyses until feasibility and power are reviewed by primary investigators and FDA. Reviewers evaluate the results of the analyses described above in Sections 7 and 8, including numbers of patients, patient characteristics, follow-up time, and reasons for censoring by treatment group, as well as overall rates of outcomes and study power. These parameters are re-evaluated and reported in the subsequent sections, after incorporating feedback and refining the protocol.

Reviewed by PI:	Jessica Franklin	Date reviewed:	8/16/19
Reviewed by FDA:	Ken Quinto	Date reviewed:	8/31/19
Reasons for stopping analysis (if required):			

9. Balance Assessment

Aetion report name:

Optum- https://bwh-dope.aetion.com/projects/details/868/results/52962/result/0
MarketScan- https://bwh-dope.aetion.com/projects/details/853/results/52963/result/0

Date conducted: 04/27/2020

After review of initial feasibility and power analyses, complete creation of the remaining covariates (see Table 1 below for list of

covariates). Again, using the dummy outcome of a 90-day gap in database enrollment, complete a 1:1 PS-matched analysis. The PS should include the complete list of covariates (excluding laboratory values, which are missing in some patients).

- Provide plot of PS distributions stratified by treatment group.

  Note- Please refer to **Appendix B.**

- Report covariate balance after matching.

  Note- For Table 1, please refer to **Appendix B.**

- Report reasons for censoring by treatment group.

	Overall	**Referent**	**Exposure**
Dummy Outcome	0 (0.00%)	0 (0.00%)	0 (0.00%)
Death	303 (0.76%)	214 (1.07%)	89 (0.44%)
Switch from referent drug to telmisartan	104 (0.26%)	104 (0.52%)	0 (0.00%)
Discontinuation of telmisartan	9,119 (22.77%)	0 (0.00%)	9,119 (45.54%)
Specified date reached	7,198 (17.97%)	3,903 (19.49%)	3,295 (16.46%)
End of patient enrollment	6,003 (14.99%)	3,976 (19.86%)	2,027 (10.12%)
Discontinuation of Loop/Dihydropyridines/Thiazides + nursing home + Pharmacy disenrollment	17,321 (43.25%)	11,827 (59.06%)	5,494 (27.44%)

- Report follow-up time by treatment group.

Median Follow-Up Time (Days) [IQR]		
Patient Group	**Optum**	**MarketScan**
Overall Patient Population	113 [59-229]	150 [77-380]

Referent	122 [66-304]	204 [84-522]
Exposure	106 [58-178]	118 [66-273]

- Report overall risk of the primary outcome.

	Optum	Marketscan	Pooled
Risk per 1,000 patients (Composite endpoint including death from cardiovascular causes, myocardial infarction, stroke, and hospitalization for heart failure)	51.95	73.72	64.1

9.1 **Final Power Assessment**

Date conducted: 04/27/2020

- Re-calculate power in the appropriate excel table, using the revised number of matched patients from the PS-match in Section 9. All other parameters in the table should be the same as in Section 8. If the study is to be implemented in more than one database, copy and paste excel sheet to report power for each database separately and for the pooled analysis that uses data from all databases together. Power calculations are based on the formulas from Chow et al. (2008).
    - Pooled

Superiority Analysis	
Number of patients matched	
Reference	20,024
Exposed	20,024
Risk per 1,000 patients	64.10
Desired HR from RCT	0.81
Alpha (2-sided)	0.05
Number of events expected	2567.0768
Power	0.999635278

- Optum

Superiority Analysis	
Number of patients matched	
Reference	8,710
Exposed	8,710
Risk per 1,000 patients	51.95
Desired HR from RCT	0.81
Alpha (2-sided)	0.05
Number of events expected	904.969
Power	0.886777233

- MarketScan

Superiority Analysis	
Number of patients matched	
Reference	11,314
Exposed	11,314
Risk per 1,000 patients	73.72
Desired HR from RCT	0.81
Alpha (2-sided)	0.05
Number of events expected	1668.13616
Power	0.990441892

- Stop analyses until balance and final power assessment are reviewed by primary investigators, FDA, and assigned members of advisory board. Reviewers evaluate the results of the analyses described above in Sections 9 and 10, including numbers of patients, balance in patient characteristics, follow-up time, and reasons for censoring by treatment group, as well as overall rates of outcomes and study power.

Reviewed by PI:	Jessica Franklin	Date reviewed:	5/13/20
Reviewed by FDA:	Ken Quinto	Date reviewed:	3/20/20
Reasons for stopping analysis (if required):			

10. Study Confidence and Concerns

Deadline for voting on study confidence and listing concerns:
Date votes and concerns are summarized:

- If final feasibility and power analyses are reviewed and approved, proceed to the remaining protocol steps.
- All study team and advisory board members that review this protocol should at this stage provide their level of confidence for the success of the RWD study in the Google Form. This form also provides space for reviewers to list any concerns that they feel may contribute to a failure to replicate the findings of the RCT, including differences in study populations, poor measurement of study variables, or residual confounding. All responses will be kept confidential and individual-level results will only be shared with the individual respondent.
- After the deadline for voting has passed, provide the distribution of responses and summarize all concerns here.

11. Register study protocol on clinicalTrials.gov

Date conducted:

- Register the study on clinicalTrials.gov and upload this document.

12. Comparative Analyses

Aetion report name:
Date conducted:

12.1 For primary analysis:

- In the PS-matched cohort of telmisartan and loop/dihydropyridines/thiazides initiators from Section 9, calculate the HR for each outcome for telmisartan versus referent patients using a Cox proportional hazards model.

12.2 For secondary analyses:

13. Requested Results

13.1 Table 1: Baseline characteristics before and after adjustment

Variable	Before adjustment			After adjustment		
	Referent	Exposure	Std. diff.	Referent	Exposure	Std. diff.
Number of patients			-			-

Age categories						
...						

13.2 Table 2: Follow-up time

Patient Group	**Median Follow-Up Time (Days) [IQR]**
Overall Patient Population	
Referent	
Exposure	

13.3 Table 3: Censoring events

	Overall	**Referent**	**Exposure**
Outcome			
Death			
Start of an additional exposure			
End of index exposure			
Specified date reached			
End of patient data			
End of patient enrollment			
...			

13.4 Table 4: Results from primary analyses;

Analysis	**No. exposed events**	**No. referent events**	**Exposed rate**	**Referent rate**	**HR (95% CI)**
Crude					
Analysis 1					
Analysis 2					
...					

HR, Hazard Ratio; CI, Confidence Interval.

13.5 Table 5: Results from secondary analyses;

14. References

Chow S, Shao J, Wang H. 2008. *Sample Size Calculations in Clinical Research*. 2nd Ed. Chapman & Hall/CRC Biostatistics Series. **page 177**

Patorno E, Pawar A, Franklin JM, et al. Empagliflozin and the Risk of Heart Failure Hospitalization in Routine Clinical Care: A First Analysis from the Empagliflozin Comparative Effectiveness and Safety (EMPRISE) Study. Circulation. 2019; in press. (https://www.ahajournals.org/doi/pdf/10.1161/CIRCULATIONAHA.118.039177)

Appendix A

#	TRANSCEND trial definitions	Implementation in routine care	References/Rationale	Color coding
	Trial details- 3- Failed 5- No NI margin specified - 3 weeks run in		**Please see the following Google Drive for further details or any missing information:** [illegible]	Criteria
	EXPOSURE vs. COMPARISON		**ICD-10 codes are not listed in this document because of excel cell size limitations and excessive number of ICD-10 codes. Full ICD-10 code lists will be available in the above Google Drive Folder (link above). ICD-9 to ICD-10 code conversions were completed using a SAS macro that implements forward/ backward mapping based on the CMS ICD-9 to ICD-10 mapping:** https://www.nber.org/data/icd9-icd-10-cm-and-pcs-crosswalk-general-equivalence-mapping.html	Adequate mapping in claims
	Telmisartan 80 mg/day vs. Placebo **TRANSCEND:** **Aimed to determine if telmisartan is superior to placebo in patients who are intolerant of ACE inhibitors**	**For Transcend trial,** Telmisartan + Loop/Dihydropyridines/Thiazides vs. Loop/Dihydropyridines/Thiazides (Please see **Comparison** sheet for drug list) New-use of Telmisartan (Exposure group) PLUS Loop/Dihydropyridines/Thiazides (days supply overlap on the index date) vs New-use of Loop/Dihydropyridines/Thiazides (Reference group)		Intermediate mapping in claims
	PRIMARY OUTCOME			Poor mapping or cannot be measured in claims
	Death from cardiovascular causes, myocardial infarction, stroke, or hospitalization for heart failure.	**Measured 1 days after drug initiation in diagnosis position specified below and inpatient care setting:** *Composite inpatient mortality/MI/Stroke/CHF –* Hospital admission for CHF (inpatient only, any position) ICD-9 diagnosis: 428.x, 398.91, 402.01, 402.11, 402.91, 404.01, 404.11, 404.91, 404.03, 404.13, 404.93 MI (inpatient only, any position) ICD-9 diagnosis: 410.x excluding 410.x2 Stroke (inpatient only, primary position only) ICD-9 diagnosis: 430.xx, 431.xx, 433.x1, 434.xx (excluding 434.x0), 436.x Mortality- See **Mortality** Sheet.	**For MI:** ➔PPV 94% in Medicare claims data [Kiyota Y, Schneeweiss S, Glynn RJ, Cannuscio CC, Avorn J, Solomon DH. Accuracy of Medicare claims-based diagnosis of acute myocardial infarction: estimating positive predictive value on the basis of review of hospital records. American heart journal 2004;148:99-104.] ➔PPV 88.4% in commercially-insured population [Wahl PM, Rodgers K, Schneeweiss S, et al. Validation of claims-based diagnostic and procedure codes for cardiovascular and gastrointestinal serious adverse events in a commercially-insured population. Pharmacoepidemiology and Drug Safety 2010;19:596-603.] **For stroke:** PPV of 85% or higher for ischemic stroke PPV ranging from 80% to 98% for hemorrhagic stroke ➔[Andrade SE, Harrold LR, Tjia J, et al. A systematic review of validated methods for identifying cerebrovascular accident or transient ischemic attack using administrative data. Pharmacoepidemiology and Drug Safety 2012;21 Suppl 1:100-28.] ➔[Tirschwell DL, Longstreth WT, Jr. Validating administrative data in stroke research. Stroke; a journal of cerebral circulation 2002;33:2465-70.] ➔[Roumie CL, Mitchel E, Gideon PS, Varas-Lorenzo C, Castellsague J, Griffin MR. Validation of ICD-9 codes with a high positive predictive value for incident strokes resulting in hospitalization using Medicaid health data. Pharmacoepidemiology and drug safety 2008;17:20-6.]	Can't be measured in claims but not important for the analysis
	INCLUSION CRITERIA			
	Individuals 55 years of age with 1 of the following:	Age ≥55 years **at drug initiation**		
1	**Coronary artery disease**			
1a	Previous myocardial infarction (>2 days post uncomplicated MI)	**Measured from the start of all available data to 2 days prior to drug initiation in any diagnosis position and the inpatient or outpatient care setting** Acute MI ICD-9 diagnosis: 410.xx Old MI ICD-9 diagnosis: 412.xx	Patorno, Elisabetta et al. "Cardiovascular outcomes associated with canagliflozin versus other non-gliflozin antidiabetic drugs: population based cohort study." BMJ 2018;360:k119 http://dx.doi.org/10.1136/bmj.k119 Patorno, Elisabetta et al. "Empagliflozin and the Risk of Heart Failure Hospitalization in Routine Clinical Care: A First Analysis from the Empagliflozin Comparative Effectiveness and Safety (EMPRISE) Study." Circulation. 2019 Apr 8. doi: 10.1161/CIRCULATIONAHA.118.039177	
1b	Stable angina or unstable angina >30 days before informed consent and with documented evidence of multivessel coronary artery disease	**Measured from the start of all available data to 30 days prior to drug initiation in any diagnosis position and the inpatient or outpatient care setting** ACS/Unstable angina ICD-9 diagnosis: 411.xx Stable angina ICD-9 diagnosis: 413.xx	Patorno, Elisabetta et al. "Cardiovascular outcomes associated with canagliflozin versus other non-gliflozin antidiabetic drugs: population based cohort study." BMJ 2018;360:k119 http://dx.doi.org/10.1136/bmj.k119 Patorno, Elisabetta et al. "Empagliflozin and the Risk of Heart Failure Hospitalization in Routine Clinical Care: A First Analysis from the Empagliflozin Comparative Effectiveness and Safety (EMPRISE) Study." Circulation. 2019 Apr 8. doi: 10.1161/CIRCULATIONAHA.118.039177	

Appendix A

1c	Multi-vessel PTCA >30 days before informed consent	**Measured from the start of all available data to 30 days prior to drug initiation in any procedure position and the care setting indicated below:** PTCA (Inpatient only) CPT-4: 92973, 92982, 92984, 92995, 92996, 92920 – 92921, 92924 – 92925, 92937, 92938, 92941, 92943, 92944 (Inpatient or outpatient) ICD-9 procedure: 00.66, 36.01, 36.02, 36.03, 36.05, 36.09 Stenting (Inpatient only) CPT-4: 92980, 92981, 92928 – 92929, 92933 - 92934 (Inpatient or outpatient) ICD-9 procedure: 36.06, 36.07 Transmyocardial revascularization (Inpatient only) CPT-4: 33140, 33141 (Inpatient or outpatient) ICD-9 procedure: 36.31-36.34	Patorno, Elisabetta et al. "Cardiovascular outcomes associated with canagliflozin versus other non-gliflozin antidiabetic drugs: population based cohort study." BMJ 2018;360:k119 http://dx.doi.org/10.1136/bmj.k119 Patorno, Elisabetta et al. "Empagliflozin and the Risk of Heart Failure Hospitalization in Routine Clinical Care: A First Analysis from the Empagliflozin Comparative Effectiveness and Safety (EMPRISE) Study." Circulation. 2019 Apr 8. doi: 10.1161/CIRCULATIONAHA.118.039177
1d	Multi-vessel CABG surgery >4 years before informed consent, or with recurrent angina following surgery	**Measured from the start of all available data to 1460 days (4 years) prior to drug initiation in any procedure position and the inpatient care setting** CABG CPT-4: 33510 – 33536, 33545, 33572. ICD-9 procedure: 36.1x, 36.2x	Patorno, Elisabetta et al. "Cardiovascular outcomes associated with canagliflozin versus other non-gliflozin antidiabetic drugs: population based cohort study." BMJ 2018;360:k119 http://dx.doi.org/10.1136/bmj.k119 Patorno, Elisabetta et al. "Empagliflozin and the Risk of Heart Failure Hospitalization in Routine Clinical Care: A First Analysis from the Empagliflozin Comparative Effectiveness and Safety (EMPRISE) Study." Circulation. 2019 Apr 8. doi: 10.1161/CIRCULATIONAHA.118.039177
2	**Peripheral artery disease**		
2a	Previous limb bypass surgery or Previous limb bypass surgery or angioplasty	**Measured from the start of all available data prior to and including day of drug initiation in any procedure position and the inpatient or outpatient care setting** Previous limb bypass surgery/Previous limb bypass surgery or angioplasty CPT-4: 35556, 35566, 35570, 35571, 35583-35587, 35623, 35656, 35666, 35671 Lower-extremity endarterectomy, stenting, angioplasty, or atherectomy ICD-9 procedure: 38.18, 38.19 (Outpatient only) CPT-4: 35454, 35456, 35459, 35470, 35473, 35474, 35482, 35483, 35485, 35492, 35493, 35495, 37207, 37208, 37220-37235 Lower-extremity bypass ICD-9 procedure: 39.25, 39.29 (Outpatient only) CPT-4: 35351, 35355, 35361, 35363, 35371, 35372, 35521, 35533, 35541, 35546, 35548, 35549, 35551, 35556, 35558, 35563, 35565, 35566, 35571, 35621, 35623, 35641, 35646, 35647, 35651, 35654, 35656, 35661, 35663, 35666, 35671, 35570, 35582, 35583, 35585, 35587, 35637, 35638, 35681, 35682, 35683 Other peripheral vascular surgery ICD-9 procedure: 38.08, 38.09, 38.38, 38.39,38.48, 38.49, 39.5x, 39.9x (Outpatient only) CPT-4: 35256, 35286, 35381, 35879	
2b	Previous limb or foot amputation	**Measured from the start of all available data prior to and including day of drug initiation in any diagnosis/procedure position and the inpatient or outpatient care setting** Lower extremity amputation ICD-9 diagnosis: V49.7x (excluding V49.76, V49.77) ICD-9 procedure: 84.10-84.18 CPT: 27590, 27591, 27592, 27880, 27881, 27882, 27884, 27886, 27888, 27889, 28800, 28805, 28810, 28820, 28825	Patorno, Elisabetta et al. "Cardiovascular outcomes associated with canagliflozin versus other non-gliflozin antidiabetic drugs: population based cohort study." BMJ 2018;360:k119 http://dx.doi.org/10.1136/bmj.k119 Patorno, Elisabetta et al. "Empagliflozin and the Risk of Heart Failure Hospitalization in Routine Clinical Care: A First Analysis from the Empagliflozin Comparative Effectiveness and Safety (EMPRISE) Study." Circulation. 2019 Apr 8. doi: 10.1161/CIRCULATIONAHA.118.039177
2c	Intermittent claudication, with ankle:arm BP ratio =<0.80 on at least 1 side	**Measured from the start of all available data prior to and including day of drug initiation in any diagnosis position and the inpatient or outpatient care setting** Atherosclerosis of native arteries of the extremities with intermittent claudication ICD-9 diagnosis: 440.21	
2d	Significant peripheral artery stenosis (>50%) documented by angiography or non-invasive testing	**Measured from the start of all available data prior to and including day of drug initiation on at least two claims on separate days in any diagnosis/procedure position and the inpatient or outpatient care setting (unless otherwise specified):** Peripheral vascular disease ICD-9 diagnosis: 440.20 – 440.24, 440.29 – 440.32, 440.3, 440.4, 443.9	Patorno, Elisabetta et al. "Cardiovascular outcomes associated with canagliflozin versus other non-gliflozin antidiabetic drugs: population based cohort study." BMJ 2018;360:k119 http://dx.doi.org/10.1136/bmj.k119 Patorno, Elisabetta et al. "Empagliflozin and the Risk of Heart Failure Hospitalization in Routine Clinical Care: A First Analysis from the Empagliflozin Comparative Effectiveness and Safety (EMPRISE) Study." Circulation. 2019 Apr 8. doi: 10.1161/CIRCULATIONAHA.118.039177
3	**Cerebrovascular disease**		

Appendix A

3a	Previous stroke	**Measured from the start of all available data prior to and including day of drug initiation in any diagnosis position and the inpatient or outpatient care setting** Stroke ICD-9 diagnosis: 430.xx, 431.xx, 433.x1, 434.xx (excluding 434.x0), 436.x	Patorno, Elisabetta et al. "Cardiovascular outcomes associated with canagliflozin versus other non-gliflozin antidiabetic drugs: population based cohort study." BMJ 2018;360:k119 http://dx.doi.org/10.1136/bmj.k119 Patorno, Elisabetta et al. "Empagliflozin and the Risk of Heart Failure Hospitalization in Routine Clinical Care: A First Analysis from the Empagliflozin Comparative Effectiveness and Safety (EMPRISE) Study." Circulation. 2019 Apr 8. doi: 10.1161/CIRCULATIONAHA.118.039177
3b	Transient ischemic attacks >7 days and <1 year before informed consent	**Measured 365 days prior to drug initiation to 7 days prior to drug initiation in any diagnosis position and the inpatient or outpatient care setting** TIA ICD-9 diagnosis: 435.xx	
4	**Diabetus mellitus**		
4	Diabetes mellitus High-risk diabetics with evidence of endorgan damage	**Measured at the start of all available data prior to and including day of drug initiation in any diagnosis position and the inpatient or outpatient care setting** Diabetic retinopathy ICD-9 diagnosis: 362.0x Diabetes with other ophthalmic manifestations ICD-9 diagnosis: 250.5x (without mention of 362.01-362.07), 366.41, 365.44 Diabetic nephropathy ICD-9 diagnosis: 250.4x, 583.81 Diabetic neuropathy ICD-9 diagnosis: 250.6x, 357.2x, 337.1 Diabetic foot ICD-9 diagnosis: 707.1x	Patorno, Elisabetta et al. "Cardiovascular outcomes associated with canagliflozin versus other non-gliflozin antidiabetic drugs: population based cohort study." BMJ 2018;360:k119 http://dx.doi.org/10.1136/bmj.k119 Patorno, Elisabetta et al. "Empagliflozin and the Risk of Heart Failure Hospitalization in Routine Clinical Care: A First Analysis from the Empagliflozin Comparative Effectiveness and Safety (EMPRISE) Study." Circulation. 2019 Apr 8. doi: 10.1161/CIRCULATIONAHA.118.039177
	Exclusion criteria		
1	**Medication use**		
1a	Inability to discontinue ACE inhibitors or ARB	N/A	
1b	Known hypersensitivity or intolerance to ACE inhibitors or ARB (patient intolerant of ACE inhibitor can be enrolled in TRANSCEND)	N/A	
2	**Cardiovascular disease (HF)**		
2a	**Symptomatic** congestive heart failure	**Measured 180 days prior to and incuding day of drug initiation in any diagnosis position and the inpatient/emergency room care setting-** Heart failure diagnosis requiring hospitalization ICD-9 diagnosis: 428.x, 398.91, 402.01, 402.11, 402.91, 404.01, 404.11, 404.91, 404.03, 404.13, 404.93 ICD-10 diagnosis: I09.81, I11.0, I13.0, I13.2, I50.1, I50.20, I50.21, I50.22, I50.23, I50.31, I50.32, I50.33, I50.40, I50.41, I50.42, I50.43, I50.9	Patorno, Elisabetta et al. "Cardiovascular outcomes associated with canagliflozin versus other non-gliflozin antidiabetic drugs: population based cohort study." BMJ 2018;360:k119 http://dx.doi.org/10.1136/bmj.k119 Patorno, Elisabetta et al. "Empagliflozin and the Risk of Heart Failure Hospitalization in Routine Clinical Care: A First Analysis from the Empagliflozin Comparative Effectiveness and Safety (EMPRISE) Study." Circulation. 2019 Apr 8. doi: 10.1161/CIRCULATIONAHA.118.039177
2b	**Hemodynamically significant** primary **valvular** or outflow tract obstruction	**Measured 180 days prior to and incuding day of drug initiation in any diagnosis position and the inpatient or outpatient care setting** Ventricular septal defect ICD-9 diagnosis: 745.4x Hypertrophic Cardiomyopathy ICD-9 diagnosis: 425.1x Significant valvular heart disease ICD-9 diagnosis: 394.x, 395.x, 396.x, 397.x, 398.9x, V42.2, V43.3 ICD-9 procedure: 35.1x, 35.2x CPT-4: 33660-33665, 33400-33403, 33405, 33420-33430, 33460, 33463-33468, 33475, 33496, 02577, 02587, 02597, 02627	
2c	Constrictive pericarditis	**Measured 180 days prior to and incuding day of drug initiation in any diagnosis position and the inpatient or outpatient care setting** Constrictive pericarditis ICD-9 diagnosis: 423.2	
2d	**Complex congenital** heart disease	**Measured 180 days prior to and incuding day of drug initiation in any diagnosis position and the inpatient or outpatient care setting** Complex congenital heart disease ICD-9 diagnosis: 416.0, 745, 745.0, 745.1, 745.10, 745.11, 745.12, 745.19, 745.2, 745.3, 745.4, 745.5, 745.6, 745.60, 745.61, 745.69, 745.7, 745.8, 745.9, 746, 746.00, 746.01, 746.02, 746.09, 746.1, 746.2, 746.3, 746.5, 746.7, 746.8, 746.81, 746.82, 746.83, 746.84, 746.85, 746.86, 746.87, 746.89, 746.9, 747, 747.0, 747.1, 747.10, 747.11, 747.2, 747.20, 747.21, 747.22, 747.29, 747.3, 747.31, 747.32, 747.39, 747.4, 747.40, 747.41, 747.42, 747.49, 747.83	

Appendix A

2e	Syncopal episodes of **unknown etiology <3 months** before informed consent	**Measured 90 days prior to and incuding day of drug initiation in any diagnosis position and the inpatient or outpatient care setting** Syncope and collapse ICD-9 diagnosis: 780.2	
2f	**Planned** cardiac surgery or PTCA <3 months of informed consent	N/A	
2g	**Uncontrolled** hypertension on treatment (eg, BP >160/100 mm Hg)	**Measured 180 days prior to and incuding day of drug initiation in any diagnosis position and the inpatient or outpatient care setting** Malignant Hypertension ICD-9 diagnosis: 401.0, 402.0, 402.00, 402.01, 403.0, 403.00, 403.01, 404.0, 404.00, 404.01, 404.02, 404.03, 405.0, 405.01, 405.09	
2f	Heart transplant recipient	**Measured 180 days prior to and incuding day of drug initiation in any diagnosis/procedure position and the inpatient or outpatient care setting** Heart transplantation ICD-9 diagnosis: V42.1 ICD-9 procedure: 37.51	
2g	Stroke **due to** subarachnoid hemorrhage	**Measured 180 days prior to and incuding day of drug initiation in any diagnosis position and the inpatient or outpatient care setting** Subarachnoid hemorrhage (SAH) ICD-9 diagnosis: 430.xx	
3	**Other conditions**		
3a	**Significant renal artery** disease	**Measured 180 days prior to and incuding day of drug initiation in any diagnosis position and the inpatient or outpatient care setting** Renovascular hypertension ICD-9 diagnosis: 405.01, 405.11, 405.91, 440.1	
3b	Hepatic dysfunction	**Measured 180 days prior to and incuding day of drug initiation in any diagnosis position and the inpatient or outpatient care setting** Hepatitis ICD-9 diagnosis: 070.0, 070.1, 070.20, 070.21, 070.30, 070.31, 070.41, 070.51 Chronic liver disease and cirrhosis ICD-9 diagnosis: 571.x, 572.x, 573.x	
3c	**Uncorrected** volume or sodium depletion	N/A	
3d	Primary hyperaldosteronism	**Measured 180 days prior to and incuding day of drug initiation in any diagnosis position and the inpatient or outpatient care setting** Hyperaldosteronism ICD-9 diagnosis: 255.10	
3e	Hereditary fructose intolerance	**Measured 180 days prior to and incuding day of drug initiation in any diagnosis position and the inpatient or outpatient care setting** Hereditary Fructose Intolerance ICD-9 diagnosis: 271.2	
3f	Other major noncardiac illness expected to reduce life expectancy or interfere with study participation	**Measured 180 days prior to and including day of drug initiation-** CCI ≥ 10	Gagne, Josh J et. al. ""A combined comorbidity score predicted mortality in elderly patients better than existing scores."" J Clin Epidemiol. 2011 Jul;64(7):749-59. doi: 10.1016/j.jclinepi.2010.10.004. Sun, Jenny W et. al. ""Validation of the Combined Comorbidity Index of Charlson and Elixhauser to Predict 30-Day Mortality Across ICD-9 and ICD-10."" Med Care. 2018 Sep;56(9):812. doi: 10.1097/MLR.0000000000000954.
3g	Simultaneously taking another experimental drug	N/A	
3h	Significant disability precluding regular follow-up visits	N/A	
3i	Unable or unwilling to provide written informed consent	N/A	

Appendix A

Trial ID	sNDA8
Trial Name (with web links)	TRANSCEND
Trial Name (with pdf links)	TRANSCEND
NCT	NCT00153101
Trial category	Secondary indication
Therapeutic Area	Cardiology/Vascular Diseases
Study batch	Antihypertensives (ARBs+aliskiren)
RCT Category	1a- Intended S with label change
Brand Name	Micardis
Generic Name	Telmisartan
Sponsor	Boehringer Ingelheim
Year	2009
Measurable endpoint	Composite endpoint including death from cardiovascular causes, myocardial infarction, stroke, and hospitalization for heart failure
Exposure	Telmisartan 80 mg/day
Comparator	Placebo
Population	55% Statin, 57% β blocker, 75% aspirin & 79% Antiplatelet users
Trial finding	HR = 0.92 (95% CI 0.81–1.05)
Notes	
No. of Patients	5926
Non-inferiority margin	-
Assay Sens. Outcome	
Assay Sens. Endpoint (from trial)	
Finding for potential Assay Sens. Outcome from trial-	
Power	
Blinding	Double-blinded
Statistical Method	
Approval indication	Reduction of the risk of myocardial infarction, stroke, or death from cardiovascular causes in patients 55 years of age or older at high risk of developing major cardiovascular events who are unable to take ACE inhibitors

Appendix A

Loop Diuretics
BUMETANIDE
ETHACRYNIC ACID
FUROSEMIDE
TORSEMIDE

Thiazides
BENDROFLUMETHIAZIDE
CHLOROTHIAZIDE
CHLORTHALIDONE
HYDROCHLOROTHIAZIDE
HYDROFLUMETHIAZIDE
INDAPAMIDE
METHYCLOTHIAZIDE
METOLAZONE
POLYTHIAZIDE

Dihydropyridines
AMLODIPINE BESYLATE
CLEVIDIPINE BUTYRATE
FELODIPINE
ISRADIPINE
NICARDIPINE HCL
NIFEDIPINE
NIMODIPINE
NISOLDIPINE
AMLODIPINE BESYLATE/ATORVASTATIN CALCIUM

Appendix A

Mortality- Dependent on data source.

1. All-cause mortality / inpatient mortality
Identified using the vital status file-

Medicare
Identified using the discharge status codes-

Optum-
- 20 = EXPIRED
- 21 = EXPIRED TO BE DEFINED AT STATE LEVEL
- 22 = EXPIRED TO BE DEFINED AT STATE LEVEL
- 23 = EXPIRED TO BE DEFINED AT STATE LEVEL
- 24 = EXPIRED TO BE DEFINED AT STATE LEVEL
- 25 = EXPIRED TO BE DEFINED AT STATE LEVEL
- 26 = EXPIRED TO BE DEFINED AT STATE LEVEL
- 27 = EXPIRED TO BE DEFINED AT STATE LEVEL
- 28 = EXPIRED TO BE DEFINED AT STATE LEVEL
- 29 = EXPIRED TO BE DEFINED AT STATE LEVEL
- 40 = EXPIRED AT HOME (HOSPICE)
- 41 = EXPIRED IN A MEDICAL FACILITY (HOSPICE)
- 42 = EXPIRED - PLACE UNKNOWN (HOSPICE)

Truven-
- 20 - Died
- 22 - Died
- 23 - Died
- 24 - Died
- 25 - Died
- 26 - Died
- 27 - Died
- 28 - Died
- 29 - Died
- 40 - Other died status or Expired at home (Hospice claims only) (depends on year)
- 41 - Other died status or Expired in medical facility (Hospice claims only) (depends on year)
- 42 - Other died status or Expired - place unknown (Hospice claims only) (depends on year)
- 21 - Died or Disch./Transf. to court/law enforcement (depends on year)

Appendix B

Optum	MarketScan

BEFORE PS MATCHING

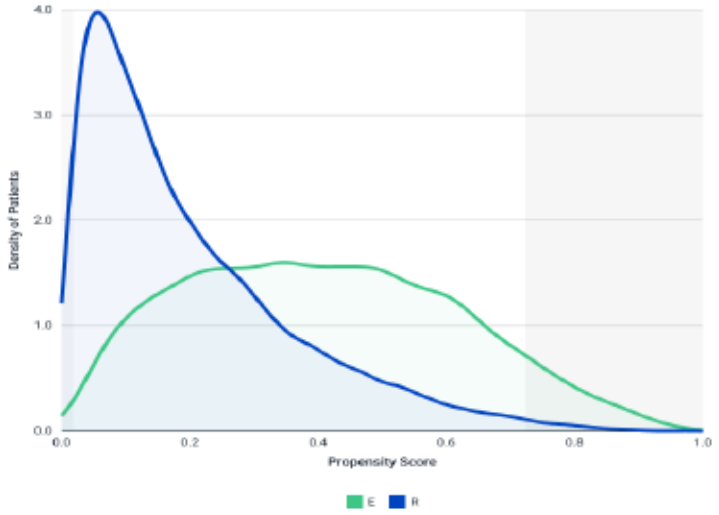


Figure 59: Pre-matching propensity score overlap

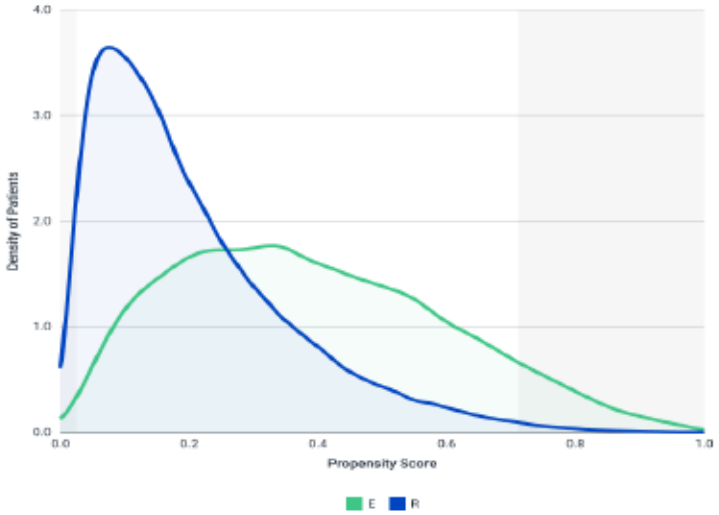


Figure 58: Pre-matching propensity score overlap

The c-statistics for the propensity score model, pre-matching was 0.791. The post-matching c-statistic was 0.536.	**The c-statistics for the propensity score model, pre-matching was 0.771. The post-matching c-statistic was 0.532.**

AFTER PS MATCHING

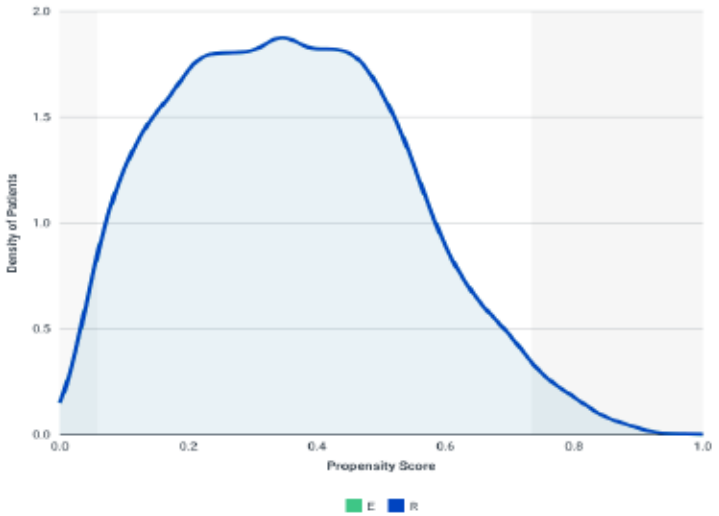


Figure 60: Post-matching propensity score overlap

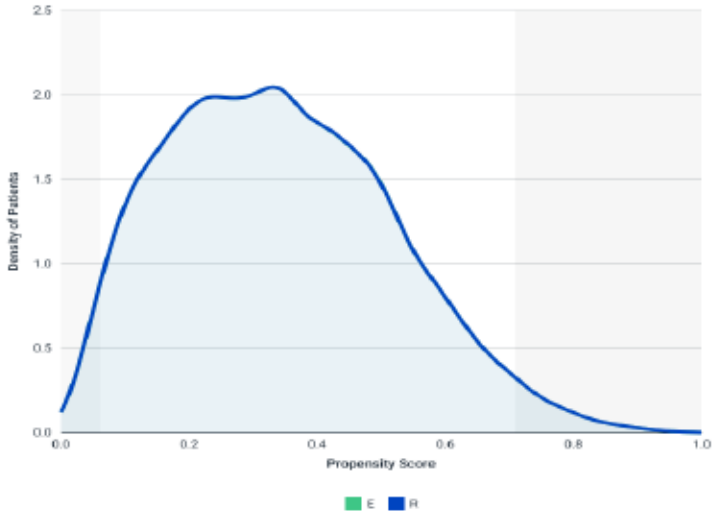


Figure 59: Post-matching propensity score overlap

Table 1: Telmisartan vs Loop/Dihydropyridines/Thiazides

	Unmatched								
	Optum			Truven			POOLED		
Variable	Matched Referent	Exposure-Telmisartan	St. Diff.	Matched Referent	Exposure-	St. Diff.	Matched Referent	Exposure-	
Number of patients	30,558	10,187		39,090	13,030		69,648	23,217	
Age									
...mean (sd)	71.58 (8.24)	71.42 (8.51)	0.02	70.44 (9.62)	70.40 (9.83)	0.00	70.94 (9.04)	70.85 (9.27)	0.01
...median [IQR]	72.00 [66.00, 78.00]	72.00 [65.00, 78.00]	0.00	70.00 [62.00, 78.00]	70.00 [62.00, 78.00]	0.00	70.88 (9.04)	70.88 (9.27)	0.00
Age categories									
...18 - 54; n (%)	0 (0.0%)	0 (0.0%)	#DIV/0!	0 (0.0%)	0 (0.0%)	#DIV/0!	0,000 (0.0%)	0,000 (0.0%)	#DIV/0!
...55 - 64; n (%)	6,649 (21.8%)	2,401 (23.6%)	-0.04	13,962 (35.7%)	4,648 (35.7%)	0.00	20,611 (29.6%)	7,049 (30.4%)	-0.02
...65 - 74; n (%)	12,245 (40.1%)	3,909 (38.4%)	0.03	10,959 (28.0%)	3,697 (28.4%)	-0.01	23,204 (33.3%)	7,606 (32.8%)	0.01
...>=75; n (%)	11,664 (38.2%)	3,877 (38.1%)	0.00	14,169 (36.2%)	4,685 (36.0%)	0.00	25,833 (37.1%)	8,562 (36.9%)	0.00
Gender									
...Males; n (%)	12,556 (41.1%)	4,187 (41.1%)	0.00	17,427 (44.6%)	5,809 (44.6%)	0.00	29,983 (43.0%)	9,996 (43.1%)	0.00
...Females; n (%)	18,002 (58.9%)	6,000 (58.9%)	0.00	21,663 (55.4%)	7,221 (55.4%)	0.00	39,665 (57.0%)	13,221 (56.9%)	0.00
Region									
...Northeast; n (%)	2,784 (9.1%)	924 (9.1%)	0.00	5,473 (14.0%)	1,598 (12.3%)	0.05	8,257 (11.9%)	2,522 (10.9%)	0.03
...South; n (%)	15,070 (49.3%)	6,451 (63.3%)	-0.29	13,295 (34.0%)	3,338 (25.6%)	0.18	28,365 (40.7%)	9,789 (42.2%)	-0.03
...Midwest; n (%)	5,614 (18.4%)	1,127 (11.1%)	0.21	13,822 (35.4%)	6,022 (46.2%)	-0.22	19,436 (27.9%)	7,149 (30.8%)	-0.06
...West; n (%)	7,090 (23.2%)	1,685 (16.5%)	0.17	6,317 (16.2%)	2,009 (15.4%)	0.02	13,407 (19.2%)	3,694 (15.9%)	0.09
...Unknown+missing; n (%)	N/A	N/A	#VALUE!	183 (0.5%)	63 (0.5%)	0.00	183 (0.3%)	63 (0.3%)	0.00
CV Covariates									
Ischemic heart disease; n (%)	10,190 (33.3%)	3,232 (31.7%)	0.03	12,833 (32.8%)	4,242 (32.6%)	0.00	23,023 (33.1%)	7,474 (32.2%)	0.02
Acute MI; n (%)	763 (2.5%)	184 (1.8%)	0.05	1,178 (3.0%)	250 (1.9%)	0.07	1941 (2.8%)	434 (1.9%)	0.06
ACS/unstable angina; n (%)	909 (3.0%)	250 (2.5%)	0.03	1,582 (4.0%)	492 (3.8%)	0.01	2491 (3.6%)	742 (3.2%)	0.02
Old MI; n (%)	1,782 (5.8%)	413 (4.1%)	0.08	1,022 (2.6%)	224 (1.7%)	0.06	2804 (4.0%)	637 (2.7%)	0.07
Stable angina; n (%)	2,184 (7.1%)	708 (7.0%)	0.00	2,274 (5.8%)	767 (5.9%)	0.00	4,458 (6.4%)	1,475 (6.4%)	0.00
Coronary atherosclerosis and other forms of chronic ischemic heart disease; n (%)	9,135 (29.9%)	2,910 (28.6%)	0.03	11,369 (29.1%)	3,744 (28.7%)	0.01	20,504 (29.4%)	6,654 (28.7%)	0.02
Other atherosclerosis with ICD10 ; n (%)	467 (1.5%)	160 (1.6%)	-0.01	715 (1.8%)	280 (2.1%)	-0.02	1182 (1.7%)	440 (1.9%)	-0.02
Previous cardiac procedure (CABG or PTCA or Stent) ; n (%)	460 (1.5%)	96 (0.9%)	0.06	1,009 (2.6%)	226 (1.7%)	0.06	1469 (2.1%)	322 (1.4%)	0.05
History of CABG or PTCA; n (%)	2,592 (8.5%)	722 (7.1%)	0.05	1,420 (3.6%)	385 (3.0%)	0.03	4,012 (5.8%)	1,107 (4.8%)	0.04
Any stroke; n (%)	4,439 (14.5%)	1,358 (13.3%)	0.03	5,684 (14.5%)	1,919 (14.7%)	-0.01	10,123 (14.5%)	3,277 (14.1%)	0.01
Ischemic stroke (w and w/o mention of cerebral infarction); n (%)	4,398 (14.4%)	1,341 (13.2%)	0.03	5,629 (14.4%)	1,907 (14.6%)	-0.01	10,027 (14.4%)	3,248 (14.0%)	0.01
Hemorrhagic stroke; n (%)	140 (0.5%)	42 (0.4%)	0.01	179 (0.5%)	41 (0.3%)	0.03	319 (0.5%)	83 (0.4%)	0.01
TIA; n (%)	1,169 (3.8%)	332 (3.3%)	0.03	1,563 (4.0%)	501 (3.8%)	0.01	2732 (3.9%)	833 (3.6%)	0.02
Other cerebrovascular disease; n (%)	1,160 (3.8%)	315 (3.1%)	0.04	1,046 (2.7%)	320 (2.5%)	0.01	2206 (3.2%)	635 (2.7%)	0.03
Late effects of cerebrovascular disease; n (%)	1,068 (3.5%)	263 (2.6%)	0.05	877 (2.2%)	226 (1.7%)	0.04	1945 (2.8%)	489 (2.1%)	0.05
Cerebrovascular procedure; n (%)	86 (0.3%)	25 (0.2%)	0.02	198 (0.5%)	65 (0.5%)	0.00	284 (0.4%)	90 (0.4%)	0.00
Heart failure (CHF); n (%)	3,690 (12.1%)	1,106 (10.9%)	0.04	3,739 (9.6%)	1,133 (8.7%)	0.03	7,429 (10.7%)	2,239 (9.6%)	0.04
Peripheral Vascular Disease (PVD) or PVD Surgery ; n (%)	3,739 (12.2%)	1,216 (11.9%)	0.01	3,346 (8.6%)	1,050 (8.1%)	0.02	7,085 (10.2%)	2,266 (9.8%)	0.01
Atrial fibrillation; n (%)	3,724 (12.2%)	962 (9.4%)	0.09	4,091 (10.5%)	1,194 (9.2%)	0.04	7,815 (11.2%)	2,156 (9.3%)	0.06
Other cardiac dysrhythmia; n (%)	4,907 (16.1%)	1,375 (13.5%)	0.07	4,006 (10.2%)	1,242 (9.5%)	0.02	8,913 (12.8%)	2,617 (11.3%)	0.05

Table 1: Telmisartan vs Loop/Dihydropyridines/Thiazides

Cardiac conduction disorders; n (%)	1,293 (4.2%)	360 (3.5%)	0.04	1,066 (2.7%)	277 (2.1%)	0.04	2359 (3.4%)	637 (2.7%)	0.04
Other CVD; n (%)	3,202 (10.5%)	960 (9.4%)	0.04	5,927 (15.2%)	1,945 (14.9%)	0.01	9,129 (13.1%)	2,905 (12.5%)	0.02
Diabetes-related complications									
Diabetic retinopathy; n (%)	2,260 (7.4%)	857 (8.4%)	-0.04	2,067 (5.3%)	731 (5.6%)	-0.01	4,327 (6.2%)	1,588 (6.8%)	-0.02
Diabetes with other ophthalmic manifestations; n (%)	300 (1.0%)	119 (1.2%)	-0.02	1,353 (3.5%)	470 (3.6%)	-0.01	1,653 (2.4%)	0,589 (2.5%)	-0.01
Retinal detachment, vitreous hemorrhage, vitrectomy; n (%)	179 (0.6%)	65 (0.6%)	0.00	199 (0.5%)	72 (0.6%)	-0.01	378 (0.5%)	137 (0.6%)	-0.01
Retinal laser coagulation therapy; n (%)	218 (0.7%)	96 (0.9%)	-0.02	396 (1.0%)	167 (1.3%)	-0.03	614 (0.9%)	263 (1.1%)	-0.02
Occurrence of Diabetic Neuropathy ; n (%)	5,375 (17.6%)	1,768 (17.4%)	0.01	3,080 (7.9%)	976 (7.5%)	0.02	8,455 (12.1%)	2,744 (11.8%)	0.01
Occurrence of diabetic nephropathy with ICD10 ; n (%)	4,097 (13.4%)	1,564 (15.4%)	-0.06	1,963 (5.0%)	683 (5.2%)	-0.01	6,060 (8.7%)	2,247 (9.7%)	-0.03
Hypoglycemia ; n (%)	403 (1.3%)	133 (1.3%)	0.00	1,016 (2.6%)	279 (2.1%)	0.03	1,419 (2.0%)	0,412 (1.8%)	0.01
Hyperglycemia; n (%)	1,356 (4.4%)	438 (4.3%)	0.00	547 (1.4%)	156 (1.2%)	0.02	1,903 (2.7%)	0,594 (2.6%)	0.01
Disorders of fluid electrolyte and acid-base balance; n (%)	3,686 (12.1%)	1,034 (10.2%)	0.06	2,829 (7.2%)	798 (6.1%)	0.04	6,515 (9.4%)	1,832 (7.9%)	0.05
Diabetic ketoacidosis; n (%)	84 (0.3%)	18 (0.2%)	0.02	89 (0.2%)	26 (0.2%)	0.00	173 (0.2%)	44 (0.2%)	0.00
Hyperosmolar hyperglycemic nonketotic syndrome (HONK); n (%)	92 (0.3%)	24 (0.2%)	0.02	54 (0.1%)	20 (0.2%)	-0.03	146 (0.2%)	44 (0.2%)	0.00
Diabetes with peripheral circulatory disorders with ICD-10 ; n (%)	2,053 (6.7%)	663 (6.5%)	0.01	946 (2.4%)	310 (2.4%)	0.00	2,999 (4.3%)	0,973 (4.2%)	0.00
Diabetic Foot; n (%)	1,262 (4.1%)	265 (2.6%)	0.08	1,603 (4.1%)	415 (3.2%)	0.05	2865 (4.1%)	680 (2.9%)	0.07
Gangrene ; n (%)	124 (0.4%)	16 (0.2%)	0.04	111 (0.3%)	17 (0.1%)	0.04	235 (0.3%)	33 (0.1%)	0.04
Lower extremity amputation; n (%)	312 (1.0%)	51 (0.5%)	0.06	188 (0.5%)	33 (0.3%)	0.03	500 (0.7%)	84 (0.4%)	0.04
Osteomyelitis; n (%)	269 (0.9%)	43 (0.4%)	0.06	323 (0.8%)	58 (0.4%)	0.05	592 (0.8%)	101 (0.4%)	0.05
Skin infections ; n (%)	2,288 (7.5%)	562 (5.5%)	0.08	2,693 (6.9%)	807 (6.2%)	0.03	4,981 (7.2%)	1,369 (5.9%)	0.05
Erectile dysfunction; n (%)	634 (2.1%)	258 (2.5%)	-0.03	401 (1.0%)	152 (1.2%)	-0.02	1,035 (1.5%)	0,410 (1.8%)	-0.02
Diabetes with unspecified complication; n (%)	1,118 (3.7%)	382 (3.7%)	0.00	751 (1.9%)	233 (1.8%)	0.01	1,869 (2.7%)	0,615 (2.6%)	0.01
Diabetes mellitus without mention of complications; n (%)	13,676 (44.8%)	5,038 (49.5%)	-0.09	15,361 (39.3%)	5,474 (42.0%)	-0.05	29,037 (41.7%)	10,512 (45.3%)	-0.07
Hypertension: 1 inpatient or 2 outpatient claims within 365 days; n (%)	27,536 (90.1%)	9,735 (95.6%)	-0.21	26,419 (67.6%)	9,876 (75.8%)	-0.18	53,955 (77.5%)	19,611 (84.5%)	-0.18
Hyperlipidemia ; n (%)	19,134 (62.6%)	6,815 (66.9%)	-0.09	14,108 (36.1%)	4,802 (36.9%)	-0.02	33,242 (47.7%)	11,617 (50.0%)	-0.05
Edema; n (%)	5,202 (17.0%)	1,351 (13.3%)	0.10	4,091 (10.5%)	1,103 (8.5%)	0.07	9,293 (13.3%)	2,454 (10.6%)	0.08
Renal Dysfunction (non-diabetic) ; n (%)	8,373 (27.4%)	3,032 (29.8%)	-0.05	5,789 (14.8%)	2,163 (16.6%)	-0.05	14,162 (20.3%)	5,195 (22.4%)	-0.05
Occurrence of acute renal disease ; n (%)	1,458 (4.8%)	374 (3.7%)	0.05	1,270 (3.2%)	341 (2.6%)	0.04	2728 (3.9%)	715 (3.1%)	0.04
Occurrence of chronic renal insufficiency; n (%)	6,787 (22.2%)	2,512 (24.7%)	-0.06	4,135 (10.6%)	1,631 (12.5%)	-0.06	10,922 (15.7%)	4,143 (17.8%)	-0.06
Chronic kidney disease ; n (%)	6,566 (21.5%)	2,430 (23.9%)	-0.06	3,774 (9.7%)	1,505 (11.6%)	-0.06	10,340 (14.8%)	3,935 (16.9%)	-0.06
CKD Stage 3-4; n (%)	4,689 (15.3%)	1,764 (17.3%)	-0.05	2,418 (6.2%)	1,002 (7.7%)	-0.06	7,107 (10.2%)	2,766 (11.9%)	-0.05
Occurrence of hypertensive nephropathy; n (%)	3,581 (11.7%)	1,352 (13.3%)	-0.05	1,611 (4.1%)	643 (4.9%)	-0.04	5192 (7.5%)	1995 (8.6%)	-0.04
Occurrence of miscellaneous renal insufficiency ; n (%)	2,228 (7.3%)	863 (8.5%)	-0.04	1,879 (4.8%)	734 (5.6%)	-0.04	4,107 (5.9%)	1,597 (6.9%)	-0.04
Glaucoma or cataracts ; n (%)	6,579 (21.5%)	2,433 (23.9%)	-0.06	7,118 (18.2%)	2,588 (19.9%)	-0.04	13,697 (19.7%)	5,021 (21.6%)	-0.05
Cellulitis or abscess of toe; n (%)	735 (2.4%)	133 (1.3%)	0.08	449 (1.1%)	124 (1.0%)	0.01	1184 (1.7%)	257 (1.1%)	0.05
Foot ulcer; n (%)	1,250 (4.1%)	268 (2.6%)	0.08	1,648 (4.2%)	426 (3.3%)	0.05	2898 (4.2%)	694 (3.0%)	0.06

Table 1: Telmisartan vs Loop/Dihydropyridines/Thiazides

Bladder stones; n (%)	44 (0.1%)	11 (0.1%)	0.00	37 (0.1%)	9 (0.1%)	0.00	81 (0.1%)	20 (0.1%)	0.00
Kidney stones; n (%)	718 (2.3%)	224 (2.2%)	0.01	650 (1.7%)	221 (1.7%)	0.00	1,368 (2.0%)	0,445 (1.9%)	0.01
Urinary tract infections (UTIs); n (%)	3,654 (12.0%)	1,123 (11.0%)	0.03	3,124 (8.0%)	873 (6.7%)	0.05	6,778 (9.7%)	1,996 (8.6%)	0.04
Dipstick urinalysis; n (%)	10,731 (35.1%)	4,047 (39.7%)	-0.10	9,218 (23.6%)	3,227 (24.8%)	-0.03	19,949 (28.6%)	7,274 (31.3%)	-0.06
Non-dipstick urinalysis; n (%)	7,758 (25.4%)	3,078 (30.2%)	-0.11	4,754 (12.2%)	1,632 (12.5%)	-0.01	12,512 (18.0%)	4,710 (20.3%)	-0.06
Urine function test; n (%)	871 (2.9%)	324 (3.2%)	-0.02	1,148 (2.9%)	406 (3.1%)	-0.01	2,019 (2.9%)	0,730 (3.1%)	-0.01
Cytology; n (%)	433 (1.4%)	134 (1.3%)	0.01	709 (1.8%)	191 (1.5%)	0.02	1142 (1.6%)	325 (1.4%)	0.02
Cystos; n (%)	576 (1.9%)	184 (1.8%)	0.01	936 (2.4%)	270 (2.1%)	0.02	1512 (2.2%)	454 (2.0%)	0.01
Other Covariates									
Liver disease; n (%)	1,031 (3.4%)	336 (3.3%)	0.01	378 (1.0%)	92 (0.7%)	0.03	1,409 (2.0%)	0,428 (1.8%)	0.01
Osteoarthritis; n (%)	6,896 (22.6%)	2,198 (21.6%)	0.02	5,701 (14.6%)	1,857 (14.3%)	0.01	12,597 (18.1%)	4,055 (17.5%)	0.02
Other arthritis, arthropathies and musculoskeletal pain; n (%)	13,531 (44.3%)	4,208 (41.3%)	0.06	13,759 (35.2%)	4,457 (34.2%)	0.02	27,290 (39.2%)	8,665 (37.3%)	0.04
Dorsopathies; n (%)	8,371 (27.4%)	2,675 (26.3%)	0.02	7,865 (20.1%)	2,610 (20.0%)	0.00	16,236 (23.3%)	5,285 (22.8%)	0.01
Fractures; n (%)	1,359 (4.4%)	308 (3.0%)	0.07	1,687 (4.3%)	466 (3.6%)	0.04	3,046 (4.4%)	0,774 (3.3%)	0.06
Falls ; n (%)	1,768 (5.8%)	379 (3.7%)	0.10	341 (0.9%)	82 (0.6%)	0.03	2109 (3.0%)	461 (2.0%)	0.06
Osteoporosis; n (%)	2,841 (9.3%)	963 (9.5%)	-0.01	3,457 (8.8%)	1,173 (9.0%)	-0.01	6,298 (9.0%)	2,136 (9.2%)	-0.01
Hyperthyroidism; n (%)	228 (0.7%)	85 (0.8%)	-0.01	169 (0.4%)	66 (0.5%)	-0.01	397 (0.6%)	151 (0.7%)	-0.01
Hypothyroidism ; n (%)	5,256 (17.2%)	1,768 (17.4%)	-0.01	3,261 (8.3%)	1,046 (8.0%)	0.01	8,517 (12.2%)	2,814 (12.1%)	0.00
Other disorders of thyroid gland ; n (%)	1,209 (4.0%)	470 (4.6%)	-0.03	870 (2.2%)	348 (2.7%)	-0.03	2,079 (3.0%)	0,818 (3.5%)	-0.03
Depression; n (%)	2,922 (9.6%)	699 (6.9%)	0.10	2,210 (5.7%)	572 (4.4%)	0.06	5,132 (7.4%)	1,271 (5.5%)	0.08
Anxiety; n (%)	3,025 (9.9%)	832 (8.2%)	0.06	1,405 (3.6%)	376 (2.9%)	0.04	4,430 (6.4%)	1,208 (5.2%)	0.05
SleepDisorder; n (%)	1,872 (6.1%)	667 (6.5%)	-0.02	3,366 (8.6%)	1,261 (9.7%)	-0.04	5,238 (7.5%)	1,928 (8.3%)	-0.03
Dementia; n (%)	1,867 (6.1%)	443 (4.3%)	0.08	1,454 (3.7%)	350 (2.7%)	0.06	3321 (4.8%)	793 (3.4%)	0.07
Delirium; n (%)	615 (2.0%)	125 (1.2%)	0.06	559 (1.4%)	109 (0.8%)	0.06	1174 (1.7%)	234 (1.0%)	0.06
Psychosis; n (%)	427 (1.4%)	89 (0.9%)	0.05	433 (1.1%)	86 (0.7%)	0.04	860 (1.2%)	175 (0.8%)	0.04
Obesity; n (%)	5,506 (18.0%)	2,014 (19.8%)	-0.05	2,043 (5.2%)	630 (4.8%)	0.02	7,549 (10.8%)	2,644 (11.4%)	-0.02
Overweight; n (%)	1,809 (5.9%)	697 (6.8%)	-0.04	203 (0.5%)	92 (0.7%)	-0.03	2,012 (2.9%)	0,789 (3.4%)	-0.03
Smoking; n (%)	4,399 (14.4%)	1,083 (10.6%)	0.12	1,540 (3.9%)	385 (3.0%)	0.05	5,939 (8.5%)	1,468 (6.3%)	0.08
Alcohol abuse or dependence; n (%)	386 (1.3%)	66 (0.6%)	0.07	180 (0.5%)	36 (0.3%)	0.03	566 (0.8%)	102 (0.4%)	0.05
Drug abuse or dependence; n (%)	678 (2.2%)	169 (1.7%)	0.04	191 (0.5%)	38 (0.3%)	0.03	869 (1.2%)	207 (0.9%)	0.03
COPD; n (%)	4,635 (15.2%)	1,287 (12.6%)	0.08	4,322 (11.1%)	1,224 (9.4%)	0.06	8,957 (12.9%)	2,511 (10.8%)	0.07
Asthma; n (%)	2,178 (7.1%)	749 (7.4%)	-0.01	1,919 (4.9%)	687 (5.3%)	-0.02	4,097 (5.9%)	1,436 (6.2%)	-0.01
Obstructive sleep apnea; n (%)	2,861 (9.4%)	1,030 (10.1%)	-0.02	2,220 (5.7%)	842 (6.5%)	-0.03	5,081 (7.3%)	1,872 (8.1%)	-0.03
Pneumonia; n (%)	1,212 (4.0%)	284 (2.8%)	0.07	1,603 (4.1%)	401 (3.1%)	0.05	2,815 (4.0%)	0,685 (3.0%)	0.05
Imaging; n (%)	61 (0.2%)	13 (0.1%)	0.03	7,118 (18.2%)	17 (0.1%)	0.66	122 (0.2%)	30 (0.1%)	0.03
Other Medications									
Use of ACE inhibitors; n (%)	12,465 (40.8%)	1,969 (19.3%)	0.48	16,962 (43.4%)	3,692 (28.3%)	0.32	29,427 (42.3%)	5,661 (24.4%)	0.39
Use of ARBs; n (%)	9,547 (31.2%)	10,187 (100.0%)	-2.10	11,259 (28.8%)	13,030 (100.0%)	-2.22	20,806 (29.9%)	23,217 (100.0%)	-2.17
Use of Loop Diuretics - ; n (%)	12,256 (40.1%)	3,193 (31.3%)	0.18	18,355 (47.0%)	4,966 (38.1%)	0.18	30,611 (44.0%)	8,159 (35.1%)	0.18
Use of other diuretics- ; n (%)	1,140 (3.7%)	452 (4.4%)	-0.04	1,556 (4.0%)	607 (4.7%)	-0.03	2,696 (3.9%)	1,059 (4.6%)	-0.03
Use of nitrates-; n (%)	2,848 (9.3%)	918 (9.0%)	0.01	5,406 (13.8%)	1,759 (13.5%)	0.01	8,254 (11.9%)	2,677 (11.5%)	0.01
Use of other hypertension drugs; n (%)	3,696 (12.1%)	1,741 (17.1%)	-0.14	4,858 (12.4%)	2,168 (16.6%)	-0.12	8,554 (12.3%)	3,909 (16.8%)	-0.13
Use of digoxin- ; n (%)	691 (2.3%)	211 (2.1%)	0.01	1,888 (4.8%)	610 (4.7%)	0.00	2579 (3.7%)	821 (3.5%)	0.01
Use of Anti-arrhythmics; n (%)	835 (2.7%)	250 (2.5%)	0.01	1,365 (3.5%)	447 (3.4%)	0.01	2200 (3.2%)	697 (3.0%)	0.01
Use of COPD/asthma meds- ; n (%)	5,867 (19.2%)	2,136 (21.0%)	-0.04	7,725 (19.8%)	2,699 (20.7%)	-0.02	13,592 (19.5%)	4,835 (20.8%)	-0.03
Use of statins; n (%)	19,124 (62.6%)	6,880 (67.5%)	-0.10	23,989 (61.4%)	8,315 (63.8%)	-0.05	43,113 (61.9%)	15,195 (65.4%)	-0.07
Use of other lipid-lowering drugs; n (%)	2,786 (9.1%)	1,173 (11.5%)	-0.08	5,338 (13.7%)	2,163 (16.6%)	-0.08	8,124 (11.7%)	3,336 (14.4%)	-0.08

Table 1: Telmisartan vs Loop/Dihydropyridines/Thiazides

Use of oral anticoagulants (Dabigatran, Rivaroxaban, Apixaban, Warfarin); n (%)	3,235 (10.6%)	837 (8.2%)	0.08	4,611 (11.8%)	1,329 (10.2%)	0.05	7,846 (11.3%)	2,166 (9.3%)	0.07
Use of heparin and other low-molecular weight heparins; n (%)	191 (0.6%)	42 (0.4%)	0.03	25 (0.1%)	2 (0.0%)	0.04	216 (0.3%)	44 (0.2%)	0.02
Use of NSAIDs; n (%)	4,843 (15.8%)	1,727 (17.0%)	-0.03	5,571 (14.3%)	1,988 (15.3%)	-0.03	10,414 (15.0%)	3,715 (16.0%)	-0.03
Use of oral corticosteroids; n (%)	6,288 (20.6%)	2,072 (20.3%)	0.01	7,586 (19.4%)	2,503 (19.2%)	0.01	13,874 (19.9%)	4,575 (19.7%)	0.01
Use of bisphosphonate (); n (%)	1,423 (4.7%)	481 (4.7%)	0.00	2,556 (6.5%)	889 (6.8%)	-0.01	3979 (5.7%)	1370 (5.9%)	-0.01
Use of opioids- ; n (%)	8,944 (29.3%)	2,651 (26.0%)	0.07	13,182 (33.7%)	4,088 (31.4%)	0.05	22,126 (31.8%)	6,739 (29.0%)	0.06
Use of antidepressants; n (%)	8,217 (26.9%)	2,446 (24.0%)	0.07	9,879 (25.3%)	3,102 (23.8%)	0.03	18,096 (26.0%)	5,548 (23.9%)	0.05
Use of antipsychotics; n (%)	847 (2.8%)	202 (2.0%)	0.05	984 (2.5%)	257 (2.0%)	0.03	1,831 (2.6%)	0,459 (2.0%)	0.04
Use of anticonvulsants; n (%)	5,915 (19.4%)	1,744 (17.1%)	0.06	5,485 (14.0%)	1,691 (13.0%)	0.03	11,400 (16.4%)	3,435 (14.8%)	0.04
Use of lithium- ; n (%)	52 (0.2%)	5 (0.0%)	0.06	43 (0.1%)	10 (0.1%)	0.00	95 (0.1%)	15 (0.1%)	0.00
Use of Benzos- ; n (%)	3,815 (12.5%)	1,286 (12.6%)	0.00	6,652 (17.0%)	2,308 (17.7%)	-0.02	10,467 (15.0%)	3,594 (15.5%)	-0.01
Use of anxiolytics/hypnotics- ; n (%)	2,091 (6.8%)	718 (7.0%)	-0.01	3,734 (9.6%)	1,335 (10.2%)	-0.02	5,825 (8.4%)	2,053 (8.8%)	-0.01
Use of dementia meds- ; n (%)	994 (3.3%)	321 (3.2%)	0.01	1,308 (3.3%)	392 (3.0%)	0.02	2302 (3.3%)	713 (3.1%)	0.01
Use of antiparkinsonian meds- ; n (%)	1,061 (3.5%)	271 (2.7%)	0.05	1,276 (3.3%)	402 (3.1%)	0.01	2,337 (3.4%)	0,673 (2.9%)	0.03
Entresto (sacubitril/valsartan); n (%)	62 (0.2%)	2 (0.0%)	0.06	4 (0.0%)	0 (0.0%)	#DIV/0!	66 (0.1%)	2 (0.0%)	0.04
Labs							0	0	
Lab values- HbA1c (%) ; n (%)	6,661 (21.8%)	2,606 (25.6%)	-0.09	566 (1.4%)	139 (1.1%)	0.03	7,227 (10.4%)	2,745 (11.8%)	-0.04
Lab values- HbA1c (%) (within 3 months) ; n (%)	4,616 (15.1%)	1,790 (17.6%)	-0.07	407 (1.0%)	91 (0.7%)	0.03	5,023 (7.2%)	1,881 (8.1%)	-0.03
Lab values- HbA1c (%) (within 6 months) ; n (%)	6,661 (21.8%)	2,606 (25.6%)	-0.09	566 (1.4%)	139 (1.1%)	0.03	7,227 (10.4%)	2,745 (11.8%)	-0.04
Lab values- BNP; n (%)	398 (1.3%)	111 (1.1%)	0.02	15 (0.0%)	5 (0.0%)	#DIV/0!	413 (0.6%)	116 (0.5%)	0.01
Lab values- BNP (within 3 months); n (%)	315 (1.0%)	75 (0.7%)	0.03	12 (0.0%)	1 (0.0%)	#DIV/0!	327 (0.5%)	76 (0.3%)	0.03
Lab values- BNP (within 6 months); n (%)	398 (1.3%)	111 (1.1%)	0.02	15 (0.0%)	5 (0.0%)	#DIV/0!	413 (0.6%)	116 (0.5%)	0.01
Lab values- BUN (mg/dl); n (%)	9,795 (32.1%)	3,628 (35.6%)	-0.07	415 (1.1%)	169 (1.3%)	-0.02	10,210 (14.7%)	3,797 (16.4%)	-0.05
Lab values- BUN (mg/dl) (within 3 months); n (%)	7,233 (23.7%)	2,633 (25.8%)	-0.05	300 (0.8%)	120 (0.9%)	-0.01	7,533 (10.8%)	2,753 (11.9%)	-0.03
Lab values- BUN (mg/dl) (within 6 months); n (%)	9,795 (32.1%)	3,628 (35.6%)	-0.07	415 (1.1%)	169 (1.3%)	-0.02	10,210 (14.7%)	3,797 (16.4%)	-0.05
Lab values- Creatinine (mg/dl) ; n (%)	10,174 (33.3%)	3,760 (36.9%)	-0.08	439 (1.1%)	182 (1.4%)	-0.03	10,613 (15.2%)	3,942 (17.0%)	-0.05
Lab values- Creatinine (mg/dl) (within 3 months) ; n (%)	7,531 (24.6%)	2,722 (26.7%)	-0.05	322 (0.8%)	130 (1.0%)	-0.02	7,853 (11.3%)	2,852 (12.3%)	-0.03
Lab values- Creatinine (mg/dl) (within 6 months) ; n (%)	10,174 (33.3%)	3,760 (36.9%)	-0.08	439 (1.1%)	182 (1.4%)	-0.03	10,613 (15.2%)	3,942 (17.0%)	-0.05
Lab values- HDL level (mg/dl); n (%)	7,125 (23.3%)	2,794 (27.4%)	-0.09	485 (1.2%)	126 (1.0%)	0.02	7,610 (10.9%)	2,920 (12.6%)	-0.05
Lab values- HDL level (mg/dl) (within 3 months); n (%)	4,750 (15.5%)	1,815 (17.8%)	-0.06	326 (0.8%)	77 (0.6%)	0.02	5,076 (7.3%)	1,892 (8.1%)	-0.03
Lab values- HDL level (mg/dl) (within 6 months); n (%)	7,125 (23.3%)	2,794 (27.4%)	-0.09	485 (1.2%)	126 (1.0%)	0.02	7,610 (10.9%)	2,920 (12.6%)	-0.05
Lab values- LDL level (mg/dl) ; n (%)	7,501 (24.5%)	2,923 (28.7%)	-0.10	541 (1.4%)	132 (1.0%)	0.04	8,042 (11.5%)	3,055 (13.2%)	-0.05
Lab values- LDL level (mg/dl) (within 3 months) ; n (%)	4,974 (16.3%)	1,901 (18.7%)	-0.06	369 (0.9%)	79 (0.6%)	0.03	5,343 (7.7%)	1,980 (8.5%)	-0.03
Lab values- LDL level (mg/dl) (within 6 months) ; n (%)	7,501 (24.5%)	2,923 (28.7%)	-0.10	541 (1.4%)	132 (1.0%)	0.04	8,042 (11.5%)	3,055 (13.2%)	-0.05
Lab values- NT-proBNP; n (%)	86 (0.3%)	19 (0.2%)	0.02	0 (0.0%)	0 (0.0%)	#DIV/0!	86 (0.1%)	19 (0.1%)	0.00
Lab values- NT-proBNP (within 3 months); n (%)	71 (0.2%)	9 (0.1%)	0.03	0 (0.0%)	0 (0.0%)	#DIV/0!	71 (0.1%)	9 (0.0%)	0.04

Table 1: Telmisartan vs Loop/Dihydropyridines/Thiazides

Lab values- NT-proBNP (within 6 months); n (%)	86 (0.3%)	19 (0.2%)	0.02	0 (0.0%)	0 (0.0%)	#DIV/0!	86 (0.1%)	19 (0.1%)	0.00
Lab values- Total cholesterol (mg/dl) ; n (%)	7,363 (24.1%)	2,895 (28.4%)	-0.10	499 (1.3%)	134 (1.0%)	0.03	7,862 (11.3%)	3,029 (13.0%)	-0.05
Lab values- Total cholesterol (mg/dl) (within 3 months) ; n (%)	4,900 (16.0%)	1,885 (18.5%)	-0.07	340 (0.9%)	81 (0.6%)	0.03	5,240 (7.5%)	1,966 (8.5%)	-0.04
Lab values- Total cholesterol (mg/dl) (within 6 months) ; n (%)	7,363 (24.1%)	2,895 (28.4%)	-0.10	499 (1.3%)	134 (1.0%)	0.03	7,862 (11.3%)	3,029 (13.0%)	-0.05
Lab values- Triglyceride level (mg/dl); n (%)	7,248 (23.7%)	2,860 (28.1%)	-0.10	487 (1.2%)	132 (1.0%)	0.02	7,735 (11.1%)	2,992 (12.9%)	-0.06
Lab values- Triglyceride level (mg/dl) (within 3 months); n (%)	4,827 (15.8%)	1,864 (18.3%)	-0.07	325 (0.8%)	79 (0.6%)	0.02	5,152 (7.4%)	1,943 (8.4%)	-0.04
Lab values- Triglyceride level (mg/dl) (within 6 months); n (%)	7,248 (23.7%)	2,860 (28.1%)	-0.10	487 (1.2%)	132 (1.0%)	0.02	7,735 (11.1%)	2,992 (12.9%)	-0.06
Lab result number- HbA1c (%) mean (only 2 to 20 included)	6,534	2,568		419	139		0	0	
...mean (sd)	6.97 (1.55)	6.86 (1.37)	0.08	7.42 (1.63)	7.36 (1.68)	0.04	7.22 (1.60)	7.14 (1.55)	0.05
...median [IQR]	6.60 [5.90, 7.60]	6.50 [5.90, 7.47]	0.07	7.00 [6.40, 8.00]	6.90 [6.20, 8.00]	0.06	6.82 (1.60)	6.72 (1.55)	0.06
...Missing; n (%)	24,024 (78.6%)	7,619 (74.8%)	0.09	38,671 (98.9%)	12,891 (98.9%)	0.00	62,695 (90.0%)	20,510 (88.3%)	0.05
Lab result number- BNP mean	398	111		15	5		0	0	
...mean (sd)	185.26 (253.16)	135.34 (198.32)	0.22	208.58 (332.19)	52.80 (38.49)	0.66	198.35 (300.09)	89.02 (134.49)	0.47
...median [IQR]	94.00 [41.27, 239.25]	67.60 [30.80, 147.97]	0.12	56.00 [21.00, 260.00]	60.00 [17.50, 84.50]	-0.02	72.67 (300.09)	63.33 (134.49)	0.04
...Missing; n (%)	30,160 (98.7%)	10,076 (98.9%)	-0.02	39,075 (100.0%)	13,025 (100.0%)	#DIV/0!	69,235 (99.4%)	23,101 (99.5%)	-0.01
Lab result number- BUN (mg/dl) mean	9,795	3,628		415	169		0	0	
...mean (sd)	20.16 (10.19)	-71.24 (5,534.18)	0.02	20.45 (9.55)	21.61 (12.44)	-0.10	20.32 (9.84)	-19.13 (3665.83)	0.02
...median [IQR]	18.00 [14.00, 23.50]	18.00 [14.00, 24.00]	0.00	19.00 [14.00, 24.00]	19.00 [14.00, 24.00]	0.00	18.56 (9.84)	18.56 (3665.83)	0.00
...Missing; n (%)	20,763 (67.9%)	6,559 (64.4%)	0.07	38,675 (98.9%)	12,861 (98.7%)	0.02	59,438 (85.3%)	19,420 (83.6%)	0.05
Lab result number- Creatinine (mg/dl) mean (only 0.1 to 15 included)	9,940	3,657		414	169		0	0	
...mean (sd)	1.14 (0.64)	1.16 (0.63)	-0.03	1.15 (0.61)	1.25 (1.04)	-0.12	1.15 (0.62)	1.21 (0.88)	-0.08
...median [IQR]	1.00 [0.82, 1.26]	1.02 [0.84, 1.30]	-0.03	1.00 [0.83, 1.29]	1.00 [0.83, 1.27]	0.00	1.00 (0.62)	1.01 (0.88)	-0.01
...Missing; n (%)	20,618 (67.5%)	6,530 (64.1%)	0.07	38,676 (98.9%)	12,861 (98.7%)	0.02	59,294 (85.1%)	19,391 (83.5%)	0.04
Lab result number- HDL level (mg/dl) mean (only =<5000 included)	7,125	2,794		485	126		0	0	
...mean (sd)	50.65 (17.42)	50.72 (17.23)	0.00	47.35 (14.16)	46.74 (13.38)	0.04	48.80 (15.67)	48.49 (15.19)	0.02
...median [IQR]	49.00 [40.00, 60.00]	49.00 [40.00, 60.00]	0.00	45.00 [37.00, 55.00]	44.25 [36.75, 54.25]	0.05	46.75 (15.67)	46.33 (15.19)	0.03
...Missing; n (%)	23,433 (76.7%)	7,393 (72.6%)	0.09	38,605 (98.8%)	12,904 (99.0%)	-0.02	62,038 (89.1%)	20,297 (87.4%)	0.05
Lab result number- LDL level (mg/dl) mean (only =<5000 included)	7,380	2,882		494	129		0	0	
...mean (sd)	-182.77 (16,462.54)	-1,476.42 (38,379.52)	0.04	86.53 (36.62)	85.79 (40.20)	0.02	-31.63 (10904.49)	-599.67 (25422.45)	0.03
...median [IQR]	84.00 [64.00, 110.50]	82.00 [63.00, 105.00]	0.00	82.00 [65.00, 107.00]	80.50 [58.33, 112.00]	0.04	82.88 (10904.49)	81.16 (25422.45)	0.00
...Missing; n (%)	23,178 (75.8%)	7,305 (71.7%)	0.09	38,596 (98.7%)	12,901 (99.0%)	-0.03	61,774 (88.7%)	20,206 (87.0%)	0.05
Lab result number- Total cholesterol (mg/dl) mean (only =<5000 included)	7,362	2,891		499	134		0	0	

Table 1: Telmisartan vs Loop/Dihydropyridines/Thiazides

...mean (sd)	167.59 (49.65)	165.07 (48.23)	0.05	168.89 (43.43)	171.93 (55.24)	-0.06	168.32 (46.26)	168.92 (52.28)	-0.01
...median [IQR]	165.00 [139.00, 195.00]	163.00 [139.00, 191.00]	0.04	162.00 [140.00, 192.00]	162.00 [140.25, 195.75]	0.00	163.32 (46.26)	162.44 (52.28)	0.02
...Missing; n (%)	23,196 (75.9%)	7,296 (71.6%)	0.10	38,591 (98.7%)	12,896 (99.0%)	-0.03	61,787 (88.7%)	20,192 (87.0%)	0.05
Lab result number- Triglyceride level (mg/dl) mean (only =<5000 included)	7,248	2,860		487	132		0	0	
...mean (sd)	142.17 (87.70)	141.97 (89.94)	0.00	165.50 (146.50)	195.76 (371.54)	-0.11	155.26 (124.18)	172.16 (284.65)	-0.08
...median [IQR]	122.00 [88.00, 172.00]	122.00 [88.00, 170.00]	0.00	137.00 [97.00, 190.00]	140.50 [95.25, 205.00]	-0.01	130.42 (124.18)	132.38 (284.65)	-0.01
...Missing; n (%)	23,310 (76.3%)	7,327 (71.9%)	0.10	38,603 (98.8%)	12,898 (99.0%)	-0.02	61,913 (88.9%)	20,225 (87.1%)	0.06
Lab result number- Hemoglobin mean (only >0 included)	7,384	2,785		291	118		0	0	
...mean (sd)	12.98 (1.77)	12.93 (1.70)	0.03	12.88 (1.90)	84,758.66 (920,573.33)	-0.13	12.92 (1.84)	47574.50 (689651.34)	-0.10
...median [IQR]	13.00 [11.90, 14.17]	12.93 [11.80, 14.05]	0.04	12.95 [11.90, 14.10]	13.10 [11.90, 14.35]	0.00	12.97 (1.84)	13.03 (689651.34)	0.00
...Missing; n (%)	23,174 (75.8%)	7,402 (72.7%)	0.07	38,799 (99.3%)	12,912 (99.1%)	0.02	61,973 (89.0%)	20,314 (87.5%)	0.05
Lab result number- Serum sodium mean (only >90 and <190 included)	9,645	3,620		373	154		0	0	
...mean (sd)	140.31 (3.03)	140.44 (2.92)	-0.04	139.48 (2.89)	139.94 (2.67)	-0.17	139.84 (2.95)	140.16 (2.78)	-0.11
...median [IQR]	140.67 [139.00, 142.00]	141.00 [139.00, 142.00]	-0.11	140.00 [138.00, 141.00]	140.00 [138.38, 142.00]	0.00	140.29 (2.95)	140.44 (2.78)	-0.05
...Missing; n (%)	20,913 (68.4%)	6,567 (64.5%)	0.08	38,717 (99.0%)	12,876 (98.8%)	0.02	59,630 (85.6%)	19,443 (83.7%)	0.05
Lab result number- Albumin mean (only >0 and <=10 included)	8,891	3,390		335	148		0	0	
...mean (sd)	4.15 (0.37)	4.20 (0.36)	-0.14	4.07 (0.48)	4.13 (0.38)	-0.14	4.11 (0.44)	4.16 (0.37)	-0.12
...median [IQR]	4.20 [3.95, 4.40]	4.20 [4.00, 4.40]	0.00	4.10 [3.90, 4.40]	4.18 [4.00, 4.37]	-0.18	4.14 (0.44)	4.19 (0.37)	-0.12
...Missing; n (%)	21,667 (70.9%)	6,797 (66.7%)	0.09	38,755 (99.1%)	12,882 (98.9%)	0.02	60,422 (86.8%)	19,679 (84.8%)	0.06
Lab result number- Glucose (fasting or random) mean (only 10-1000 included)	9,589	3,608		356	153		0	0	
...mean (sd)	125.63 (52.72)	123.59 (46.97)	0.04	144.13 (58.68)	144.99 (59.74)	-0.01	136.01 (56.14)	135.60 (54.51)	0.01
...median [IQR]	108.50 [94.00, 141.00]	109.00 [95.00, 138.00]	-0.01	129.25 [103.44, 166.88]	133.00 [106.50, 165.25]	-0.06	120.15 (56.14)	122.47 (54.51)	-0.04
...Missing; n (%)	20,969 (68.6%)	6,579 (64.6%)	0.08	38,734 (99.1%)	12,877 (98.8%)	0.03	59,703 (85.7%)	19,456 (83.8%)	0.05
Lab result number- Potassium mean (only 1-7 included)	9,892	3,674		420	169		0	0	
...mean (sd)	4.42 (0.48)	4.37 (0.48)	0.10	4.31 (0.51)	4.28 (0.48)	0.06	4.36 (0.50)	4.32 (0.48)	0.08
...median [IQR]	4.40 [4.10, 4.70]	4.35 [4.07, 4.65]	0.10	4.30 [4.00, 4.60]	4.30 [4.00, 4.60]	0.00	4.34 (0.50)	4.32 (0.48)	0.04
...Missing; n (%)	20,666 (67.6%)	6,513 (63.9%)	0.08	38,670 (98.9%)	12,861 (98.7%)	0.02	59,336 (85.2%)	19,374 (83.4%)	0.05
Comorbidity Scores									
CCI (180 days)- ICD9 and ICD10									
...mean (sd)	3.10 (2.10)	3.04 (2.00)	0.03	2.11 (1.80)	2.08 (1.69)	0.02	2.54 (1.94)	2.50 (1.83)	0.02
...median [IQR]	3.00 [1.00, 4.00]	3.00 [1.00, 4.00]	0.00	2.00 [1.00, 3.00]	2.00 [1.00, 3.00]	0.00	2.44 (1.94)	2.44 (1.83)	0.00
Frailty Score (mean): Empirical Version 365 days,									
...mean (sd)	0.19 (0.06)	0.18 (0.06)	0.17	0.17 (0.06)	0.17 (0.05)	0.00	0.18 (0.06)	0.17 (0.05)	0.18
...median [IQR]	0.18 [0.14, 0.22]	0.17 [0.14, 0.21]	0.17	0.16 [0.13, 0.20]	0.16 [0.14, 0.19]	0.00	0.17 (0.06)	0.16 (0.05)	0.18
Healthcare Utilization									
Any hospitalization; n (%)	4,339 (14.2%)	939 (9.2%)	0.16	7,950 (20.3%)	1,950 (15.0%)	0.14	12,289 (17.6%)	2,889 (12.4%)	0.15

Table 1: Telmisartan vs Loop/Dihydropyridines/Thiazides

Any hospitalization during prior 31-180 days; n (%)	3,166 (10.4%)	738 (7.2%)	0.11	5,951 (15.2%)	1,546 (11.9%)	0.10	9,117 (13.1%)	2,284 (9.8%)	0.10
Endocrinologist Visit; n (%)	2,048 (6.7%)	865 (8.5%)	-0.07	2,190 (5.6%)	897 (6.9%)	-0.05	4,238 (6.1%)	1,762 (7.6%)	-0.06
Endocrinologist Visit (30 days prior); n (%)	730 (2.4%)	285 (2.8%)	-0.03	784 (2.0%)	346 (2.7%)	-0.05	1,514 (2.2%)	0,631 (2.7%)	-0.03
Endocrinologist Visit (31 to 180 days prior); n (%)	1,793 (5.9%)	782 (7.7%)	-0.07	1,959 (5.0%)	801 (6.1%)	-0.05	3,752 (5.4%)	1,583 (6.8%)	-0.06
Internal medicine/family medicine visits; n (%)	26,121 (85.5%)	8,580 (84.2%)	0.04	30,158 (77.2%)	10,465 (80.3%)	-0.08	56,279 (80.8%)	19,045 (82.0%)	-0.03
Internal medicine/family medicine visits (30 days prior) ; n (%)	16,528 (54.1%)	5,661 (55.6%)	-0.03	18,789 (48.1%)	6,950 (53.3%)	-0.10	35,317 (50.7%)	12,611 (54.3%)	-0.07
Internal medicine/family medicine visits (31 to 180 days prior) ; n (%)	24,292 (79.5%)	7,939 (77.9%)	0.04	27,875 (71.3%)	9,655 (74.1%)	-0.06	52,167 (74.9%)	17,594 (75.8%)	-0.02
Cardiologist visit; n (%)	12,308 (40.3%)	4,133 (40.6%)	-0.01	13,821 (35.4%)	5,000 (38.4%)	-0.06	26,129 (37.5%)	9,133 (39.3%)	-0.04
Number of Cardiologist visits (30 days prior); n (%)	5,503 (18.0%)	1,788 (17.6%)	0.01	6,180 (15.8%)	2,310 (17.7%)	-0.05	11,683 (16.8%)	4,098 (17.7%)	-0.02
Number of Cardiologist visits (31 to 180 days prior); n (%)	10,090 (33.0%)	3,429 (33.7%)	-0.01	11,449 (29.3%)	4,188 (32.1%)	-0.06	21,539 (30.9%)	7,617 (32.8%)	-0.04
Electrocardiogram ; n (%)	12,530 (41.0%)	3,952 (38.8%)	0.04	16,188 (41.4%)	5,594 (42.9%)	-0.03	28,718 (41.2%)	9,546 (41.1%)	0.00
Use of glucose test strips; n (%)	699 (2.3%)	271 (2.7%)	-0.03	692 (1.8%)	278 (2.1%)	-0.02	1,391 (2.0%)	0,549 (2.4%)	-0.03
Dialysis; n (%)	100 (0.3%)	33 (0.3%)	0.00	179 (0.5%)	58 (0.4%)	0.01	279 (0.4%)	91 (0.4%)	0.00
number of different/distinct medication prescriptions									
...mean (sd)	10.39 (5.17)	11.81 (5.25)	-0.27	10.90 (5.24)	11.95 (5.36)	-0.20	10.68 (5.21)	11.89 (5.31)	-0.23
...median [IQR]	10.00 [7.00, 13.00]	11.00 [8.00, 15.00]	-0.19	10.00 [7.00, 14.00]	11.00 [8.00, 15.00]	-0.19	10.00 (5.21)	11.00 (5.31)	-0.19
Number of Hospitalizations									
...mean (sd)	0.18 (0.49)	0.11 (0.38)	0.16	0.24 (0.52)	0.17 (0.44)	0.15	0.21 (0.51)	0.14 (0.41)	0.15
...median [IQR]	0.00 [0.00, 0.00]	0.00 [0.00, 0.00]	0.00	0.00 [0.00, 0.00]	0.00 [0.00, 0.00]	0.00	0.00 (0.51)	0.00 (0.41)	0.00
Number of hospital days									
...mean (sd)	1.08 (4.26)	0.57 (2.56)	0.15	1.41 (4.54)	0.94 (3.46)	0.12	1.27 (4.42)	0.78 (3.10)	0.13
...median [IQR]	0.00 [0.00, 0.00]	0.00 [0.00, 0.00]	0.00	0.00 [0.00, 0.00]	0.00 [0.00, 0.00]	0.00	0.00 (4.42)	0.00 (3.10)	0.00
Number of Emergency Department (ED) visits									
...mean (sd)	0.58 (1.36)	0.44 (1.38)	0.10	0.26 (1.50)	0.14 (1.12)	0.09	0.40 (1.44)	0.27 (1.24)	0.10
...median [IQR]	0.00 [0.00, 1.00]	0.00 [0.00, 0.00]	0.00	0.00 [0.00, 0.00]	0.00 [0.00, 0.00]	0.00	0.00 (1.44)	0.00 (1.24)	0.00
Number of Office visits									
...mean (sd)	5.90 (4.60)	6.12 (4.55)	-0.05	6.16 (5.13)	6.65 (5.08)	-0.10	6.05 (4.90)	6.42 (4.85)	-0.08
...median [IQR]	5.00 [3.00, 8.00]	5.00 [3.00, 8.00]	0.00	5.00 [3.00, 8.00]	6.00 [3.00, 9.00]	-0.20	5.00 (4.90)	5.56 (4.85)	-0.11
Number of Endocrinologist visits									
...mean (sd)	0.30 (1.74)	0.40 (2.08)	-0.05	0.27 (1.69)	0.34 (1.91)	-0.04	0.41 (1.55)	0.38 (1.70)	0.02
...median [IQR]	0.00 [0.00, 0.00]	0.00 [0.00, 0.00]	0.00	0.00 [0.00, 0.00]	0.00 [0.00, 0.00]	0.00	0.00 (1.55)	0.00 (1.70)	0.00
Number of internal medicine/family medicine visits									
...mean (sd)	11.25 (15.95)	10.71 (15.22)	0.03	7.00 (11.52)	7.51 (11.09)	-0.05	8.86 (13.64)	8.91 (13.06)	0.00
...median [IQR]	6.00 [2.00, 14.00]	6.00 [2.00, 13.00]	0.00	4.00 [1.00, 9.00]	4.00 [1.00, 10.00]	0.00	4.88 (13.64)	4.88 (13.06)	0.00
Number of Cardiologist visits									
...mean (sd)	2.14 (4.97)	2.09 (4.45)	0.01	1.96 (4.61)	2.13 (4.53)	-0.04	2.04 (4.77)	2.11 (4.50)	-0.02
...median [IQR]	0.00 [0.00, 2.00]	0.00 [0.00, 2.00]	0.00	0.00 [0.00, 2.00]	0.00 [0.00, 2.00]	0.00	0.00 (4.77)	0.00 (4.50)	0.00

Table 1: Telmisartan vs Loop/Dihydropyridines/Thiazides

Number electrocardiograms received									
...mean (sd)	0.87 (1.60)	0.75 (1.41)	0.08	0.81 (1.43)	0.79 (1.32)	0.01	0.84 (1.51)	0.77 (1.36)	0.05
...median [IQR]	0.00 [0.00, 1.00]	0.00 [0.00, 1.00]	0.00	0.00 [0.00, 1.00]	0.00 [0.00, 1.00]	0.00	0.00 (1.51)	0.00 (1.36)	0.00
Number of HbA1c tests ordered									
...mean (sd)	0.69 (0.88)	0.82 (0.93)	-0.14	0.34 (0.69)	0.35 (0.72)	-0.01	0.49 (0.78)	0.56 (0.82)	-0.09
...median [IQR]	0.00 [0.00, 1.00]	1.00 [0.00, 1.00]	-1.10	0.00 [0.00, 0.00]	0.00 [0.00, 0.00]	0.00	0.00 (0.78)	0.44 (0.82)	-0.55
Number of glucose tests ordered									
...mean (sd)	0.34 (2.36)	0.35 (2.08)	0.00	0.23 (0.92)	0.23 (1.41)	0.00	0.28 (1.71)	0.28 (1.74)	0.00
...median [IQR]	0.00 [0.00, 0.00]	0.00 [0.00, 0.00]	0.00	0.00 [0.00, 0.00]	0.00 [0.00, 0.00]	0.00	0.00 (1.71)	0.00 (1.74)	0.00
Number of lipid tests ordered									
...mean (sd)	0.75 (0.93)	0.86 (0.96)	-0.12	0.43 (0.89)	0.43 (0.90)	0.00	0.57 (0.91)	0.62 (0.93)	-0.05
...median [IQR]	1.00 [0.00, 1.00]	1.00 [0.00, 1.00]	0.00	0.00 [0.00, 1.00]	0.00 [0.00, 1.00]	0.00	0.44 (0.91)	0.44 (0.93)	0.00
Number of creatinine tests ordered									
...mean (sd)	0.10 (0.48)	0.08 (0.40)	0.05	0.14 (0.67)	0.06 (0.38)	0.15	0.12 (0.59)	0.07 (0.39)	0.10
...median [IQR]	0.00 [0.00, 0.00]	0.00 [0.00, 0.00]	0.00	0.00 [0.00, 0.00]	0.00 [0.00, 0.00]	0.00	0.00 (0.59)	0.00 (0.39)	0.00
Number of BUN tests ordered									
...mean (sd)	0.07 (0.54)	0.06 (0.50)	0.02	0.09 (0.59)	0.05 (0.44)	0.08	0.08 (0.57)	0.05 (0.47)	0.06
...median [IQR]	0.00 [0.00, 0.00]	0.00 [0.00, 0.00]	0.00	0.00 [0.00, 0.00]	0.00 [0.00, 0.00]	0.00	0.00 (0.57)	0.00 (0.47)	0.00
Number of tests for microalbuminuria									
...mean (sd)	0.48 (1.07)	0.60 (1.16)	-0.11	0.18 (0.64)	0.20 (0.67)	-0.03	0.31 (0.86)	0.38 (0.92)	-0.08
...median [IQR]	0.00 [0.00, 0.00]	0.00 [0.00, 1.00]	0.00	0.00 [0.00, 0.00]	0.00 [0.00, 0.00]	0.00	0.00 (0.86)	0.00 (0.92)	0.00
Total N distinct ICD9/ICD10 diagnoses at the 3rd digit level									
...mean (sd)	8.34 (9.97)	7.64 (8.67)	0.07	1.77 (4.44)	1.41 (3.76)	0.09	4.65 (7.39)	4.14 (6.40)	0.07
...median [IQR]	6.00 [0.00, 12.00]	5.00 [0.00, 12.00]	0.11	0.00 [0.00, 1.00]	0.00 [0.00, 1.00]	0.00	2.63 (7.39)	2.19 (6.40)	0.06
For PS									
Hemorrhagic stroke+Other cerebrovascular disease+Cerebrovascular procedure (for PS); n (%)	1,288 (4.2%)	362 (3.6%)	0.03	1,308 (3.3%)	392 (3.0%)	0.02	2596 (3.7%)	754 (3.2%)	0.03
Occurrence of creatinine tests ordered (for PS); n (%)	1,980 (6.5%)	542 (5.3%)	0.05	2,949 (7.5%)	562 (4.3%)	0.14	4,929 (7.1%)	1,104 (4.8%)	0.10
Occurrence of BUN tests ordered (for PS); n (%)	1,146 (3.8%)	339 (3.3%)	0.03	1,852 (4.7%)	411 (3.2%)	0.08	2,998 (4.3%)	0,750 (3.2%)	0.06
Occurrence of chronic renal insufficiency w/o CKD (for PS) ; n (%)	2,436 (8.0%)	840 (8.2%)	-0.01	1,704 (4.4%)	660 (5.1%)	-0.03	4,140 (5.9%)	1,500 (6.5%)	-0.02
Chronic kidney disease Stage 1-2 (for PS); n (%)	1,248 (4.1%)	514 (5.0%)	-0.04	443 (1.1%)	214 (1.6%)	-0.04	1691 (2.4%)	728 (3.1%)	-0.04
Chronic kidney disease Stage 3-6 (for PS); n (%)	4,943 (16.2%)	1,843 (18.1%)	-0.05	2,782 (7.1%)	1,114 (8.5%)	-0.05	7,725 (11.1%)	2,957 (12.7%)	-0.05
Bladder stones+Kidney stones (for PS); n (%)	738 (2.4%)	228 (2.2%)	0.01	670 (1.7%)	227 (1.7%)	0.00	1,408 (2.0%)	0,455 (2.0%)	0.00
Diabetes with peripheral circulatory disorders+Gangrene+Osteomyelitis(for PS) with ICD10 ; n (%)	2,248 (7.4%)	700 (6.9%)	0.02	1,251 (3.2%)	367 (2.8%)	0.02	3,499 (5.0%)	1,067 (4.6%)	0.02
Alcohol abuse or dependence+Drug abuse or dependence (for PS); n (%)	1,014 (3.3%)	227 (2.2%)	0.07	340 (0.9%)	71 (0.5%)	0.05	1354 (1.9%)	298 (1.3%)	0.05

Table 1: Telmisartan vs Loop/Dihydropyridines/Thiazides

Diabetes with other ophthalmic manifestations+Retinal detachment, vitreous hemorrhage, vitrectomy+Retinal laser coagulation therapy (for PS); n (%)	645 (2.1%)	257 (2.5%)	-0.03	1,738 (4.4%)	616 (4.7%)	-0.01	2,383 (3.4%)	0,873 (3.8%)	-0.02
Other atherosclerosis+Cardiac conduction disorders+Other CVD (for PS) ; n (%)	4,574 (15.0%)	1,386 (13.6%)	0.04	7,157 (18.3%)	2,324 (17.8%)	0.01	11,731 (16.8%)	3,710 (16.0%)	0.02
Previous cardiac procedure (CABG or PTCA or Stent) + History of CABG or PTCA (for PS) ; n (%)	2,735 (9.0%)	748 (7.3%)	0.06	2,029 (5.2%)	527 (4.0%)	0.06	4,764 (6.8%)	1,275 (5.5%)	0.05
Hyperthyroidism + Hypothyroidism + Other disorders of thyroid gland (for PS); n (%)	6,115 (20.0%)	2,123 (20.8%)	-0.02	3,989 (10.2%)	1,338 (10.3%)	0.00	10,104 (14.5%)	3,461 (14.9%)	-0.01
Delirium + Psychosis (for PS); n (%)	943 (3.1%)	200 (2.0%)	0.07	893 (2.3%)	178 (1.4%)	0.07	1836 (2.6%)	378 (1.6%)	0.07
Any use of Meglitinides (for PS); n (%)	169 (0.6%)	89 (0.9%)	-0.03	426 (1.1%)	202 (1.6%)	-0.04	595 (0.9%)	291 (1.3%)	-0.04
Any use of AGIs (for PS); n (%)	56 (0.2%)	19 (0.2%)	0.00	87 (0.2%)	43 (0.3%)	-0.02	11,731 (16.8%)	3,710 (16.0%)	0.02
CKD stage 3-6 + dialysis (for PS); n (%)	4,953 (16.2%)	1,845 (18.1%)	-0.05	2,814 (7.2%)	1,121 (8.6%)	-0.05	7,767 (11.2%)	2,966 (12.8%)	-0.05
Use of thiazide; n (%)	11,780 (38.5%)	3,002 (29.5%)	0.19	14,978 (38.3%)	3,878 (29.8%)	0.18	36,428 (52.3%)	12,835 (55.3%)	-0.06
Use of beta blockers; n (%)	15,394 (50.4%)	5,625 (55.2%)	-0.10	21,034 (53.8%)	7,210 (55.3%)	-0.03	41,604 (59.7%)	16,258 (70.0%)	-0.22
Use of calcium channel blockers; n (%)	18,948 (62.0%)	7,400 (72.6%)	-0.23	22,656 (58.0%)	8,858 (68.0%)	-0.21	24,505 (35.2%)	9,196 (39.6%)	-0.09
All antidiabetic medications except Insulin; n (%)	11,225 (36.7%)	4,342 (42.6%)	-0.12	13,280 (34.0%)	4,854 (37.3%)	-0.07	26,758 (38.4%)	6,880 (29.6%)	0.19
DM Medications - Insulin ; n (%)	4,651 (15.2%)	1,738 (17.1%)	-0.05	6,406 (16.4%)	2,156 (16.5%)	0.00	11,057 (15.9%)	3,894 (16.8%)	-0.02
Use of Low Intensity Statins; n (%)	9,976 (32.6%)	3,348 (32.9%)	-0.01	13,646 (34.9%)	4,367 (33.5%)	0.03	23622 (33.9%)	7,715 (33.2%)	0.01
Use of High Intensity Statins; n (%)	9,219 (30.2%)	3,433 (33.7%)	-0.08	9,307 (23.8%)	3,330 (25.6%)	-0.04	18526 (26.6%)	6,763 (29.1%)	-0.06
Malignant hypertension; n (%)	1,065 (3.5%)	303 (3.0%)	0.03	16,602 (42.5%)	5,939 (45.6%)	-0.06	17667 (25.4%)	6,242 (26.9%)	-0.03
Cardiovascular stress test; n (%)	52 (0.2%)	25 (0.2%)	0.00	180 (0.5%)	59 (0.5%)	0.00	0,232 (0.3%)	84 (0.4%)	-0.02
Echocardiogram; n (%)	4,440 (14.5%)	1,292 (12.7%)	0.05	8,540 (21.8%)	2,793 (21.4%)	0.01	12,980 (18.6%)	4085 (17.6%)	0.03
Number of BNP tests									
...mean (sd)	0.08 (0.35)	0.06 (0.32)	0.06	0.05 (0.29)	0.04 (0.26)	0.04	0.06 (0.32)	0.05 (0.29)	0.03
...median [IQR]	0.00 [0.00, 0.00]	0.00 [0.00, 0.00]	0.00	0.00 [0.00, 0.00]	0.00 [0.00, 0.00]	0.00	0.00 (0.32)	0.00 (0.29)	0.00
Number of Cardiac biomarkers tests (tropnin, CK-MBs, Myoglobin, CPK)									
...mean (sd)	0.24 (0.97)	0.20 (0.85)	0.04	0.21 (0.97)	0.19 (0.94)	0.02	0.22 (0.97)	0.19 (0.90)	0.03
...median [IQR]	0.00 [0.00, 0.00]	0.00 [0.00, 0.00]	0.00	0.00 [0.00, 0.00]	0.00 [0.00, 0.00]	0.00	0.00 (0.97)	0.00 (0.90)	0.00
Number of Ambulatory Blood pressure monitoring tests									
...mean (sd)	0.00 (0.04)	0.00 (0.05)	0.00	0.00 (0.06)	0.00 (0.08)	0.00	0.00 (0.05)	0.00 (0.07)	0.00
...median [IQR]	0.00 [0.00, 0.00]	0.00 [0.00, 0.00]	0.00	0.00 [0.00, 0.00]	0.00 [0.00, 0.00]	0.00	0.00 (0.05)	0.00 (0.07)	0.00
N of days on antihypertensive medications during baseline									
...mean (sd)	133.67 (59.83)	157.56 (44.97)	-0.45	136.86 (58.07)	151.84 (48.50)	-0.28	135.46 (58.85)	154.35 (46.98)	-0.35
...median [IQR]	168.00 [89.00, 181.00]	180.00 [160.00, 181.00]	-0.23	169.00 [103.00, 181.00]	177.00 [147.00, 181.00]	-0.15	168.56 (58.85)	178.32 (46.98)	-0.18
N of days in database anytime prior									
...mean (sd)	1,995.86 (1,453.10)	2,000.22 (1,451.36)	0.00	1,703.15 (1,098.06)	1,702.21 (1,073.87)	0.00	1831.58 (1266.15)	1832.97 (1253.58)	0.00
...median [IQR]	1,624.00 [863.00, 2,765.00]	1,603.00 [870.00, 2,760.00]	0.01	1,489.50 [821.00, 2,387.00]	1,512.00 [823.00, 2,435.00]	-0.02	1548.51 (1266.15)	1551.93 (1253.58)	0.00

Table 1: Telmisartan vs Loop/Dihydropyridines/Thiazides

Mean Copay for per prescription cost (charges in U.S. $) (180-1 day prior)									
...mean (sd)	27.35 (36.41)	27.57 (33.60)	-0.01	24.94 (27.07)	25.76 (27.05)	-0.03	26.00 (31.51)	26.55 (30.10)	-0.02
...median [IQR]	18.09 [7.38, 34.53]	18.83 [7.21, 35.75]	-0.02	19.14 [8.16, 34.09]	20.24 [8.02, 35.24]	-0.04	18.68 (31.51)	19.62 (30.10)	-0.03
...Missing; n (%)	35 (0.1%)	125 (1.2%)	-0.14	25 (0.1%)	155 (1.2%)	-0.14	0,060 (0.1%)	280 (1.2%)	-0.14
Colonos; n (%)	1,397 (4.6%)	507 (5.0%)	-0.02	2,205 (5.6%)	691 (5.3%)	0.01	3,602 (5.2%)	1198 (5.2%)	0.00
Fecal occult blood (FOB) test; n (%)	1,279 (4.2%)	451 (4.4%)	-0.01	1,375 (3.5%)	423 (3.2%)	0.02	2,654 (3.8%)	874 (3.8%)	0.00
Flu vaccine; n (%)	5,716 (18.7%)	1,888 (18.5%)	0.01	4,264 (10.9%)	1,381 (10.6%)	0.01	9,980 (14.3%)	3269 (14.1%)	0.01
Mammogram; n (%)	3,758 (12.3%)	1,366 (13.4%)	-0.03	4,463 (11.4%)	1,576 (12.1%)	-0.02	8,221 (11.8%)	2942 (12.7%)	-0.03
Pap smear; n (%)	864 (2.8%)	337 (3.3%)	-0.03	1,502 (3.8%)	527 (4.0%)	-0.01	2,366 (3.4%)	864 (3.7%)	-0.02
Pneumonia vaccine; n (%)	5,084 (16.6%)	1,661 (16.3%)	0.01	1,174 (3.0%)	369 (2.8%)	0.01	6,258 (9.0%)	2030 (8.7%)	0.01
PSA test or Prostate exam for DRE; n (%)	3,599 (11.8%)	1,374 (13.5%)	-0.05	3,005 (7.7%)	1,010 (7.8%)	0.00	6,604 (9.5%)	2384 (10.3%)	-0.03
Bone mineral density; n (%)	1,387 (4.5%)	501 (4.9%)	-0.02	1,099 (2.8%)	410 (3.1%)	-0.02	2,486 (3.6%)	911 (3.9%)	-0.02
Use of Sympatomimetic agents; n (%)	241 (0.8%)	88 (0.9%)	-0.01	690 (1.8%)	245 (1.9%)	-0.01	0,931 (1.3%)	333 (1.4%)	-0.01
Use of CNS stimulants; n (%)	175 (0.6%)	59 (0.6%)	0.00	338 (0.9%)	116 (0.9%)	0.00	0,513 (0.7%)	175 (0.8%)	-0.01
Use of estrogens, progestins, androgens; n (%)	1,157 (3.8%)	444 (4.4%)	-0.03	2,529 (6.5%)	936 (7.2%)	-0.03	3,686 (5.3%)	1380 (5.9%)	-0.03
Use of Angiogenesis inhibitors; n (%)	17 (0.1%)	2 (0.0%)	0.04	41 (0.1%)	7 (0.1%)	0.00	0,058 (0.1%)	9 (0.0%)	0.04
Use of Oral Immunosuppressants; n (%)	106 (0.3%)	42 (0.4%)	-0.02	283 (0.7%)	68 (0.5%)	0.03	0,389 (0.6%)	110 (0.5%)	0.01
Cardiomegaly, LVH, and other cardiopathy due to hypertension; n (%)	3,515 (11.5%)	1,372 (13.5%)	-0.06	3,537 (9.0%)	1,413 (10.8%)	-0.06	7,052 (10.1%)	2785 (12.0%)	-0.06
Ultrasound; n (%)	6,328 (20.7%)	1,957 (19.2%)	0.04	9,576 (24.5%)	3,275 (25.1%)	-0.01	15,904 (22.8%)	5232 (22.5%)	0.01
Symptomatic hypotension; n (%)	808 (2.6%)	171 (1.7%)	0.06	711 (1.8%)	155 (1.2%)	0.05	1,519 (2.2%)	326 (1.4%)	0.06
Syncopal episodes; n (%)	913 (3.0%)	256 (2.5%)	0.03	586 (1.5%)	211 (1.6%)	-0.01	1,499 (2.2%)	467 (2.0%)	0.01
N of Generic name drugs only									
...mean (sd)	16.93 (12.96)	19.19 (14.62)	-0.16	13.57 (10.14)	13.52 (10.76)	0.00	15.04 (11.46)	16.01 (12.60)	-0.08
...median [IQR]	14.00 [8.00, 22.00]	16.00 [10.00, 25.00]	-0.14	11.00 [7.00, 18.00]	11.00 [6.00, 18.00]	0.00	12.32 (11.46)	13.19 (12.60)	-0.07
N of Brand name drugs only									
...mean (sd)	4.58 (6.39)	5.69 (7.35)	-0.16	7.70 (7.53)	8.69 (8.23)	-0.13	6.33 (7.05)	7.37 (7.86)	-0.14
...median [IQR]	2.00 [0.00, 6.00]	3.00 [0.00, 8.00]	-0.15	6.00 [2.00, 11.00]	7.00 [3.00, 12.00]	-0.13	4.25 (7.05)	5.24 (7.86)	-0.13
Number of distinct antihypertensive generic medications (180-1 days before index)									
...mean (sd)	3.01 (1.39)	2.98 (1.50)	0.02	3.12 (1.45)	2.80 (1.57)	0.21	3.07 (1.42)	2.88 (1.54)	0.13
...median [IQR]	3.00 [2.00, 4.00]	3.00 [2.00, 4.00]	0.00	3.00 [2.00, 4.00]	3.00 [2.00, 4.00]	0.00	3.00 (1.42)	3.00 (1.54)	0.00
Number of distinct antihypertensive generic medications on CED									
...mean (sd)	0.08 (0.34)	1.40 (0.75)	-2.27	0.08 (0.35)	1.50 (0.83)	-2.23	0.08 (0.35)	1.46 (0.80)	-2.23
...median [IQR]	0.00 [0.00, 0.00]	1.00 [1.00, 2.00]	-1.72	0.00 [0.00, 0.00]	1.00 [1.00, 2.00]	-1.57	0.00 (0.35)	1.00 (0.80)	-1.62
Hypertensive retinopathy; n (%)	345 (1.1%)	182 (1.8%)	-0.06	194 (0.5%)	77 (0.6%)	-0.01	0,539 (0.8%)	259 (1.1%)	-0.03
Commercial vs Medicare Advantage-Business Type Code - CORRECT ONE - TRUVEN									
...Commercial; n (%)	7,018 (23.0%)	2,863 (28.1%)	-0.12	25,554 (65.4%)	8,518 (65.4%)	0.00	32,572 (46.8%)	11381 (49.0%)	0.00
...Medicare Advantage; n (%)	23,540 (77.0%)	7,324 (71.9%)	0.12	13,536 (34.6%)	4,512 (34.6%)	0.00	37,076 (53.2%)	11836 (51.0%)	0.00
Commercial vs Medicare Advantage-Business Type Code									

Table 1: Telmisartan vs Loop/Dihydropyridines/Thiazides

...COM = COMMERCIAL; n (%)	7,018 (23.0%)	2,863 (28.1%)	-0.12	-	-	#VALUE!	7,018 (23.0%)	2,863 (28.1%)	-0.12
...MCR = MEDICARE; n (%)	23,540 (77.0%)	7,324 (71.9%)	0.12	-	-	#VALUE!	23,540 (77.0%)	7,324 (71.9%)	0.12
...MCD = MEDICAID; n (%)	0 (0.0%)	0 (0.0%)	#DIV/0!	-	-	#VALUE!	0 (0.0%)	0 (0.0%)	#DIV/0!
...NONE = NO BUSINESS LINE CODE (added in 2015); n (%)	0 (0.0%)	0 (0.0%)	#DIV/0!	-	-	#VALUE!	0 (0.0%)	0 (0.0%)	#DIV/0!
...UNK = UNKNOWN (added in 2015); n (%)	0 (0.0%)	0 (0.0%)	#DIV/0!	-	-	#VALUE!	0 (0.0%)	0 (0.0%)	#DIV/0!
Commercial vs Medicare Advantage- Data Type									
...1 - Fee For Service; n (%)	-	-	#VALUE!	11,302 (28.9%)	4,122 (31.6%)	-0.06	11,302 (28.9%)	4,122 (31.6%)	-0.06
...2 - Encounter; n (%)	-	-	#VALUE!	2,234 (5.7%)	390 (3.0%)	0.13	2,234 (5.7%)	390 (3.0%)	0.13
...3 - Medicare; n (%)	-	-	#VALUE!	21,958 (56.2%)	8,038 (61.7%)	-0.11	21,958 (56.2%)	8,038 (61.7%)	-0.11
...4 - Medicare Encounter; n (%)	-	-	#VALUE!	3,596 (9.2%)	480 (3.7%)	0.23	3,596 (9.2%)	480 (3.7%)	0.23
Metropolitan Statistical Area - Urban (any MSA) vs Rural (non-MSA)									
...Urban; n (%)	-	-	#VALUE!	29,715 (76.0%)	9,885 (75.9%)	0.00	29,715 (76.0%)	9,885 (75.9%)	0.00
...Rural; n (%)	-	-	#VALUE!	298 (0.8%)	75 (0.6%)	0.02	298 (0.8%)	75 (0.6%)	0.02
...Unknown/Missing; n (%)	-	-	#VALUE!	9,077 (23.2%)	3,070 (23.6%)	-0.01	9,077 (23.2%)	3,070 (23.6%)	-0.01

Table 1: Telmisartan vs Loop/Dihydropyridines/Thiazides

PS-matched									
	Optum			Truven			POOLED		
Variable	Matched Referent	Exposure-	St. Diff.	Matched Referent	Exposure-	St. Diff.	Matched Referent	Exposure-	St. Diff.
Number of patients	8,710	8,710		11,314	11,314		20,024	20,024	
Age									
...mean (sd)	71.46 (8.13)	71.49 (8.51)	0.00	70.45 (9.52)	70.46 (9.87)	0.00	70.89 (8.94)	70.91 (9.30)	0.00
...median [IQR]	72.00 [66.00, 77.00]	72.00 [65.00, 78.00]	0.00	70.00 [62.00,	70.00 [62.00,	0.00	70.87 (8.94)	70.87 (9.30)	0.00
Age categories									
...18 - 54; n (%)	0 (0.0%)	0 (0.0%)	#DIV/0!	0 (0.0%)	0 (0.0%)	#DIV/0!	0,000 (0.0%)	0,000 (0.0%)	#DIV/0!
...55 - 64; n (%)	1,942 (22.3%)	2,029 (23.3%)	-0.02	4,003 (35.4%)	4,024 (35.6%)	0.00	5,945 (29.7%)	6,053 (30.2%)	-0.01
...65 - 74; n (%)	3,515 (40.4%)	3,353 (38.5%)	0.04	3,208 (28.4%)	3,184 (28.1%)	0.01	6,723 (33.6%)	6,537 (32.6%)	0.02
...>=75; n (%)	3,253 (37.3%)	3,328 (38.2%)	-0.02	4,103 (36.3%)	4,106 (36.3%)	0.00	7,356 (36.7%)	7,434 (37.1%)	-0.01
Gender									
...Males; n (%)	3,477 (39.9%)	3,537 (40.6%)	-0.01	5,008 (44.3%)	5,001 (44.2%)	0.00	8,485 (42.4%)	8,538 (42.6%)	0.00
...Females; n (%)	5,233 (60.1%)	5,173 (59.4%)	0.01	6,306 (55.7%)	6,313 (55.8%)	0.00	11,539 (57.6%)	11,486 (57.4%)	0.00
Region									
...Northeast; n (%)	831 (9.5%)	800 (9.2%)	0.01	1,465 (12.9%)	1,447 (12.8%)	0.00	2,296 (11.5%)	2,247 (11.2%)	0.01
...South; n (%)	5,271 (60.5%)	5,276 (60.6%)	0.00	3,087 (27.3%)	3,085 (27.3%)	0.00	8,358 (41.7%)	8,361 (41.8%)	0.00
...Midwest; n (%)	1,077 (12.4%)	1,070 (12.3%)	0.00	5,011 (44.3%)	5,001 (44.2%)	0.00	6,088 (30.4%)	6,071 (30.3%)	0.00
...West; n (%)	1,531 (17.6%)	1,564 (18.0%)	-0.01	1,688 (14.9%)	1,723 (15.2%)	-0.01	3,219 (16.1%)	3,287 (16.4%)	-0.01
...Unknown+missing; n (%)	N/A	N/A	#VALUE!	63 (0.6%)	58 (0.5%)	0.01	63 (0.3%)	58 (0.3%)	0.00
CV Covariates									
Ischemic heart disease; n (%)	2,835 (32.5%)	2,813 (32.3%)	0.00	3,786 (33.5%)	3,714 (32.8%)	0.01	6,621 (33.1%)	6,527 (32.6%)	0.01
Acute MI; n (%)	162 (1.9%)	163 (1.9%)	0.00	242 (2.1%)	227 (2.0%)	0.01	404 (2.0%)	390 (1.9%)	0.01
ACS/unstable angina; n (%)	225 (2.6%)	221 (2.5%)	0.01	423 (3.7%)	421 (3.7%)	0.00	648 (3.2%)	642 (3.2%)	0.00
Old MI; n (%)	381 (4.4%)	386 (4.4%)	0.00	193 (1.7%)	205 (1.8%)	-0.01	574 (2.9%)	591 (3.0%)	-0.01
Stable angina; n (%)	630 (7.2%)	632 (7.3%)	0.00	675 (6.0%)	655 (5.8%)	0.01	1,305 (6.5%)	1,287 (6.4%)	0.00
Coronary atherosclerosis and other forms of chronic ischemic heart disease; n (%)	2,585 (29.7%)	2,529 (29.0%)	0.02	3,393 (30.0%)	3,285 (29.0%)	0.02	5,978 (29.9%)	5,814 (29.0%)	0.02
Other atherosclerosis with ICD10 ; n (%)	137 (1.6%)	138 (1.6%)	0.00	209 (1.8%)	245 (2.2%)	-0.03	346 (1.7%)	383 (1.9%)	-0.02
Previous cardiac procedure (CABG or PTCA or Stent) ; n (%)	98 (1.1%)	88 (1.0%)	0.01	188 (1.7%)	205 (1.8%)	-0.01	286 (1.4%)	293 (1.5%)	-0.01
History of CABG or PTCA; n (%)	656 (7.5%)	652 (7.5%)	0.00	366 (3.2%)	343 (3.0%)	0.01	1,022 (5.1%)	0,995 (5.0%)	0.00
Any stroke; n (%)	1,188 (13.6%)	1,174 (13.5%)	0.00	1,660 (14.7%)	1,648 (14.6%)	0.00	2,848 (14.2%)	2,822 (14.1%)	0.00
Ischemic stroke (w and w/o mention of cerebral infarction); n (%)	1,178 (13.5%)	1,159 (13.3%)	0.01	1,650 (14.6%)	1,637 (14.5%)	0.00	2,828 (14.1%)	2,796 (14.0%)	0.00
Hemorrhagic stroke; n (%)	29 (0.3%)	34 (0.4%)	-0.02	32 (0.3%)	34 (0.3%)	0.00	61 (0.3%)	68 (0.3%)	0.00
TIA; n (%)	307 (3.5%)	290 (3.3%)	0.01	432 (3.8%)	446 (3.9%)	-0.01	739 (3.7%)	736 (3.7%)	0.00
Other cerebrovascular disease; n (%)	307 (3.5%)	274 (3.1%)	0.02	300 (2.7%)	285 (2.5%)	0.01	607 (3.0%)	559 (2.8%)	0.01
Late effects of cerebrovascular disease; n (%)	239 (2.7%)	231 (2.7%)	0.00	217 (1.9%)	203 (1.8%)	0.01	456 (2.3%)	434 (2.2%)	0.01
Cerebrovascular procedure; n (%)	26 (0.3%)	23 (0.3%)	0.00	54 (0.5%)	63 (0.6%)	-0.01	80 (0.4%)	86 (0.4%)	0.00
Heart failure (CHF); n (%)	962 (11.0%)	982 (11.3%)	-0.01	1,054 (9.3%)	1,023 (9.0%)	0.01	2,016 (10.1%)	2,005 (10.0%)	0.00
Peripheral Vascular Disease (PVD) or PVD Surgery ; n (%)	1,062 (12.2%)	1,046 (12.0%)	0.01	922 (8.1%)	920 (8.1%)	0.00	1,984 (9.9%)	1,966 (9.8%)	0.00
Atrial fibrillation; n (%)	909 (10.4%)	882 (10.1%)	0.01	1,066 (9.4%)	1,071 (9.5%)	0.00	1,975 (9.9%)	1,953 (9.8%)	0.00
Other cardiac dysrhythmia; n (%)	1,248 (14.3%)	1,224 (14.1%)	0.01	1,095 (9.7%)	1,090 (9.6%)	0.00	2,343 (11.7%)	2,314 (11.6%)	0.00

Table 1: Telmisartan vs Loop/Dihydropyridines/Thiazides

Cardiac conduction disorders; n (%)	313 (3.6%)	318 (3.7%)	-0.01	293 (2.6%)	240 (2.1%)	0.03	606 (3.0%)	558 (2.8%)	0.01
Other CVD; n (%)	878 (10.1%)	839 (9.6%)	0.02	1,698 (15.0%)	1,716 (15.2%)	-0.01	2,576 (12.9%)	2,555 (12.8%)	0.00
Diabetes-related complications									
Diabetic retinopathy; n (%)	761 (8.7%)	727 (8.3%)	0.01	656 (5.8%)	634 (5.6%)	0.01	1,417 (7.1%)	1,361 (6.8%)	0.01
Diabetes with other ophthalmic manifestations; n (%)	101 (1.2%)	91 (1.0%)	0.02	415 (3.7%)	410 (3.6%)	0.01	0,516 (2.6%)	0,501 (2.5%)	0.01
Retinal detachment, vitreous hemorrhage, vitrectomy; n (%)	62 (0.7%)	54 (0.6%)	0.01	51 (0.5%)	62 (0.5%)	0.00	113 (0.6%)	116 (0.6%)	0.00
Retinal laser coagulation therapy; n (%)	69 (0.8%)	82 (0.9%)	-0.01	131 (1.2%)	139 (1.2%)	0.00	200 (1.0%)	221 (1.1%)	-0.01
Occurrence of Diabetic Neuropathy ; n (%)	1,526 (17.5%)	1,497 (17.2%)	0.01	839 (7.4%)	845 (7.5%)	0.00	2,365 (11.8%)	2,342 (11.7%)	0.00
Occurrence of diabetic nephropathy with ICD10 ; n (%)	1,320 (15.2%)	1,308 (15.0%)	0.01	581 (5.1%)	574 (5.1%)	0.00	1,901 (9.5%)	1,882 (9.4%)	0.00
Hypoglycemia ; n (%)	113 (1.3%)	120 (1.4%)	-0.01	229 (2.0%)	237 (2.1%)	-0.01	0,342 (1.7%)	0,357 (1.8%)	-0.01
Hyperglycemia; n (%)	379 (4.4%)	364 (4.2%)	0.01	139 (1.2%)	137 (1.2%)	0.00	0,518 (2.6%)	0,501 (2.5%)	0.01
Disorders of fluid electrolyte and acid-base balance; n (%)	932 (10.7%)	923 (10.6%)	0.00	717 (6.3%)	707 (6.2%)	0.00	1,649 (8.2%)	1,630 (8.1%)	0.00
Diabetic ketoacidosis; n (%)	20 (0.2%)	16 (0.2%)	0.00	21 (0.2%)	23 (0.2%)	0.00	41 (0.2%)	39 (0.2%)	0.00
Hyperosmolar hyperglycemic nonketotic syndrome (HONK); n (%)	28 (0.3%)	21 (0.2%)	0.02	12 (0.1%)	17 (0.2%)	-0.03	40 (0.2%)	38 (0.2%)	0.00
Diabetes with peripheral circulatory disorders with ICD-10 ; n (%)	593 (6.8%)	575 (6.6%)	0.01	238 (2.1%)	273 (2.4%)	-0.02	0,831 (4.2%)	0,848 (4.2%)	0.00
Diabetic Foot; n (%)	250 (2.9%)	240 (2.8%)	0.01	358 (3.2%)	367 (3.2%)	0.00	608 (3.0%)	607 (3.0%)	0.00
Gangrene ; n (%)	18 (0.2%)	14 (0.2%)	0.00	17 (0.2%)	16 (0.1%)	0.03	35 (0.2%)	30 (0.1%)	0.03
Lower extremity amputation; n (%)	41 (0.5%)	49 (0.6%)	-0.01	27 (0.2%)	30 (0.3%)	-0.02	68 (0.3%)	79 (0.4%)	-0.02
Osteomyelitis; n (%)	51 (0.6%)	42 (0.5%)	0.01	67 (0.6%)	54 (0.5%)	0.01	118 (0.6%)	96 (0.5%)	0.01
Skin infections ; n (%)	498 (5.7%)	504 (5.8%)	0.00	730 (6.5%)	714 (6.3%)	0.01	1,228 (6.1%)	1,218 (6.1%)	0.00
Erectile dysfunction; n (%)	203 (2.3%)	215 (2.5%)	-0.01	130 (1.1%)	131 (1.2%)	-0.01	0,333 (1.7%)	0,346 (1.7%)	0.00
Diabetes with unspecified complication; n (%)	330 (3.8%)	338 (3.9%)	-0.01	214 (1.9%)	201 (1.8%)	0.01	0,544 (2.7%)	0,539 (2.7%)	0.00
Diabetes mellitus without mention of complications; n (%)	4,329 (49.7%)	4,230 (48.6%)	0.02	4,706 (41.6%)	4,689 (41.4%)	0.00	9,035 (45.1%)	8,919 (44.5%)	0.01
Hypertension: 1 inpatient or 2 outpatient claims within 365 days; n (%)	8,291 (95.2%)	8,291 (95.2%)	0.00	8,443 (74.6%)	8,416 (74.4%)	0.00	16,734 (83.6%)	16,707 (83.4%)	0.01
Hyperlipidemia ; n (%)	5,790 (66.5%)	5,796 (66.5%)	0.00	4,103 (36.3%)	4,117 (36.4%)	0.00	9,893 (49.4%)	9,913 (49.5%)	0.00
Edema; n (%)	1,228 (14.1%)	1,220 (14.0%)	0.00	1,011 (8.9%)	985 (8.7%)	0.01	2,239 (11.2%)	2,205 (11.0%)	0.01
Renal Dysfunction (non-diabetic) ; n (%)	2,558 (29.4%)	2,576 (29.6%)	0.00	1,921 (17.0%)	1,831 (16.2%)	0.02	4,479 (22.4%)	4,407 (22.0%)	0.01
Occurrence of acute renal disease ; n (%)	357 (4.1%)	338 (3.9%)	0.01	314 (2.8%)	306 (2.7%)	0.01	671 (3.4%)	644 (3.2%)	0.01
Occurrence of chronic renal insufficiency; n (%)	2,128 (24.4%)	2,137 (24.5%)	0.00	1,374 (12.1%)	1,388 (12.3%)	-0.01	3,502 (17.5%)	3,525 (17.6%)	0.00
Chronic kidney disease ; n (%)	2,057 (23.6%)	2,063 (23.7%)	0.00	1,269 (11.2%)	1,277 (11.3%)	0.00	3,326 (16.6%)	3,340 (16.7%)	0.00
CKD Stage 3-4; n (%)	1,465 (16.8%)	1,517 (17.4%)	-0.02	828 (7.3%)	850 (7.5%)	-0.01	2,293 (11.5%)	2,367 (11.8%)	-0.01
Occurrence of hypertensive nephropathy; n (%)	1,135 (13.0%)	1,134 (13.0%)	0.00	546 (4.8%)	534 (4.7%)	0.00	1681 (8.4%)	1668 (8.3%)	0.00
Occurrence of miscellaneous renal insufficiency ; n (%)	685 (7.9%)	716 (8.2%)	-0.01	659 (5.8%)	606 (5.4%)	0.02	1,344 (6.7%)	1,322 (6.6%)	0.00
Glaucoma or cataracts ; n (%)	2,104 (24.2%)	2,009 (23.1%)	0.03	2,288 (20.2%)	2,198 (19.4%)	0.02	4,392 (21.9%)	4,207 (21.0%)	0.02
Cellulitis or abscess of toe; n (%)	126 (1.4%)	124 (1.4%)	0.00	99 (0.9%)	110 (1.0%)	-0.01	225 (1.1%)	234 (1.2%)	-0.01
Foot ulcer; n (%)	243 (2.8%)	240 (2.8%)	0.00	370 (3.3%)	378 (3.3%)	0.00	613 (3.1%)	618 (3.1%)	0.00

Table 1: Telmisartan vs Loop/Dihydropyridines/Thiazides

Bladder stones; n (%)	10 (0.1%)	11 (0.1%)	0.00	7 (0.1%)	7 (0.1%)	0.00	17 (0.1%)	18 (0.1%)	0.00
Kidney stones; n (%)	193 (2.2%)	192 (2.2%)	0.00	192 (1.7%)	189 (1.7%)	0.00	0,385 (1.9%)	0,381 (1.9%)	0.00
Urinary tract infections (UTIs); n (%)	987 (11.3%)	997 (11.4%)	0.00	787 (7.0%)	788 (7.0%)	0.00	1,774 (8.9%)	1,785 (8.9%)	0.00
Dipstick urinalysis; n (%)	3,368 (38.7%)	3,400 (39.0%)	-0.01	2,729 (24.1%)	2,756 (24.4%)	-0.01	6,097 (30.4%)	6,156 (30.7%)	-0.01
Non-dipstick urinalysis; n (%)	2,594 (29.8%)	2,560 (29.4%)	0.01	1,392 (12.3%)	1,386 (12.3%)	0.00	3,986 (19.9%)	3,946 (19.7%)	0.01
Urine function test; n (%)	298 (3.4%)	271 (3.1%)	0.02	410 (3.6%)	349 (3.1%)	0.03	0,708 (3.5%)	0,620 (3.1%)	0.02
Cytology; n (%)	120 (1.4%)	113 (1.3%)	0.01	217 (1.9%)	164 (1.4%)	0.04	337 (1.7%)	277 (1.4%)	0.02
Cystos; n (%)	159 (1.8%)	147 (1.7%)	0.01	313 (2.8%)	225 (2.0%)	0.05	472 (2.4%)	372 (1.9%)	0.03
Other Covariates									
Liver disease; n (%)	274 (3.1%)	289 (3.3%)	-0.01	82 (0.7%)	74 (0.7%)	0.00	0,356 (1.8%)	0,363 (1.8%)	0.00
Osteoarthritis; n (%)	1,892 (21.7%)	1,895 (21.8%)	0.00	1,575 (13.9%)	1,625 (14.4%)	-0.01	3,467 (17.3%)	3,520 (17.6%)	-0.01
Other arthritis, arthropathies and musculoskeletal pain; n (%)	3,668 (42.1%)	3,639 (41.8%)	0.01	3,859 (34.1%)	3,888 (34.4%)	-0.01	7,527 (37.6%)	7,527 (37.6%)	0.00
Dorsopathies; n (%)	2,364 (27.1%)	2,293 (26.3%)	0.02	2,260 (20.0%)	2,296 (20.3%)	-0.01	4,624 (23.1%)	4,589 (22.9%)	0.00
Fractures; n (%)	297 (3.4%)	283 (3.2%)	0.01	426 (3.8%)	421 (3.7%)	0.01	0,723 (3.6%)	0,704 (3.5%)	0.01
Falls ; n (%)	353 (4.1%)	344 (3.9%)	0.01	88 (0.8%)	78 (0.7%)	0.01	441 (2.2%)	422 (2.1%)	0.01
Osteoporosis; n (%)	823 (9.4%)	815 (9.4%)	0.00	1,004 (8.9%)	1,033 (9.1%)	-0.01	1,827 (9.1%)	1,848 (9.2%)	0.00
Hyperthyroidism; n (%)	69 (0.8%)	74 (0.8%)	0.00	50 (0.4%)	63 (0.6%)	-0.03	119 (0.6%)	137 (0.7%)	-0.01
Hypothyroidism ; n (%)	1,667 (19.1%)	1,524 (17.5%)	0.04	901 (8.0%)	907 (8.0%)	0.00	2,568 (12.8%)	2,431 (12.1%)	0.02
Other disorders of thyroid gland ; n (%)	364 (4.2%)	408 (4.7%)	-0.02	251 (2.2%)	302 (2.7%)	-0.03	0,615 (3.1%)	0,710 (3.5%)	-0.02
Depression; n (%)	679 (7.8%)	636 (7.3%)	0.02	511 (4.5%)	514 (4.5%)	0.00	1,190 (5.9%)	1,150 (5.7%)	0.01
Anxiety; n (%)	773 (8.9%)	736 (8.5%)	0.01	359 (3.2%)	340 (3.0%)	0.01	1,132 (5.7%)	1,076 (5.4%)	0.01
SleepDisorder; n (%)	588 (6.8%)	571 (6.6%)	0.01	1,084 (9.6%)	1,078 (9.5%)	0.00	1,672 (8.3%)	1,649 (8.2%)	0.00
Dementia; n (%)	413 (4.7%)	394 (4.5%)	0.01	330 (2.9%)	321 (2.8%)	0.01	743 (3.7%)	715 (3.6%)	0.01
Delirium; n (%)	109 (1.3%)	116 (1.3%)	0.00	105 (0.9%)	104 (0.9%)	0.00	214 (1.1%)	220 (1.1%)	0.00
Psychosis; n (%)	88 (1.0%)	82 (0.9%)	0.01	83 (0.7%)	78 (0.7%)	0.00	171 (0.9%)	160 (0.8%)	0.01
Obesity; n (%)	1,722 (19.8%)	1,689 (19.4%)	0.01	540 (4.8%)	553 (4.9%)	0.00	2,262 (11.3%)	2,242 (11.2%)	0.00
Overweight; n (%)	584 (6.7%)	567 (6.5%)	0.01	83 (0.7%)	80 (0.7%)	0.00	0,667 (3.3%)	0,647 (3.2%)	0.01
Smoking; n (%)	1,014 (11.6%)	971 (11.1%)	0.02	353 (3.1%)	347 (3.1%)	0.00	1,367 (6.8%)	1,318 (6.6%)	0.01
Alcohol abuse or dependence; n (%)	66 (0.8%)	65 (0.7%)	0.01	32 (0.3%)	34 (0.3%)	0.00	98 (0.5%)	99 (0.5%)	0.00
Drug abuse or dependence; n (%)	165 (1.9%)	156 (1.8%)	0.01	44 (0.4%)	33 (0.3%)	0.02	209 (1.0%)	189 (0.9%)	0.01
COPD; n (%)	1,182 (13.6%)	1,134 (13.0%)	0.02	1,116 (9.9%)	1,107 (9.8%)	0.00	2,298 (11.5%)	2,241 (11.2%)	0.01
Asthma; n (%)	664 (7.6%)	654 (7.5%)	0.00	600 (5.3%)	588 (5.2%)	0.00	1,264 (6.3%)	1,242 (6.2%)	0.00
Obstructive sleep apnea; n (%)	869 (10.0%)	861 (9.9%)	0.00	733 (6.5%)	714 (6.3%)	0.01	1,602 (8.0%)	1,575 (7.9%)	0.00
Pneumonia; n (%)	260 (3.0%)	260 (3.0%)	0.00	377 (3.3%)	363 (3.2%)	0.01	0,637 (3.2%)	0,623 (3.1%)	0.01
Imaging; n (%)	11 (0.1%)	11 (0.1%)	0.00	12 (0.1%)	15 (0.1%)	0.00	23 (0.1%)	26 (0.1%)	0.00
Other Medications									
Use of ACE inhibitors; n (%)	1,904 (21.9%)	1,935 (22.2%)	-0.01	3,523 (31.1%)	3,516 (31.1%)	0.00	5,427 (27.1%)	5,451 (27.2%)	0.00
Use of ARBs; n (%)	4,132 (47.4%)	8,710 (100.0%)	-1.49	3,674 (32.5%)	11,314 (100.0%)	-2.04	7,806 (39.0%)	20,024 (100.0%)	-1.77
Use of Loop Diuretics - ; n (%)	2,955 (33.9%)	2,918 (33.5%)	0.01	4,662 (41.2%)	4,571 (40.4%)	0.02	7,617 (38.0%)	7,489 (37.4%)	0.01
Use of other diuretics- ; n (%)	401 (4.6%)	388 (4.5%)	0.00	528 (4.7%)	500 (4.4%)	0.01	0,929 (4.6%)	0,888 (4.4%)	0.01
Use of nitrates-; n (%)	821 (9.4%)	800 (9.2%)	0.01	1,578 (13.9%)	1,532 (13.5%)	0.01	2,399 (12.0%)	2,332 (11.6%)	0.01
Use of other hypertension drugs; n (%)	1,457 (16.7%)	1,407 (16.2%)	0.01	1,839 (16.3%)	1,755 (15.5%)	0.02	3,296 (16.5%)	3,162 (15.8%)	0.02
Use of digoxin- ; n (%)	190 (2.2%)	183 (2.1%)	0.01	547 (4.8%)	536 (4.7%)	0.00	737 (3.7%)	719 (3.6%)	0.01
Use of Anti-arrhythmics; n (%)	210 (2.4%)	221 (2.5%)	-0.01	411 (3.6%)	393 (3.5%)	0.01	621 (3.1%)	614 (3.1%)	0.00
Use of COPD/asthma meds- ; n (%)	1,837 (21.1%)	1,805 (20.7%)	0.01	2,441 (21.6%)	2,343 (20.7%)	0.02	4,278 (21.4%)	4,148 (20.7%)	0.02
Use of statins; n (%)	5,780 (66.4%)	5,815 (66.8%)	-0.01	7,194 (63.6%)	7,201 (63.6%)	0.00	12,974 (64.8%)	13,016 (65.0%)	0.00
Use of other lipid-lowering drugs; n (%)	938 (10.8%)	957 (11.0%)	-0.01	1,796 (15.9%)	1,820 (16.1%)	-0.01	2,734 (13.7%)	2,777 (13.9%)	-0.01

Table 1: Telmisartan vs Loop/Dihydropyridines/Thiazides

Use of oral anticoagulants (Dabigatran, Rivaroxaban, Apixaban, Warfarin); n (%)	770 (8.8%)	765 (8.8%)	0.00	1,228 (10.9%)	1,207 (10.7%)	0.01	1,998 (10.0%)	1,972 (9.8%)	0.01
Use of heparin and other low-molecular weight heparins; n (%)	42 (0.5%)	40 (0.5%)	0.00	2 (0.0%)	2 (0.0%)	#DIV/0!	44 (0.2%)	42 (0.2%)	0.00
Use of NSAIDs; n (%)	1,440 (16.5%)	1,464 (16.8%)	-0.01	1,720 (15.2%)	1,726 (15.3%)	0.00	3,160 (15.8%)	3,190 (15.9%)	0.00
Use of oral corticosteroids; n (%)	1,804 (20.7%)	1,806 (20.7%)	0.00	2,220 (19.6%)	2,175 (19.2%)	0.01	4,024 (20.1%)	3,981 (19.9%)	0.01
Use of bisphosphonate (); n (%)	419 (4.8%)	410 (4.7%)	0.00	746 (6.6%)	784 (6.9%)	-0.01	1165 (5.8%)	1194 (6.0%)	-0.01
Use of opioids- ; n (%)	2,333 (26.8%)	2,334 (26.8%)	0.00	3,670 (32.4%)	3,614 (31.9%)	0.01	6,003 (30.0%)	5,948 (29.7%)	0.01
Use of antidepressants; n (%)	2,184 (25.1%)	2,119 (24.3%)	0.02	2,782 (24.6%)	2,733 (24.2%)	0.01	4,966 (24.8%)	4,852 (24.2%)	0.01
Use of antipsychotics; n (%)	195 (2.2%)	183 (2.1%)	0.01	245 (2.2%)	234 (2.1%)	0.01	0,440 (2.2%)	0,417 (2.1%)	0.01
Use of anticonvulsants; n (%)	1,571 (18.0%)	1,512 (17.4%)	0.02	1,513 (13.4%)	1,521 (13.4%)	0.00	3,084 (15.4%)	3,033 (15.1%)	0.01
Use of lithium- ; n (%)	15 (0.2%)	5 (0.1%)	0.03	13 (0.1%)	9 (0.1%)	0.00	28 (0.1%)	14 (0.1%)	0.00
Use of Benzos- ; n (%)	1,127 (12.9%)	1,119 (12.8%)	0.00	2,017 (17.8%)	1,993 (17.6%)	0.01	3,144 (15.7%)	3,112 (15.5%)	0.01
Use of anxiolytics/hypnotics- ; n (%)	584 (6.7%)	609 (7.0%)	-0.01	1,176 (10.4%)	1,141 (10.1%)	0.01	1,760 (8.8%)	1,750 (8.7%)	0.00
Use of dementia meds- ; n (%)	281 (3.2%)	279 (3.2%)	0.00	341 (3.0%)	345 (3.0%)	0.00	622 (3.1%)	624 (3.1%)	0.00
Use of antiparkinsonian meds- ; n (%)	255 (2.9%)	245 (2.8%)	0.01	375 (3.3%)	358 (3.2%)	0.01	0,630 (3.1%)	0,603 (3.0%)	0.01
Entresto (sacubitril/valsartan); n (%)	24 (0.3%)	1 (0.0%)	0.08	4 (0.0%)	0 (0.0%)	#DIV/0!	28 (0.1%)	1 (0.0%)	0.04
Labs									
Lab values- HbA1c (%) ; n (%)	2,219 (25.5%)	2,160 (24.8%)	0.02	141 (1.2%)	113 (1.0%)	0.02	2,360 (11.8%)	2,273 (11.4%)	0.01
Lab values- HbA1c (%) (within 3 months) ; n (%)	1,546 (17.7%)	1,488 (17.1%)	0.02	104 (0.9%)	70 (0.6%)	0.03	1,650 (8.2%)	1,558 (7.8%)	0.01
Lab values- HbA1c (%) (within 6 months) ; n (%)	2,219 (25.5%)	2,160 (24.8%)	0.02	141 (1.2%)	113 (1.0%)	0.02	2,360 (11.8%)	2,273 (11.4%)	0.01
Lab values- BNP; n (%)	103 (1.2%)	99 (1.1%)	0.01	3 (0.0%)	4 (0.0%)	#DIV/0!	106 (0.5%)	103 (0.5%)	0.00
Lab values- BNP (within 3 months); n (%)	83 (1.0%)	66 (0.8%)	0.02	3 (0.0%)	1 (0.0%)	#DIV/0!	86 (0.4%)	67 (0.3%)	0.02
Lab values- BNP (within 6 months); n (%)	103 (1.2%)	99 (1.1%)	0.01	3 (0.0%)	4 (0.0%)	#DIV/0!	106 (0.5%)	103 (0.5%)	0.00
Lab values- BUN (mg/dl); n (%)	3,095 (35.5%)	3,059 (35.1%)	0.01	118 (1.0%)	139 (1.2%)	-0.02	3,213 (16.0%)	3,198 (16.0%)	0.00
Lab values- BUN (mg/dl) (within 3 months); n (%)	2,258 (25.9%)	2,203 (25.3%)	0.01	83 (0.7%)	96 (0.8%)	-0.01	2,341 (11.7%)	2,299 (11.5%)	0.01
Lab values- BUN (mg/dl) (within 6 months); n (%)	3,095 (35.5%)	3,059 (35.1%)	0.01	118 (1.0%)	139 (1.2%)	-0.02	3,213 (16.0%)	3,198 (16.0%)	0.00
Lab values- Creatinine (mg/dl) ; n (%)	3,209 (36.8%)	3,164 (36.3%)	0.01	122 (1.1%)	150 (1.3%)	-0.02	3,331 (16.6%)	3,314 (16.6%)	0.00
Lab values- Creatinine (mg/dl) (within 3 months) ; n (%)	2,349 (27.0%)	2,272 (26.1%)	0.02	85 (0.8%)	106 (0.9%)	-0.01	2,434 (12.2%)	2,378 (11.9%)	0.01
Lab values- Creatinine (mg/dl) (within 6 months) ; n (%)	3,209 (36.8%)	3,164 (36.3%)	0.01	122 (1.1%)	150 (1.3%)	-0.02	3,331 (16.6%)	3,314 (16.6%)	0.00
Lab values- HDL level (mg/dl); n (%)	2,385 (27.4%)	2,343 (26.9%)	0.01	117 (1.0%)	101 (0.9%)	0.01	2,502 (12.5%)	2,444 (12.2%)	0.01
Lab values- HDL level (mg/dl) (within 3 months); n (%)	1,570 (18.0%)	1,511 (17.3%)	0.02	81 (0.7%)	60 (0.5%)	0.03	1,651 (8.2%)	1,571 (7.8%)	0.01
Lab values- HDL level (mg/dl) (within 6 months); n (%)	2,385 (27.4%)	2,343 (26.9%)	0.01	117 (1.0%)	101 (0.9%)	0.01	2,502 (12.5%)	2,444 (12.2%)	0.01
Lab values- LDL level (mg/dl) ; n (%)	2,504 (28.7%)	2,452 (28.2%)	0.01	130 (1.1%)	106 (0.9%)	0.02	2,634 (13.2%)	2,558 (12.8%)	0.01
Lab values- LDL level (mg/dl) (within 3 months) ; n (%)	1,640 (18.8%)	1,587 (18.2%)	0.02	94 (0.8%)	61 (0.5%)	0.04	1,734 (8.7%)	1,648 (8.2%)	0.02
Lab values- LDL level (mg/dl) (within 6 months) ; n (%)	2,504 (28.7%)	2,452 (28.2%)	0.01	130 (1.1%)	106 (0.9%)	0.02	2,634 (13.2%)	2,558 (12.8%)	0.01
Lab values- NT-proBNP; n (%)	17 (0.2%)	18 (0.2%)	0.00	0 (0.0%)	0 (0.0%)	#DIV/0!	17 (0.1%)	18 (0.1%)	0.00
Lab values- NT-proBNP (within 3 months); n (%)	12 (0.1%)	9 (0.1%)	0.00	0 (0.0%)	0 (0.0%)	#DIV/0!	12 (0.1%)	9 (0.0%)	0.04

Table 1: Telmisartan vs Loop/Dihydropyridines/Thiazides

Lab values- NT-proBNP (within 6 months); n (%)	17 (0.2%)	18 (0.2%)	0.00	0 (0.0%)	0 (0.0%)	#DIV/0!	17 (0.1%)	18 (0.1%)	0.00
Lab values- Total cholesterol (mg/dl) ; n (%)	2,465 (28.3%)	2,426 (27.9%)	0.01	127 (1.1%)	106 (0.9%)	0.02	2,592 (12.9%)	2,532 (12.6%)	0.01
Lab values- Total cholesterol (mg/dl) (within 3 months) ; n (%)	1,611 (18.5%)	1,569 (18.0%)	0.01	89 (0.8%)	61 (0.5%)	0.04	1,700 (8.5%)	1,630 (8.1%)	0.01
Lab values- Total cholesterol (mg/dl) (within 6 months) ; n (%)	2,465 (28.3%)	2,426 (27.9%)	0.01	127 (1.1%)	106 (0.9%)	0.02	2,592 (12.9%)	2,532 (12.6%)	0.01
Lab values- Triglyceride level (mg/dl); n (%)	2,424 (27.8%)	2,396 (27.5%)	0.01	125 (1.1%)	106 (0.9%)	0.02	2,549 (12.7%)	2,502 (12.5%)	0.01
Lab values- Triglyceride level (mg/dl) (within 3 months); n (%)	1,590 (18.3%)	1,552 (17.8%)	0.01	87 (0.8%)	61 (0.5%)	0.04	1,677 (8.4%)	1,613 (8.1%)	0.01
Lab values- Triglyceride level (mg/dl) (within 6 months); n (%)	2,424 (27.8%)	2,396 (27.5%)	0.01	125 (1.1%)	106 (0.9%)	0.02	2,549 (12.7%)	2,502 (12.5%)	0.01
Lab result number- HbA1c (%) mean (only 2 to 20 included)	2,183	2,127		112	113		0	0	
...mean (sd)	7.00 (1.50)	6.86 (1.38)	0.10	7.64 (1.66)	7.31 (1.77)	0.19	7.36 (1.59)	7.11 (1.61)	0.16
...median [IQR]	6.60 [6.00, 7.70]	6.50 [5.90, 7.47]	0.07	7.10 [6.40, 8.50]	6.90 [6.10, 7.80]	0.12	6.88 (1.59)	6.73 (1.61)	0.09
...Missing; n (%)	6,527 (74.9%)	6,583 (75.6%)	-0.02	11,202 (99.0%)	11,201 (99.0%)	0.00	17,729 (88.5%)	17,784 (88.8%)	-0.01
Lab result number- BNP mean	103	99		3	4		0	0	
...mean (sd)	159.45 (288.42)	142.08 (206.91)	0.07	169.00 (139.82)	66.00 (28.53)	1.02	164.85 (217.32)	99.09 (138.14)	0.36
...median [IQR]	74.00 [37.00, 196.00]	69.85 [37.00, 147.97]	0.02	239.00 [8.00, 260.00]	62.50 [41.25, 94.25]	1.75	167.23 (217.32)	65.70 (138.14)	0.56
...Missing; n (%)	8,607 (98.8%)	8,611 (98.9%)	-0.01	11,311 (100.0%)	11,310 (100.0%)	#DIV/0!	19,918 (99.5%)	19,921 (99.5%)	0.00
Lab result number- BUN (mg/dl) mean	3,095	3,059		118	139		0	0	
...mean (sd)	20.21 (10.19)	-88.29 (6,026.94)	0.03	20.87 (12.48)	22.01 (13.02)	-0.09	20.58 (11.54)	-25.97 (3974.92)	0.02
...median [IQR]	18.00 [14.00, 24.00]	18.00 [14.00, 24.00]	0.00	18.00 [13.97, 23.54]	19.00 [14.50, 25.50]	-0.08	18.00 (11.54)	18.57 (3974.92)	0.00
...Missing; n (%)	5,615 (64.5%)	5,651 (64.9%)	-0.01	11,196 (99.0%)	11,175 (98.8%)	0.02	16,811 (84.0%)	16,826 (84.0%)	0.00
Lab result number- Creatinine (mg/dl) mean (only 0.1 to 15 included)	3,129	3,079		116	139		3,245	3,218	
...mean (sd)	1.17 (0.70)	1.16 (0.62)	0.02	1.22 (0.92)	1.29 (1.13)	-0.07	1.20 (0.83)	1.23 (0.94)	-0.03
...median [IQR]	1.01 [0.82, 1.29]	1.02 [0.84, 1.30]	-0.02	1.00 [0.84, 1.25]	1.00 [0.83, 1.33]	0.00	1.00 (0.83)	1.01 (0.94)	-0.01
...Missing; n (%)	5,581 (64.1%)	5,631 (64.6%)	-0.01	11,198 (99.0%)	11,175 (98.8%)	0.02	16,779 (83.8%)	16,806 (83.9%)	0.00
Lab result number- HDL level (mg/dl) mean (only =<5000 included)	2,385	2,343		117	101		2,502	2,444	
...mean (sd)	49.89 (17.01)	50.86 (17.23)	-0.06	46.19 (13.54)	46.22 (13.42)	0.00	47.80 (15.15)	48.24 (15.20)	-0.03
...median [IQR]	48.00 [40.00, 59.00]	49.00 [40.00, 60.00]	-0.06	44.00 [36.00, 54.00]	44.00 [36.00, 53.50]	0.00	45.74 (15.15)	46.17 (15.20)	-0.03
...Missing; n (%)	6,325 (72.6%)	6,367 (73.1%)	-0.01	11,197 (99.0%)	11,213 (99.1%)	-0.01	17,522 (87.5%)	17,580 (87.8%)	-0.01
Lab result number- LDL level (mg/dl) mean (only =<5000 included)	2,464	2,422		121	103		2,585	2,525	
...mean (sd)	-320.39 (20,147.33)	-1,566.06 (40,617.30)	0.04	86.82 (39.78)	85.48 (41.86)	0.03	-90.31 (13287.68)	-632.90 (26788.09)	0.03
...median [IQR]	83.00 [62.00, 108.00]	82.00 [63.00, 106.00]	0.00	81.00 [62.00, 110.00]	77.00 [57.00, 118.00]	0.10	81.87 (13287.68)	79.17 (26788.09)	0.00
...Missing; n (%)	6,246 (71.7%)	6,288 (72.2%)	-0.01	11,193 (98.9%)	11,211 (99.1%)	-0.02	17,439 (87.1%)	17,499 (87.4%)	-0.01
Lab result number- Total cholesterol (mg/dl) mean (only =<5000 included)	2,464	2,422		127	106		2,591	2,528	

Table 1: Telmisartan vs Loop/Dihydropyridines/Thiazides

...mean (sd)	163.82 (48.07)	165.75 (48.76)	-0.04	167.44 (40.25)	171.71 (59.13)	-0.08	165.87 (43.82)	169.12 (54.86)	-0.07
...median [IQR]	162.00 [136.00, 191.00]	163.00 [139.00, 191.50]	-0.02	164.00 [135.00, 188.00]	160.00 [137.00, 189.00]	0.08	163.13 (43.82)	161.30 (54.86)	0.04
...Missing; n (%)	6,246 (71.7%)	6,288 (72.2%)	-0.01	11,187 (98.9%)	11,208 (99.1%)	-0.02	17,433 (87.1%)	17,496 (87.4%)	-0.01
Lab result number- Triglyceride level (mg/dl) mean (only =<5000 included)	2,424	2,396		125	106		2,549	2,502	
...mean (sd)	143.07 (91.94)	142.08 (90.61)	0.01	165.02 (106.63)	203.39 (411.31)	-0.13	155.47 (100.50)	176.72 (314.90)	-0.09
...median [IQR]	122.50 [90.00, 172.00]	121.00 [88.00, 171.00]	0.02	139.00 [99.50, 200.50]	140.50 [94.50, 206.75]	0.00	131.82 (100.50)	132.02 (314.90)	0.00
...Missing; n (%)	6,286 (72.2%)	6,314 (72.5%)	-0.01	11,189 (98.9%)	11,208 (99.1%)	-0.02	17,475 (87.3%)	17,522 (87.5%)	-0.01
Lab result number- Hemoglobin mean (only >0 included)	2,354	2,321		82	101		2,436	2,422	
...mean (sd)	12.99 (1.68)	12.92 (1.72)	0.04	13.04 (1.78)	99,022.65 (995,035.81)	-0.14	13.02 (1.74)	55955.59 (747952.25)	-0.11
...median [IQR]	13.00 [11.90, 14.10]	12.93 [11.75, 14.05]	0.04	13.00 [11.95, 14.61]	13.10 [11.73, 14.30]	0.00	13.00 (1.74)	13.03 (747952.25)	0.00
...Missing; n (%)	6,356 (73.0%)	6,389 (73.4%)	-0.01	11,232 (99.3%)	11,213 (99.1%)	0.02	17,588 (87.8%)	17,602 (87.9%)	0.00
Lab result number- Serum sodium mean (only >90 and <190 included)	3,059	3,040		110	125		3,169	3,165	
...mean (sd)	140.35 (3.02)	140.39 (2.92)	-0.01	139.32 (2.59)	139.72 (2.65)	-0.15	139.77 (2.79)	140.01 (2.77)	-0.09
...median [IQR]	140.50 [139.00, 142.00]	140.95 [139.00, 142.00]	-0.15	139.50 [138.00, 141.00]	140.00 [138.00, 141.42]	-0.19	139.93 (2.79)	140.41 (2.77)	-0.17
...Missing; n (%)	5,651 (64.9%)	5,670 (65.1%)	0.00	11,204 (99.0%)	11,189 (98.9%)	0.01	16,855 (84.2%)	16,859 (84.2%)	0.00
Lab result number- Albumin mean (only >0 and <=10 included)	2,872	2,834		102	124		2,974	2,958	
...mean (sd)	4.16 (0.36)	4.20 (0.36)	-0.11	4.15 (0.38)	4.12 (0.40)	0.08	4.15 (0.37)	4.15 (0.38)	0.00
...median [IQR]	4.20 [4.00, 4.40]	4.20 [4.00, 4.40]	0.00	4.18 [4.00, 4.40]	4.13 [3.95, 4.37]	0.13	4.19 (0.37)	4.16 (0.38)	0.08
...Missing; n (%)	5,838 (67.0%)	5,876 (67.5%)	-0.01	11,212 (99.1%)	11,190 (98.9%)	0.02	17,050 (85.1%)	17,066 (85.2%)	0.00
Lab result number- Glucose (fasting or random) mean (only 10-1000 included)	3,051	3,028		102	123		3,153	3,151	
...mean (sd)	128.09 (53.05)	123.35 (46.88)	0.09	153.54 (67.14)	145.57 (62.13)	0.12	142.47 (61.41)	135.90 (56.01)	0.11
...median [IQR]	111.00 [95.00, 146.00]	108.50 [95.00, 138.00]	0.05	135.25 [103.81, 178.50]	133.00 [104.00, 165.00]	0.03	124.70 (61.41)	122.34 (56.01)	0.04
...Missing; n (%)	5,659 (65.0%)	5,682 (65.2%)	0.00	11,212 (99.1%)	11,191 (98.9%)	0.02	16,871 (84.3%)	16,873 (84.3%)	0.00
Lab result number- Potassium mean (only 1-7 included)	3,120	3,091		118	138		3,238	3,229	
...mean (sd)	4.41 (0.46)	4.37 (0.48)	0.09	4.29 (0.49)	4.30 (0.51)	-0.02	4.34 (0.48)	4.33 (0.50)	0.02
...median [IQR]	4.40 [4.10, 4.70]	4.35 [4.07, 4.65]	0.11	4.27 [4.00, 4.55]	4.30 [4.00, 4.60]	-0.06	4.33 (0.48)	4.32 (0.50)	0.02
...Missing; n (%)	5,590 (64.2%)	5,619 (64.5%)	-0.01	11,196 (99.0%)	11,176 (98.8%)	0.02	16,786 (83.8%)	16,795 (83.9%)	0.00
Comorbidity Scores									
CCI (180 days)- ICD9 and ICD10									
...mean (sd)	3.09 (2.05)	3.06 (2.02)	0.01	2.11 (1.74)	2.09 (1.70)	0.01	2.54 (1.88)	2.51 (1.85)	0.02
...median [IQR]	3.00 [1.00, 4.00]	3.00 [1.00, 4.00]	0.00	2.00 [1.00, 3.00]	2.00 [1.00, 3.00]	0.00	2.43 (1.88)	2.43 (1.85)	0.00
Frailty Score (mean): Empirical Version 365 days,									
...mean (sd)	0.18 (0.06)	0.18 (0.06)	0.00	0.17 (0.05)	0.17 (0.05)	0.00	0.17 (0.05)	0.17 (0.05)	0.00
...median [IQR]	0.17 [0.14, 0.21]	0.17 [0.14, 0.21]	0.00	0.16 [0.14, 0.20]	0.16 [0.14, 0.20]	0.00	0.16 (0.05)	0.16 (0.05)	0.00
Healthcare Utilization									
Any hospitalization; n (%)	894 (10.3%)	868 (10.0%)	0.01	1,833 (16.2%)	1,769 (15.6%)	0.02	2,727 (13.6%)	2,637 (13.2%)	0.01

Table 1: Telmisartan vs Loop/Dihydropyridines/Thiazides

Any hospitalization during prior 31-180 days; n (%)	706 (8.1%)	680 (7.8%)	0.01	1,440 (12.7%)	1,401 (12.4%)	0.01	2,146 (10.7%)	2,081 (10.4%)	0.01
Endocrinologist Visit; n (%)	726 (8.3%)	711 (8.2%)	0.00	711 (6.3%)	736 (6.5%)	-0.01	1,437 (7.2%)	1,447 (7.2%)	0.00
Endocrinologist Visit (30 days prior); n (%)	250 (2.9%)	246 (2.8%)	0.01	254 (2.2%)	271 (2.4%)	-0.01	0,504 (2.5%)	0,517 (2.6%)	-0.01
Endocrinologist Visit (31 to 180 days prior); n (%)	644 (7.4%)	636 (7.3%)	0.00	647 (5.7%)	664 (5.9%)	-0.01	1,291 (6.4%)	1,300 (6.5%)	0.00
Internal medicine/family medicine visits; n (%)	7,403 (85.0%)	7,353 (84.4%)	0.02	9,048 (80.0%)	9,046 (80.0%)	0.00	16,451 (82.2%)	16,399 (81.9%)	0.01
Internal medicine/family medicine visits (30 days prior) ; n (%)	4,534 (52.1%)	4,888 (56.1%)	-0.08	5,619 (49.7%)	5,985 (52.9%)	-0.06	10,153 (50.7%)	10,873 (54.3%)	-0.07
Internal medicine/family medicine visits (31 to 180 days prior) ; n (%)	6,958 (79.9%)	6,800 (78.1%)	0.04	8,457 (74.7%)	8,353 (73.8%)	0.02	15,415 (77.0%)	15,153 (75.7%)	0.03
Cardiologist visit; n (%)	3,601 (41.3%)	3,542 (40.7%)	0.01	4,416 (39.0%)	4,297 (38.0%)	0.02	8,017 (40.0%)	7,839 (39.1%)	0.02
Number of Cardiologist visits (30 days prior); n (%)	1,590 (18.3%)	1,519 (17.4%)	0.02	1,996 (17.6%)	1,963 (17.4%)	0.01	3,586 (17.9%)	3,482 (17.4%)	0.01
Number of Cardiologist visits (31 to 180 days prior); n (%)	2,997 (34.4%)	2,934 (33.7%)	0.01	3,665 (32.4%)	3,605 (31.9%)	0.01	6,662 (33.3%)	6,539 (32.7%)	0.01
Electrocardiogram ; n (%)	3,482 (40.0%)	3,419 (39.3%)	0.01	4,861 (43.0%)	4,862 (43.0%)	0.00	8,343 (41.7%)	8,281 (41.4%)	0.01
Use of glucose test strips; n (%)	218 (2.5%)	234 (2.7%)	-0.01	247 (2.2%)	230 (2.0%)	0.01	0,465 (2.3%)	0,464 (2.3%)	0.00
Dialysis; n (%)	30 (0.3%)	27 (0.3%)	0.00	66 (0.6%)	50 (0.4%)	0.03	96 (0.5%)	77 (0.4%)	0.01
number of different/distinct medication prescriptions									
...mean (sd)	11.69 (5.68)	11.56 (5.05)	0.02	11.97 (5.71)	11.79 (5.20)	0.03	11.85 (5.70)	11.69 (5.14)	0.03
...median [IQR]	11.00 [8.00, 15.00]	11.00 [8.00, 14.00]	0.00	11.00 [8.00, 15.00]	11.00 [8.00, 15.00]	0.00	11.00 (5.70)	11.00 (5.14)	0.00
Number of Hospitalizations									
...mean (sd)	0.12 (0.41)	0.12 (0.39)	0.00	0.19 (0.46)	0.18 (0.45)	0.02	0.16 (0.44)	0.15 (0.42)	0.02
...median [IQR]	0.00 [0.00, 0.00]	0.00 [0.00, 0.00]	0.00	0.00 [0.00, 0.00]	0.00 [0.00, 0.00]	0.00	0.00 (0.44)	0.00 (0.42)	0.00
Number of hospital days									
...mean (sd)	0.67 (2.94)	0.62 (2.67)	0.02	1.02 (3.48)	0.99 (3.54)	0.01	0.87 (3.26)	0.83 (3.19)	0.01
...median [IQR]	0.00 [0.00, 0.00]	0.00 [0.00, 0.00]	0.00	0.00 [0.00, 0.00]	0.00 [0.00, 0.00]	0.00	0.00 (3.26)	0.00 (3.19)	0.00
Number of Emergency Department (ED) visits									
...mean (sd)	0.46 (1.16)	0.45 (1.44)	0.01	0.16 (0.94)	0.15 (1.17)	0.01	0.29 (1.04)	0.28 (1.29)	0.01
...median [IQR]	0.00 [0.00, 0.00]	0.00 [0.00, 0.00]	0.00	0.00 [0.00, 0.00]	0.00 [0.00, 0.00]	0.00	0.00 (1.04)	0.00 (1.29)	0.00
Number of Office visits									
...mean (sd)	6.23 (4.59)	6.10 (4.55)	0.03	6.68 (5.39)	6.59 (5.03)	0.02	6.48 (5.06)	6.38 (4.83)	0.02
...median [IQR]	5.00 [3.00, 8.00]	5.00 [3.00, 8.00]	0.00	6.00 [3.00, 9.00]	6.00 [3.00, 9.00]	0.00	5.57 (5.06)	5.57 (4.83)	0.00
Number of Endocrinologist visits									
...mean (sd)	0.39 (1.97)	0.39 (2.06)	0.00	0.31 (1.84)	0.33 (1.88)	-0.01	0.38 (1.58)	0.38 (1.70)	0.00
...median [IQR]	0.00 [0.00, 0.00]	0.00 [0.00, 0.00]	0.00	0.00 [0.00, 0.00]	0.00 [0.00, 0.00]	0.00	0.00 (1.58)	0.00 (1.70)	0.00
Number of internal medicine/family medicine visits									
...mean (sd)	10.92 (15.41)	10.78 (15.39)	0.01	7.49 (11.92)	7.40 (10.47)	0.01	8.98 (13.55)	8.87 (12.84)	0.01
...median [IQR]	6.00 [2.00, 14.00]	6.00 [2.00, 14.00]	0.00	4.00 [1.00, 9.00]	4.00 [1.00, 9.00]	0.00	4.87 (13.55)	4.87 (12.84)	0.00
Number of Cardiologist visits									
...mean (sd)	2.19 (4.98)	2.13 (4.57)	0.01	2.13 (4.59)	2.09 (4.48)	0.01	2.16 (4.76)	2.11 (4.52)	0.01
...median [IQR]	0.00 [0.00, 2.00]	0.00 [0.00, 2.00]	0.00	0.00 [0.00, 2.00]	0.00 [0.00, 2.00]	0.00	0.00 (4.76)	0.00 (4.52)	0.00

Table 1: Telmisartan vs Loop/Dihydropyridines/Thiazides

Number electrocardiograms received									
...mean (sd)	0.78 (1.39)	0.77 (1.45)	0.01	0.81 (1.36)	0.79 (1.32)	0.01	0.80 (1.37)	0.78 (1.38)	0.01
...median [IQR]	0.00 [0.00, 1.00]	0.00 [0.00, 1.00]	0.00	0.00 [0.00, 1.00]	0.00 [0.00, 1.00]	0.00	0.00 (1.37)	0.00 (1.38)	0.00
Number of HbA1c tests ordered									
...mean (sd)	0.80 (0.93)	0.80 (0.92)	0.00	0.35 (0.71)	0.34 (0.72)	0.01	0.55 (0.81)	0.54 (0.81)	0.01
...median [IQR]	1.00 [0.00, 1.00]	1.00 [0.00, 1.00]	0.00	0.00 [0.00, 0.00]	0.00 [0.00, 0.00]	0.00	0.43 (0.81)	0.43 (0.81)	0.00
Number of glucose tests ordered									
...mean (sd)	0.37 (2.28)	0.35 (2.21)	0.01	0.23 (0.93)	0.22 (0.92)	0.01	0.29 (1.66)	0.28 (1.61)	0.01
...median [IQR]	0.00 [0.00, 0.00]	0.00 [0.00, 0.00]	0.00	0.00 [0.00, 0.00]	0.00 [0.00, 0.00]	0.00	0.00 (1.66)	0.00 (1.61)	0.00
Number of lipid tests ordered									
...mean (sd)	0.86 (1.05)	0.85 (0.95)	0.01	0.43 (0.91)	0.43 (0.90)	0.00	0.62 (0.97)	0.61 (0.92)	0.01
...median [IQR]	1.00 [0.00, 1.00]	1.00 [0.00, 1.00]	0.00	0.00 [0.00, 1.00]	0.00 [0.00, 1.00]	0.00	0.43 (0.97)	0.43 (0.92)	0.00
Number of creatinine tests ordered									
...mean (sd)	0.09 (0.49)	0.08 (0.41)	0.02	0.08 (0.49)	0.07 (0.39)	0.02	0.08 (0.49)	0.07 (0.40)	0.02
...median [IQR]	0.00 [0.00, 0.00]	0.00 [0.00, 0.00]	0.00	0.00 [0.00, 0.00]	0.00 [0.00, 0.00]	0.00	0.00 (0.49)	0.00 (0.40)	0.00
Number of BUN tests ordered									
...mean (sd)	0.06 (0.56)	0.06 (0.52)	0.00	0.05 (0.46)	0.06 (0.46)	-0.02	0.05 (0.51)	0.06 (0.49)	-0.02
...median [IQR]	0.00 [0.00, 0.00]	0.00 [0.00, 0.00]	0.00	0.00 [0.00, 0.00]	0.00 [0.00, 0.00]	0.00	0.00 (0.51)	0.00 (0.49)	0.00
Number of tests for microalbuminuria									
...mean (sd)	0.59 (1.28)	0.58 (1.14)	0.01	0.20 (0.69)	0.19 (0.66)	0.01	0.37 (0.99)	0.36 (0.90)	0.01
...median [IQR]	0.00 [0.00, 1.00]	0.00 [0.00, 1.00]	0.00	0.00 [0.00, 0.00]	0.00 [0.00, 0.00]	0.00	0.00 (0.99)	0.00 (0.90)	0.00
Total N distinct ICD9/ICD10 diagnoses at the 3rd digit level									
...mean (sd)	7.82 (9.19)	7.74 (8.80)	0.01	1.51 (3.92)	1.44 (3.83)	0.02	4.25 (6.74)	4.18 (6.48)	0.01
...median [IQR]	5.00 [0.00, 12.00]	6.00 [0.00, 12.00]	-0.11	0.00 [0.00, 1.00]	0.00 [0.00, 1.00]	0.00	2.17 (6.74)	2.61 (6.48)	-0.07
For PS									
Hemorrhagic stroke+Other cerebrovascular disease+Cerebrovascular procedure (for PS); n (%)	341 (3.9%)	314 (3.6%)	0.02	358 (3.2%)	351 (3.1%)	0.01	699 (3.5%)	665 (3.3%)	0.01
Occurrence of creatinine tests ordered (for PS); n (%)	502 (5.8%)	490 (5.6%)	0.01	520 (4.6%)	527 (4.7%)	0.00	1,022 (5.1%)	1,017 (5.1%)	0.00
Occurrence of BUN tests ordered (for PS); n (%)	287 (3.3%)	308 (3.5%)	-0.01	336 (3.0%)	387 (3.4%)	-0.02	0,623 (3.1%)	0,695 (3.5%)	-0.02
Occurrence of chronic renal insufficiency w/o CKD (for PS) ; n (%)	756 (8.7%)	729 (8.4%)	0.01	566 (5.0%)	550 (4.9%)	0.00	1,322 (6.6%)	1,279 (6.4%)	0.01
Chronic kidney disease Stage 1-2 (for PS); n (%)	421 (4.8%)	415 (4.8%)	0.00	168 (1.5%)	178 (1.6%)	-0.01	589 (2.9%)	593 (3.0%)	-0.01
Chronic kidney disease Stage 3-6 (for PS); n (%)	1,557 (17.9%)	1,579 (18.1%)	-0.01	968 (8.6%)	941 (8.3%)	0.01	2,525 (12.6%)	2,520 (12.6%)	0.00
Bladder stones+Kidney stones (for PS); n (%)	196 (2.3%)	196 (2.3%)	0.00	194 (1.7%)	193 (1.7%)	0.00	0,390 (1.9%)	0,389 (1.9%)	0.00
Diabetes with peripheral circulatory disorders+Gangrene+Osteomyelitis(for PS) with ICD10 ; n (%)	639 (7.3%)	610 (7.0%)	0.01	303 (2.7%)	326 (2.9%)	-0.01	0,942 (4.7%)	0,936 (4.7%)	0.00
Alcohol abuse or dependence+Drug abuse or dependence (for PS); n (%)	221 (2.5%)	213 (2.4%)	0.01	70 (0.6%)	65 (0.6%)	0.00	291 (1.5%)	278 (1.4%)	0.01

Table 1: Telmisartan vs Loop/Dihydropyridines/Thiazides

Diabetes with other ophthalmic manifestations+Retinal detachment, vitreous hemorrhage, vitrectomy+Retinal laser coagulation therapy (for PS); n (%)	216 (2.5%)	213 (2.4%)	0.01	540 (4.8%)	528 (4.7%)	0.00	0,756 (3.8%)	0,741 (3.7%)	0.01
Other atherosclerosis+Cardiac conduction disorders+Other CVD (for PS) ; n (%)	1,237 (14.2%)	1,211 (13.9%)	0.01	2,055 (18.2%)	2,042 (18.0%)	0.01	3,292 (16.4%)	3,253 (16.2%)	0.01
Previous cardiac procedure (CABG or PTCA or Stent) + History of CABG or PTCA (for PS) ; n (%)	691 (7.9%)	675 (7.7%)	0.01	480 (4.2%)	472 (4.2%)	0.00	1,171 (5.8%)	1,147 (5.7%)	0.00
Hyperthyroidism + Hypothyroidism + Other disorders of thyroid gland (for PS); n (%)	1,914 (22.0%)	1,834 (21.1%)	0.02	1,123 (9.9%)	1,165 (10.3%)	-0.01	3,037 (15.2%)	2,999 (15.0%)	0.01
Delirium + Psychosis (for PS); n (%)	180 (2.1%)	186 (2.1%)	0.00	174 (1.5%)	167 (1.5%)	0.00	354 (1.8%)	353 (1.8%)	0.00
Any use of Meglitinides (for PS); n (%)	72 (0.8%)	66 (0.8%)	0.00	142 (1.3%)	164 (1.4%)	-0.01	214 (1.1%)	230 (1.1%)	0.00
Any use of AGIs (for PS); n (%)	23 (0.3%)	13 (0.1%)	0.04	2,055 (18.2%)	2,042 (18.0%)	0.01	3,292 (16.4%)	3,253 (16.2%)	0.01
CKD stage 3-6 + dialysis (for PS); n (%)	1,560 (17.9%)	1,580 (18.1%)	-0.01	977 (8.6%)	947 (8.4%)	0.01	2,537 (12.7%)	2,527 (12.6%)	0.00
Use of thiazide; n (%)	2,793 (32.1%)	2,788 (32.0%)	0.00	3,575 (31.6%)	3,582 (31.7%)	0.00	11,209 (56.0%)	11,107 (55.5%)	0.01
Use of beta blockers; n (%)	4,837 (55.5%)	4,821 (55.4%)	0.00	6,372 (56.3%)	6,286 (55.6%)	0.01	13,631 (68.1%)	13,607 (68.0%)	0.00
Use of calcium channel blockers; n (%)	6,196 (71.1%)	6,156 (70.7%)	0.01	7,435 (65.7%)	7,451 (65.9%)	0.00	7,859 (39.2%)	7,759 (38.7%)	0.01
All antidiabetic medications except Insulin; n (%)	3,652 (41.9%)	3,607 (41.4%)	0.01	4,207 (37.2%)	4,152 (36.7%)	0.01	6,368 (31.8%)	6,370 (31.8%)	0.00
DM Medications - Insulin ; n (%)	1,491 (17.1%)	1,467 (16.8%)	0.01	1,865 (16.5%)	1,861 (16.4%)	0.00	3,356 (16.8%)	3,328 (16.6%)	0.01
Use of Low Intensity Statins; n (%)	2,845 (32.7%)	2,886 (33.1%)	-0.01	3,842 (34.0%)	3,834 (33.9%)	0.00	6687 (33.4%)	6,720 (33.6%)	0.00
Use of High Intensity Statins; n (%)	2,931 (33.7%)	2,856 (32.8%)	0.02	2,976 (26.3%)	2,846 (25.2%)	0.03	5907 (29.5%)	5,702 (28.5%)	0.02
Malignant hypertension; n (%)	288 (3.3%)	271 (3.1%)	0.01	5,093 (45.0%)	5,127 (45.3%)	-0.01	5381 (26.9%)	5,398 (27.0%)	0.00
Cardiovascular stress test; n (%)	21 (0.2%)	23 (0.3%)	-0.02	49 (0.4%)	50 (0.4%)	0.00	0,070 (0.3%)	73 (0.4%)	-0.02
Echocardiogram; n (%)	1,165 (13.4%)	1,125 (12.9%)	0.01	2,534 (22.4%)	2,440 (21.6%)	0.02	3,699 (18.5%)	3565 (17.8%)	0.02
Number of BNP tests									
...mean (sd)	0.07 (0.33)	0.07 (0.34)	0.00	0.05 (0.28)	0.04 (0.27)	0.04	0.06 (0.30)	0.05 (0.30)	0.03
...median [IQR]	0.00 [0.00, 0.00]	0.00 [0.00, 0.00]	0.00	0.00 [0.00, 0.00]	0.00 [0.00, 0.00]	0.00	0.00 (0.30)	0.00 (0.30)	0.00
Number of Cardiac biomarkers tests (tropnin, CK-MBs, Myoglobin, CPK)									
...mean (sd)	0.22 (0.90)	0.21 (0.88)	0.01	0.19 (0.98)	0.19 (0.97)	0.00	0.20 (0.95)	0.20 (0.93)	0.00
...median [IQR]	0.00 [0.00, 0.00]	0.00 [0.00, 0.00]	0.00	0.00 [0.00, 0.00]	0.00 [0.00, 0.00]	0.00	0.00 (0.95)	0.00 (0.93)	0.00
Number of Ambulatory Blood pressure monitoring tests									
...mean (sd)	0.00 (0.05)	0.00 (0.05)	0.00	0.00 (0.09)	0.00 (0.07)	0.00	0.00 (0.08)	0.00 (0.06)	0.00
...median [IQR]	0.00 [0.00, 0.00]	0.00 [0.00, 0.00]	0.00	0.00 [0.00, 0.00]	0.00 [0.00, 0.00]	0.00	0.00 (0.08)	0.00 (0.06)	0.00
N of days on antihypertensive medications during baseline									
...mean (sd)	155.87 (43.03)	156.52 (45.30)	-0.01	152.05 (46.71)	151.49 (48.30)	0.01	153.71 (45.15)	153.68 (47.02)	0.00
...median [IQR]	176.00 [154.00, 181.00]	179.00 [158.00, 181.00]	-0.07	175.00 [147.00, 181.00]	177.00 [145.00, 181.00]	-0.04	175.43 (45.15)	177.87 (47.02)	-0.05
N of days in database anytime prior									
...mean (sd)	1,982.37 (1,425.64)	2,002.50 (1,451.47)	-0.01	1,709.38 (1,080.10)	1,702.87 (1,073.43)	0.01	1828.12 (1242.27)	1833.20 (1251.97)	0.00
...median [IQR]	1,617.50 [867.00, 2,699.25]	1,612.00 [873.75, 2,761.00]	0.00	1,508.50 [840.00, 2,387.00]	1,520.50 [821.75, 2,445.25]	-0.01	1555.91 (1242.27)	1560.30 (1251.97)	0.00

Table 1: Telmisartan vs Loop/Dihydropyridines/Thiazides

Mean Copay for per prescription cost (charges in U.S. $) (180-1 day prior)									
...mean (sd)	27.14 (36.65)	27.51 (33.53)	-0.01	25.60 (26.67)	25.50 (26.82)	0.00	26.27 (31.40)	26.37 (29.92)	0.00
...median [IQR]	18.62 [7.00, 35.26]	18.64 [7.23, 35.71]	0.00	20.16 [8.57, 35.34]	20.00 [7.97, 35.00]	0.01	19.49 (31.40)	19.41 (29.92)	0.00
...Missing; n (%)	33 (0.4%)	40 (0.5%)	-0.01	25 (0.2%)	28 (0.2%)	0.00	0,058 (0.3%)	68 (0.3%)	0.00
Colonos; n (%)	427 (4.9%)	434 (5.0%)	0.00	637 (5.6%)	607 (5.4%)	0.01	1,064 (5.3%)	1041 (5.2%)	0.00
Fecal occult blood (FOB) test; n (%)	388 (4.5%)	390 (4.5%)	0.00	345 (3.0%)	368 (3.3%)	-0.02	0,733 (3.7%)	758 (3.8%)	-0.01
Flu vaccine; n (%)	1,619 (18.6%)	1,601 (18.4%)	0.01	1,188 (10.5%)	1,207 (10.7%)	-0.01	2,807 (14.0%)	2808 (14.0%)	0.00
Mammogram; n (%)	1,128 (13.0%)	1,166 (13.4%)	-0.01	1,297 (11.5%)	1,371 (12.1%)	-0.02	2,425 (12.1%)	2537 (12.7%)	-0.02
Pap smear; n (%)	278 (3.2%)	281 (3.2%)	0.00	445 (3.9%)	458 (4.0%)	-0.01	0,723 (3.6%)	739 (3.7%)	-0.01
Pneumonia vaccine; n (%)	1,425 (16.4%)	1,411 (16.2%)	0.01	326 (2.9%)	322 (2.8%)	0.01	1,751 (8.7%)	1733 (8.7%)	0.00
PSA test or Prostate exam for DRE; n (%)	1,117 (12.8%)	1,120 (12.9%)	0.00	827 (7.3%)	861 (7.6%)	-0.01	1,944 (9.7%)	1981 (9.9%)	-0.01
Bone mineral density; n (%)	425 (4.9%)	431 (4.9%)	0.00	352 (3.1%)	353 (3.1%)	0.00	0,777 (3.9%)	784 (3.9%)	0.00
Use of Sympatomimetic agents; n (%)	72 (0.8%)	80 (0.9%)	-0.01	230 (2.0%)	219 (1.9%)	0.01	0,302 (1.5%)	299 (1.5%)	0.00
Use of CNS stimulants; n (%)	59 (0.7%)	54 (0.6%)	0.01	92 (0.8%)	98 (0.9%)	-0.01	0,151 (0.8%)	152 (0.8%)	0.00
Use of estrogens, progestins, androgens; n (%)	390 (4.5%)	382 (4.4%)	0.00	791 (7.0%)	805 (7.1%)	0.00	1,181 (5.9%)	1187 (5.9%)	0.00
Use of Angiogenesis inhibitors; n (%)	5 (0.1%)	1 (0.0%)	0.04	20 (0.2%)	6 (0.1%)	0.03	0,025 (0.1%)	7 (0.0%)	0.04
Use of Oral Immunosuppressants; n (%)	54 (0.6%)	31 (0.4%)	0.03	137 (1.2%)	54 (0.5%)	0.08	0,191 (1.0%)	85 (0.4%)	0.07
Cardiomegaly, LVH, and other cardiopathy due to hypertension; n (%)	1,187 (13.6%)	1,120 (12.9%)	0.02	1,219 (10.8%)	1,179 (10.4%)	0.01	2,406 (12.0%)	2299 (11.5%)	0.02
Ultrasound; n (%)	1,728 (19.8%)	1,704 (19.6%)	0.01	2,845 (25.1%)	2,813 (24.9%)	0.00	4,573 (22.8%)	4517 (22.6%)	0.00
Symptomatic hypotension; n (%)	154 (1.8%)	149 (1.7%)	0.01	158 (1.4%)	146 (1.3%)	0.01	0,312 (1.6%)	295 (1.5%)	0.01
Syncopal episodes; n (%)	208 (2.4%)	220 (2.5%)	-0.01	186 (1.6%)	187 (1.7%)	-0.01	0,394 (2.0%)	407 (2.0%)	0.00
N of Generic name drugs only									
...mean (sd)	19.00 (13.93)	18.89 (14.40)	0.01	13.94 (10.10)	13.66 (10.69)	0.03	16.14 (11.92)	15.93 (12.44)	0.02
...median [IQR]	16.00 [10.00, 25.00]	16.00 [10.00, 24.00]	0.00	12.00 [7.00, 18.00]	11.00 [6.00, 18.00]	0.10	13.74 (11.92)	13.17 (12.44)	0.05
N of Brand name drugs only									
...mean (sd)	5.64 (7.16)	5.56 (7.28)	0.01	8.82 (7.98)	8.68 (8.29)	0.02	7.44 (7.63)	7.32 (7.87)	0.02
...median [IQR]	3.00 [1.00, 8.00]	3.00 [0.00, 8.00]	0.00	7.00 [3.00, 12.00]	7.00 [3.00, 12.00]	0.00	5.26 (7.63)	5.26 (7.87)	0.00
Number of distinct antihypertensive generic medications (180-1 days before index)									
...mean (sd)	3.06 (1.28)	3.04 (1.51)	0.01	2.95 (1.26)	2.90 (1.58)	0.03	3.00 (1.27)	2.96 (1.55)	0.03
...median [IQR]	3.00 [2.00, 4.00]	3.00 [2.00, 4.00]	0.00	3.00 [2.00, 4.00]	3.00 [2.00, 4.00]	0.00	3.00 (1.27)	3.00 (1.55)	0.00
Number of distinct antihypertensive generic medications on CED									
...mean (sd)	0.10 (0.39)	1.39 (0.74)	-2.18	0.12 (0.44)	1.47 (0.80)	-2.09	0.11 (0.42)	1.44 (0.77)	-2.14
...median [IQR]	0.00 [0.00, 0.00]	1.00 [1.00, 2.00]	-1.69	0.00 [0.00, 0.00]	1.00 [1.00, 2.00]	-1.55	0.00 (0.42)	1.00 (0.77)	-1.61
Hypertensive retinopathy; n (%)	142 (1.6%)	142 (1.6%)	0.00	69 (0.6%)	65 (0.6%)	0.00	0	0	#VALUE!
Commercial vs Medicare Advantage-Business Type Code - CORRECT ONE - TRUVEN									
...Commercial; n (%)	2,354 (27.0%)	2,352 (27.0%)	0.00	7,423 (65.6%)	7,408 (65.5%)	0.00	9,777 (48.8%)	9760 (48.7%)	0.00
...Medicare Advantage; n (%)	6,356 (73.0%)	6,358 (73.0%)	0.00	3,891 (34.4%)	3,906 (34.5%)	0.00	10,247 (51.2%)	10264 (51.3%)	0.00
Commercial vs Medicare Advantage-Business Type Code									

Table 1: Telmisartan vs Loop/Dihydropyridines/Thiazides

...COM = COMMERCIAL; n (%)	2,354 (27.0%)	2,352 (27.0%)	0.00	-	-	#VALUE!	2,354 (27.0%)	2,352 (27.0%)	0.00
...MCR = MEDICARE; n (%)	6,356 (73.0%)	6,358 (73.0%)	0.00	-	-	#VALUE!	6,356 (73.0%)	6,358 (73.0%)	0.00
...MCD = MEDICAID; n (%)	0 (0.0%)	0 (0.0%)	#DIV/0!	-	-	#VALUE!	0 (0.0%)	0 (0.0%)	#DIV/0!
...NONE = NO BUSINESS LINE CODE (added in 2015); n (%)	0 (0.0%)	0 (0.0%)	#DIV/0!	-	-	#VALUE!	0 (0.0%)	0 (0.0%)	#DIV/0!
...UNK = UNKNOWN (added in 2015); n (%)	0 (0.0%)	0 (0.0%)	#DIV/0!	-	-	#VALUE!	0 (0.0%)	0 (0.0%)	#DIV/0!
Commercial vs Medicare Advantage- Data Type	-	-	#VALUE!	0	0	#VALUE!	0	0	#VALUE!
...1 - Fee For Service; n (%)	-	-	#VALUE!	3,524 (31.1%)	3,538 (31.3%)	0.00	3,524 (31.1%)	3,538 (31.3%)	0.00
...2 - Encounter; n (%)	-	-	#VALUE!	367 (3.2%)	368 (3.3%)	-0.01	367 (3.2%)	368 (3.3%)	-0.01
...3 - Medicare; n (%)	-	-	#VALUE!	6,985 (61.7%)	6,939 (61.3%)	0.01	6,985 (61.7%)	6,939 (61.3%)	0.01
...4 - Medicare Encounter; n (%)	-	-	#VALUE!	438 (3.9%)	469 (4.1%)	-0.01	438 (3.9%)	469 (4.1%)	-0.01
Metropolitan Statistical Area - Urban (any MSA) vs Rural (non-MSA)									
...Urban; n (%)	-	-	#VALUE!	8,502 (75.1%)	8,576 (75.8%)	-0.02	8,502 (75.1%)	8,576 (75.8%)	-0.02
...Rural; n (%)	-	-	#VALUE!	68 (0.6%)	68 (0.6%)	0.00	68 (0.6%)	68 (0.6%)	0.00
...Unknown/Missing; n (%)	-	-	#VALUE!	2,744 (24.3%)	2,670 (23.6%)	0.02	2,744 (24.3%)	2,670 (23.6%)	0.02