# Oral cancer drug therapy use has drastically increased since 2006: the Saskatchewan experience

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# Disclosures

- No real or apparent conflicts of interest

# Background

- Saskatchewan Cancer Agency
  - Cancer control for province of Saskatchewan through prevention, early detection, research, treatment
  - Population: 1.1 million
- Funding from provincial Ministry of Health
  - Operating budget FY13/14
    - ~$150 million (Drugs $50 million)
- Operates 2 tertiary treatment centres
  - Saskatoon and Regina
  - Solid tumors, hematology, BMT
  - Adult, pediatric

# Background (cont'd)

- Mandate includes provision of all anti-cancer treatments whether parenteral or oral
  - Includes take home medications (oral chemotherapy, prostate cancer injections, some supportive care meds)
  - In some other provinces, these medications are dispensed by retail pharmacies
- One provincial Cancer Agency pharmacy dispensing system captures all Saskatchewan anti-cancer drug information
  - Includes outpatient, inpatient, 16 outlying rural hospitals (community oncology program sites)

# Hypothesis

- Oral drug therapy is responsible for increasing volume of workload and proportion of annual Cancer Agency drug budget
  - Increasing reliance on patient/family for self-administration

# Objectives

- To determine whether the use of oral anti-cancer treatment has changed in Saskatchewan over the past 8 years
  - Including chemotherapy, targeted treatments, hormones

# Methods

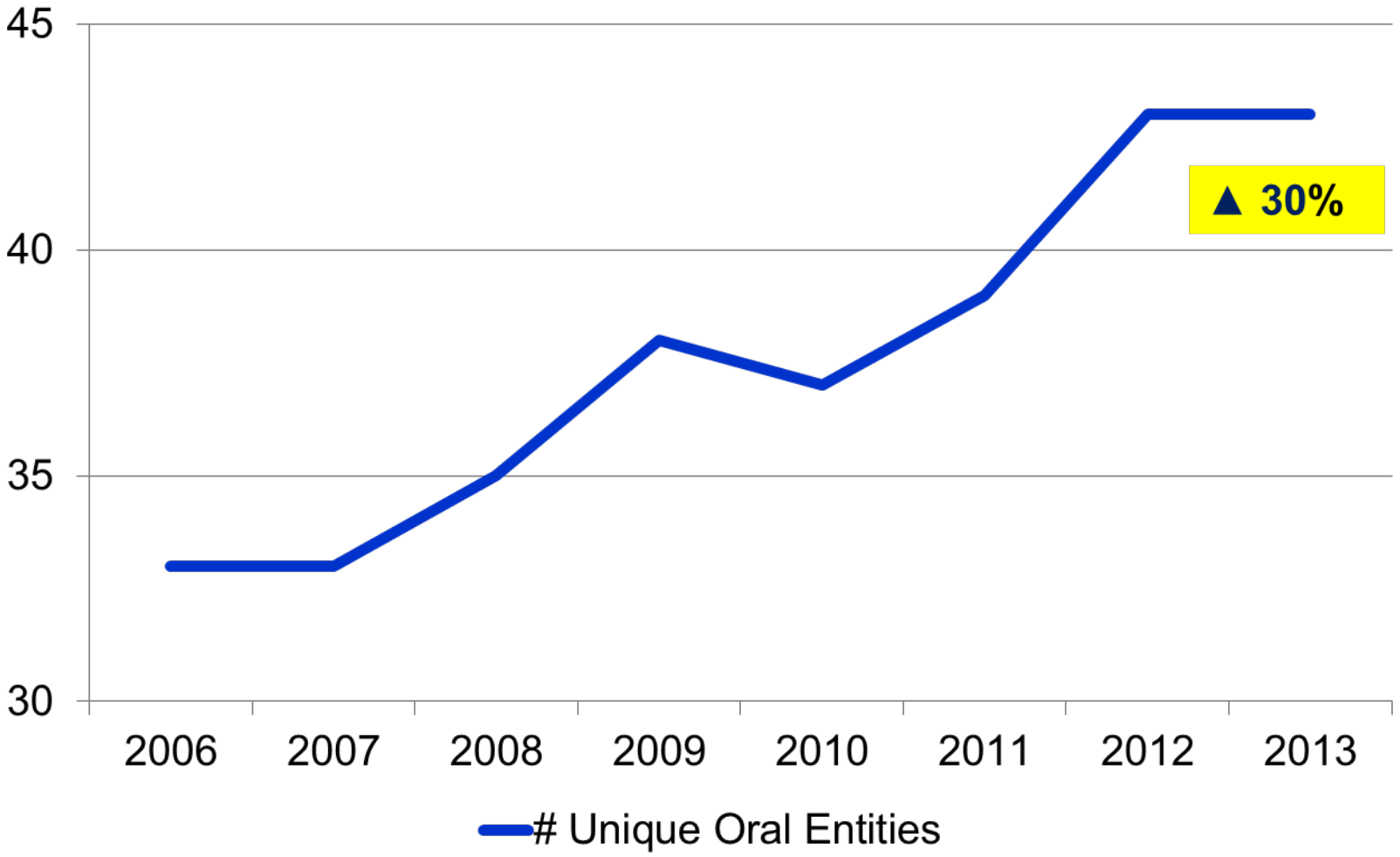
- Data from calendar years 2006 to 2013 on cancer drug prescriptions extracted from provincial Saskatchewan Cancer Agency Pharmacy system
- Volume of all injectable and take home (including oral) cancer drug prescriptions (Total Rx) obtained
  - Excluded all supportive care drugs (including growth factors, bisphosphonates, antiemetics, Dexamethasone)
- Isolated oral medications (Oral Rx) from Total Rx
  - Excluded any drugs with injectable or topical route of administration, compassionate program drugs/free drug supplies, Health Canada SAP drugs, clinical trials
- Costs calculated based on invoiced costs
  - Drug rebates not included in calculations

# Results

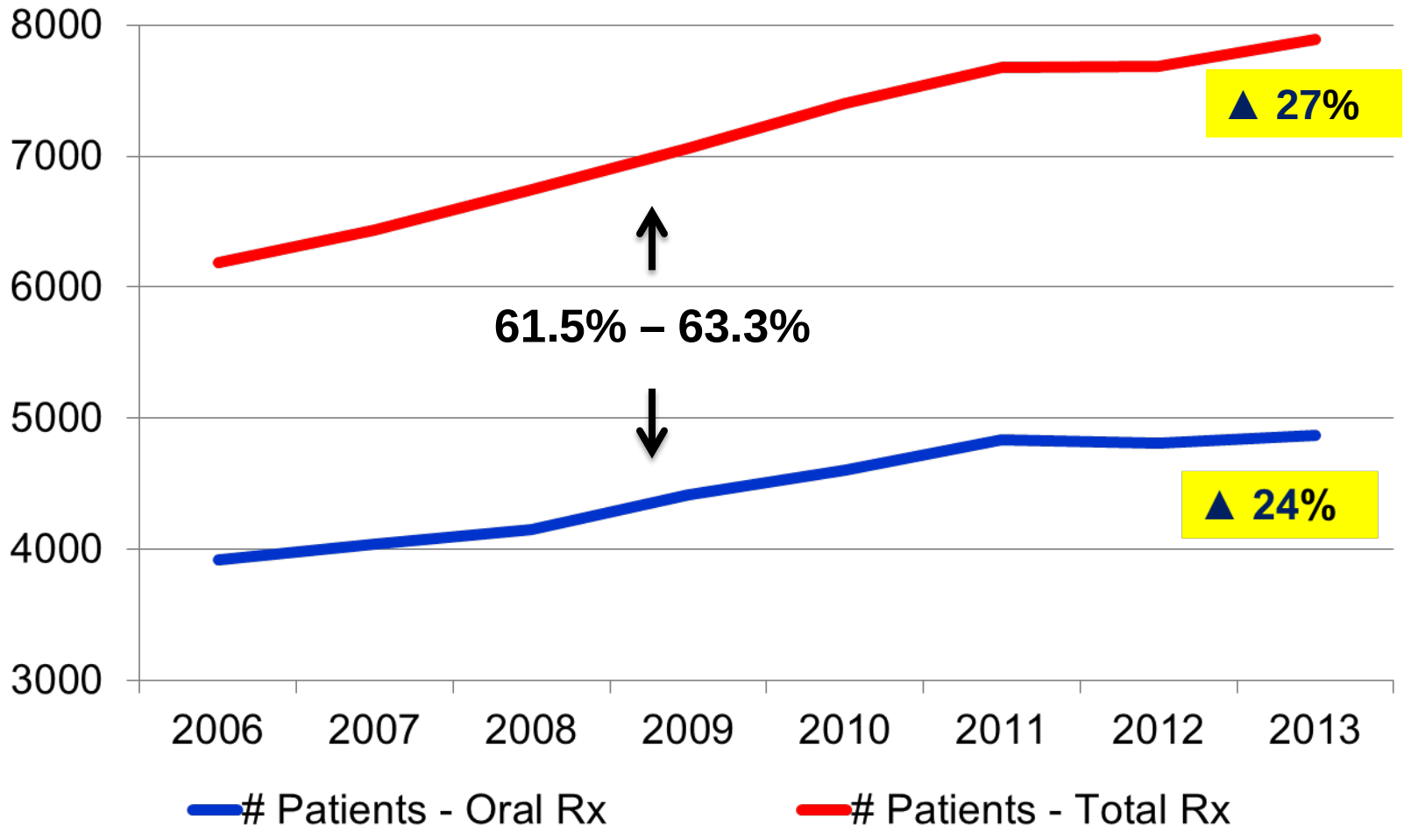
- 43 oral cancer drugs isolated

| | | | |
|---|---|---|---|
| Abiraterone | Erlotinib | Letrozole | Prednisolone |
| Anagrelide | Etoposide | Lomustine | Prednisone |
| Anastrozole | Everolimus | Medroxyprogesterone | Procarbazine |
| Bicalutamide | Exemestane | Megestrol | Sorafenib |
| Busulfan | Fludarabine | Melphalan | Sunitinib |
| Capecitabine | Flutamide | Mercaptopurine | Tamoxifen |
| Chlorambucil | Gefitinib | Methotrexate | Temozolomide |
| Crizotinib | Hydroxyurea | Mitotane | Thioguanine |
| Cyclophosphamide | Imatinib | Nilotinib | Tretinoin |
| Cyproterone | Lapatinib | Nilutamide | Vemurafenib |
| Dasatinib | Lenalidomide | Pazopanib | |

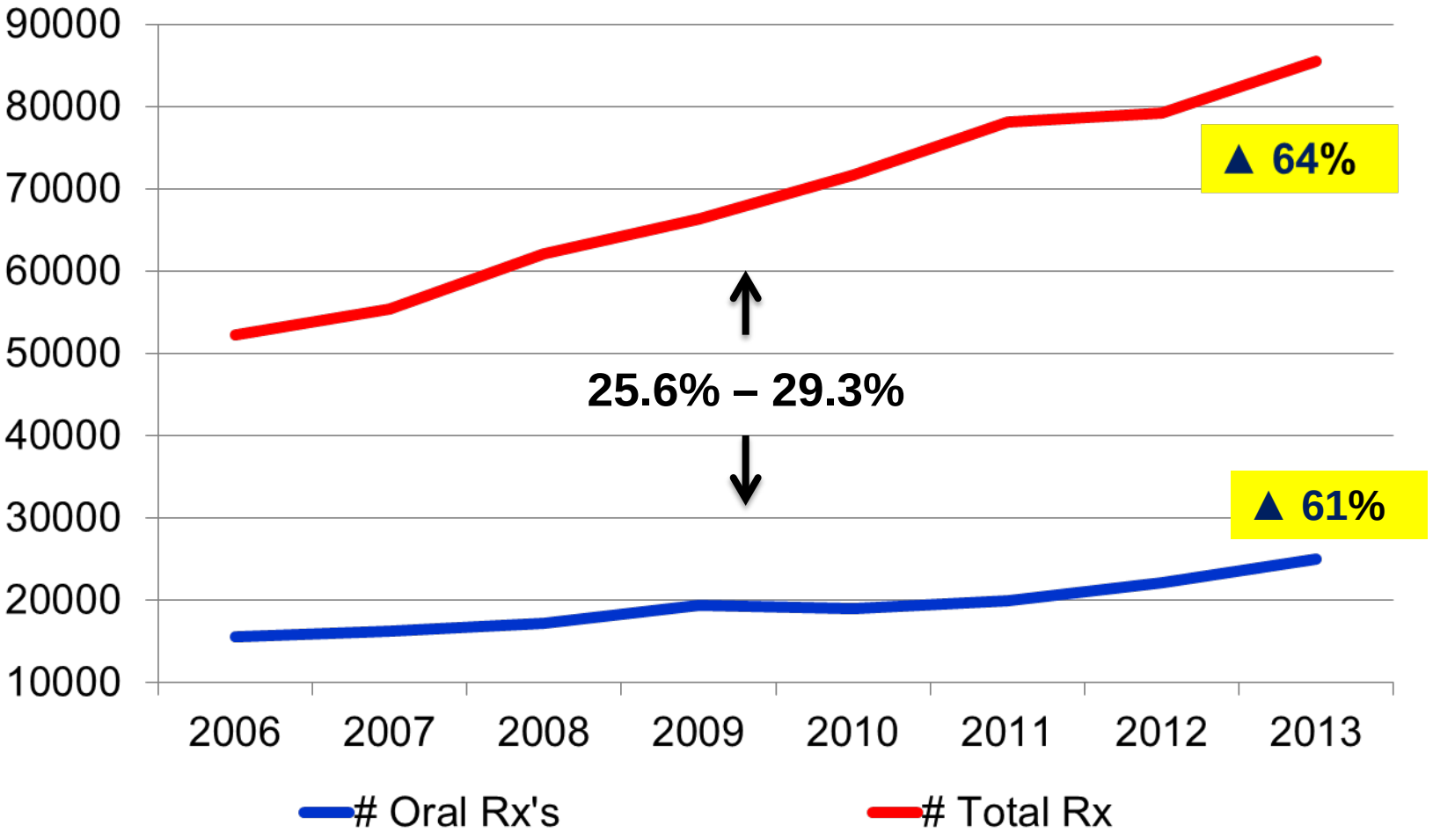
# Volume Change In Unique Oral Entities



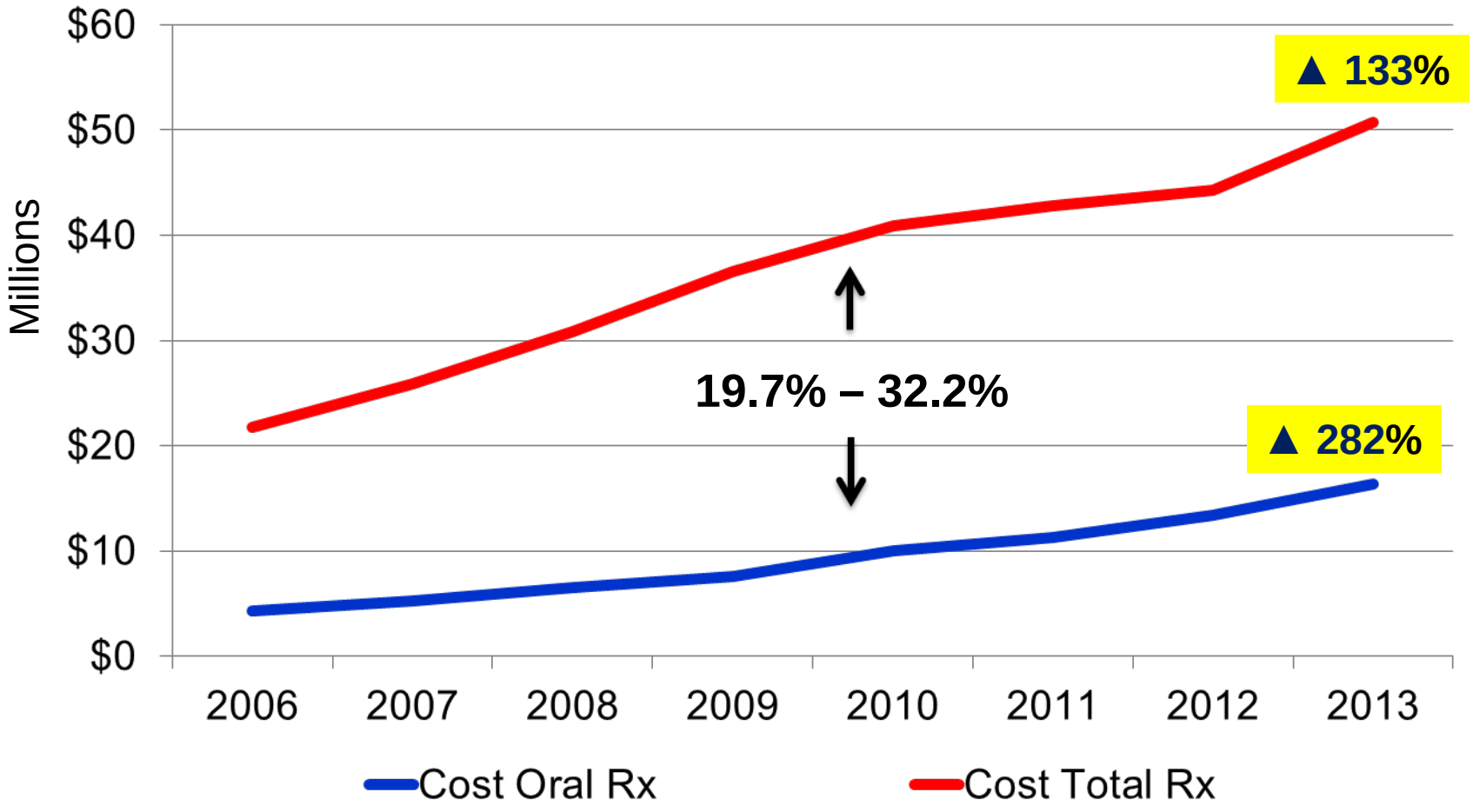
# Change in patient volume: Oral Rx vs. Total Rx



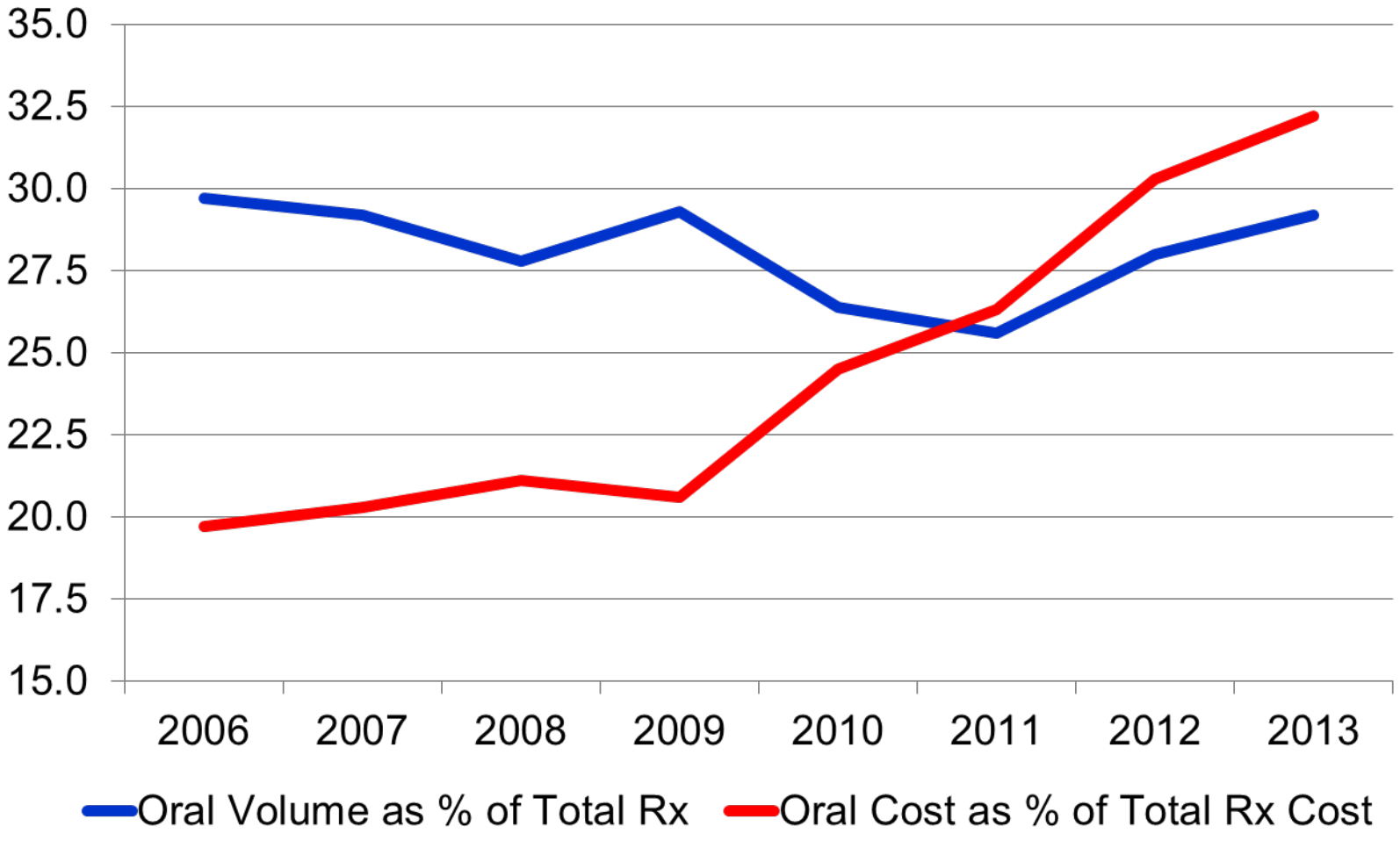
# Change in prescription volume: Oral Rx vs. Total Rx



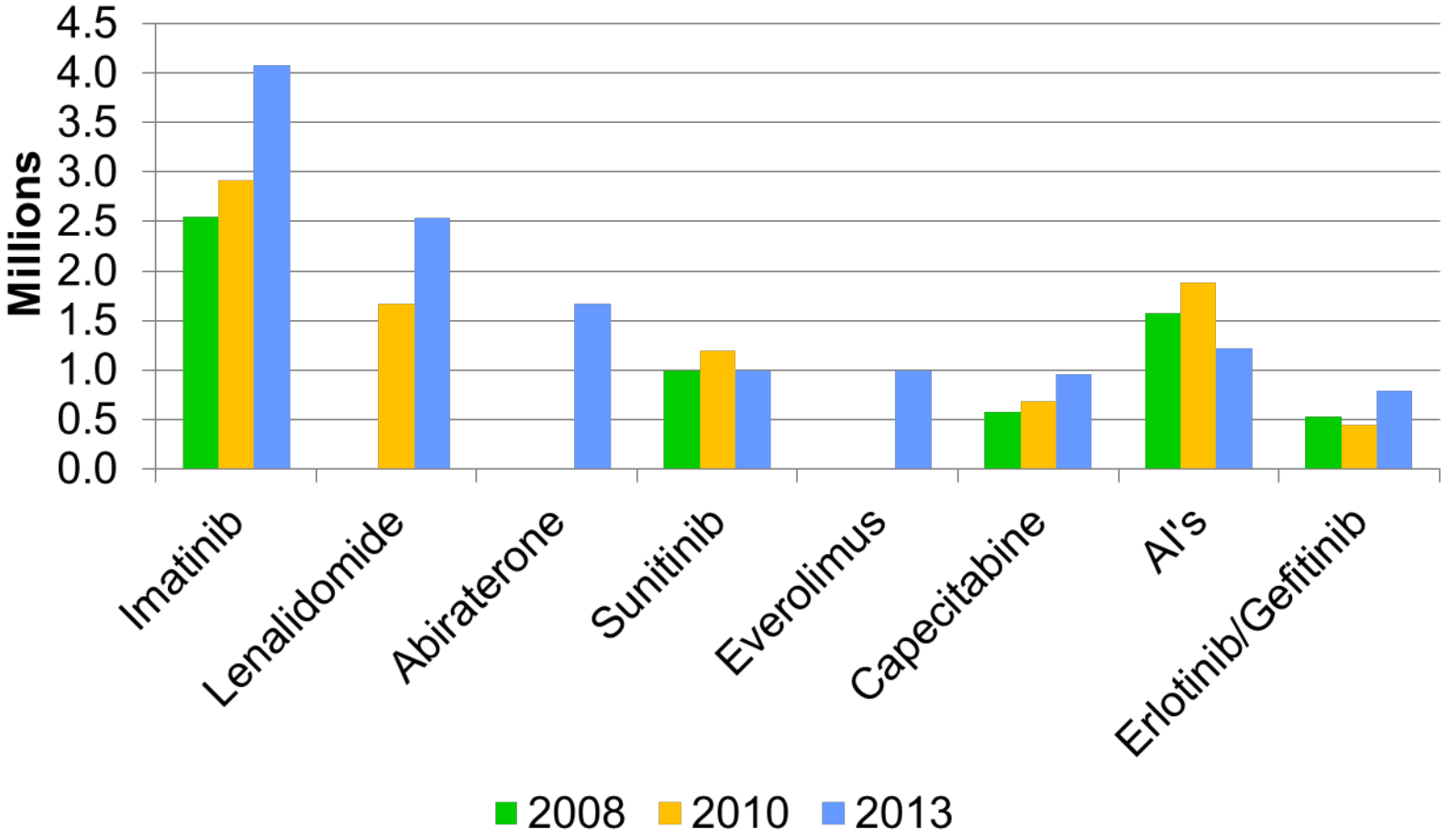
# Drug Budget:
# Oral Rx Cost vs. Total Rx Cost



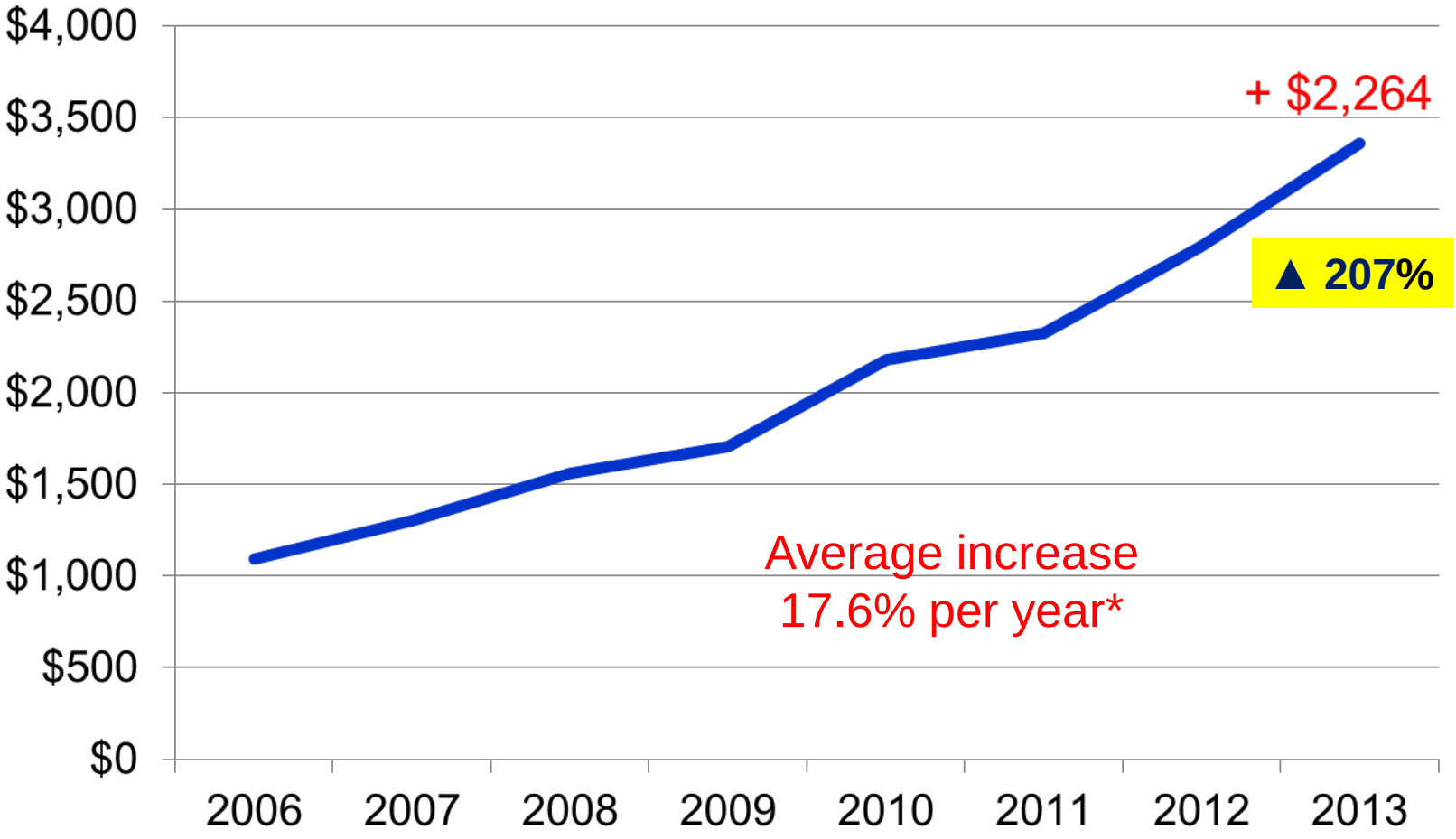
# Change in volume and cost of Oral Rx relative to Total Rx



# Expenditure by drug and year



# Average Oral Rx Yearly Cost Per Patient




*Each individual year compared against previous year to calculate average yearly increase

# Discussion

- Use of oral anti-cancer therapy is increasing
  - Targeted small molecules (Sunitinib, Everolimus, Pazopanib, Dasatinib, Nilotinib, Vemurafenib …)
  - Hormone treatments (Abiraterone, Enzalutamide)
  - iMiD's (Lenalidomide)
- pCODR (Oct 2011-Mar 2014)
  - 26/45 (57%) drugs reviewed or in queue: oral
- Implications for allocation of resources and supports to ensure safety, efficacy, adherence and value
- In provinces where more reliance on private insurance, may be an increasing burden on patients to pay out of pocket – access to Rx may not be equal

# Conclusions

- Between 2006 and 2013 (8 years):
  - Absolute number of prescriptions for oral cancer drugs increased 61%
  - Ratio of Oral to Total prescriptions/orders has remained relatively constant ~28%
    - Parallel rise in volume of injectable cancer drug doses/prescriptions
  - As a proportion of total cancer drug budget, cost for oral cancer drugs has increased 63% (~8%/year)
  - Average cost per patient per year has increased 207% (~26%/year)