



# Diabetes

## Chapter 9

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Project for an Ontario Women's Health Evidence-Based Report

# A Tool for Monitoring and Improvement

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The **Project for an Ontario Women's Health Evidence-Based Report (POWER)** is designed to serve as a tool to help policymakers and providers to improve the health of and reduce inequities among the women of Ontario.

# Overarching Objectives

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- Use of performance measurement and reporting
  - as a mechanism for knowledge translation
  - as a tool to drive equity in health care
- Provide evidence for use by a diverse group of stakeholders for use to improve women's (and men's) health in the province

# Ontario Women's Health Equity Report

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## Volume 1

- Burden of Illness
- Cancer
- Depression
- Cardiovascular disease (CVD)
- Access to Health Care

## Volume 2

- Musculoskeletal Disorders (arthritis, osteoporosis)
- Reproductive and Gynecological Health
- Diabetes
- HIV Infection
- Special Populations (low income, immigrant and older women)
- Social Determinants of Health
- Conclusions and Policy Implications

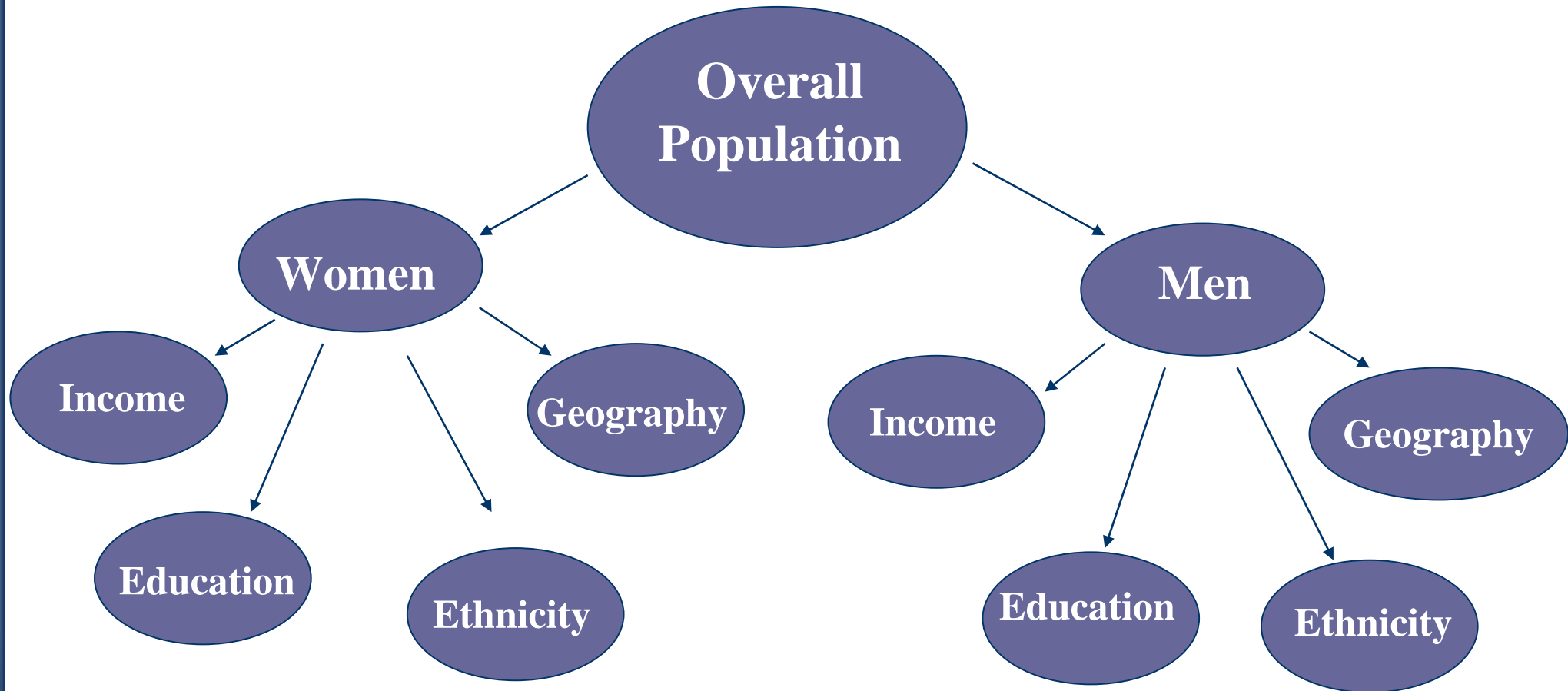
## Web-based reporting

# Community-Engaged Research

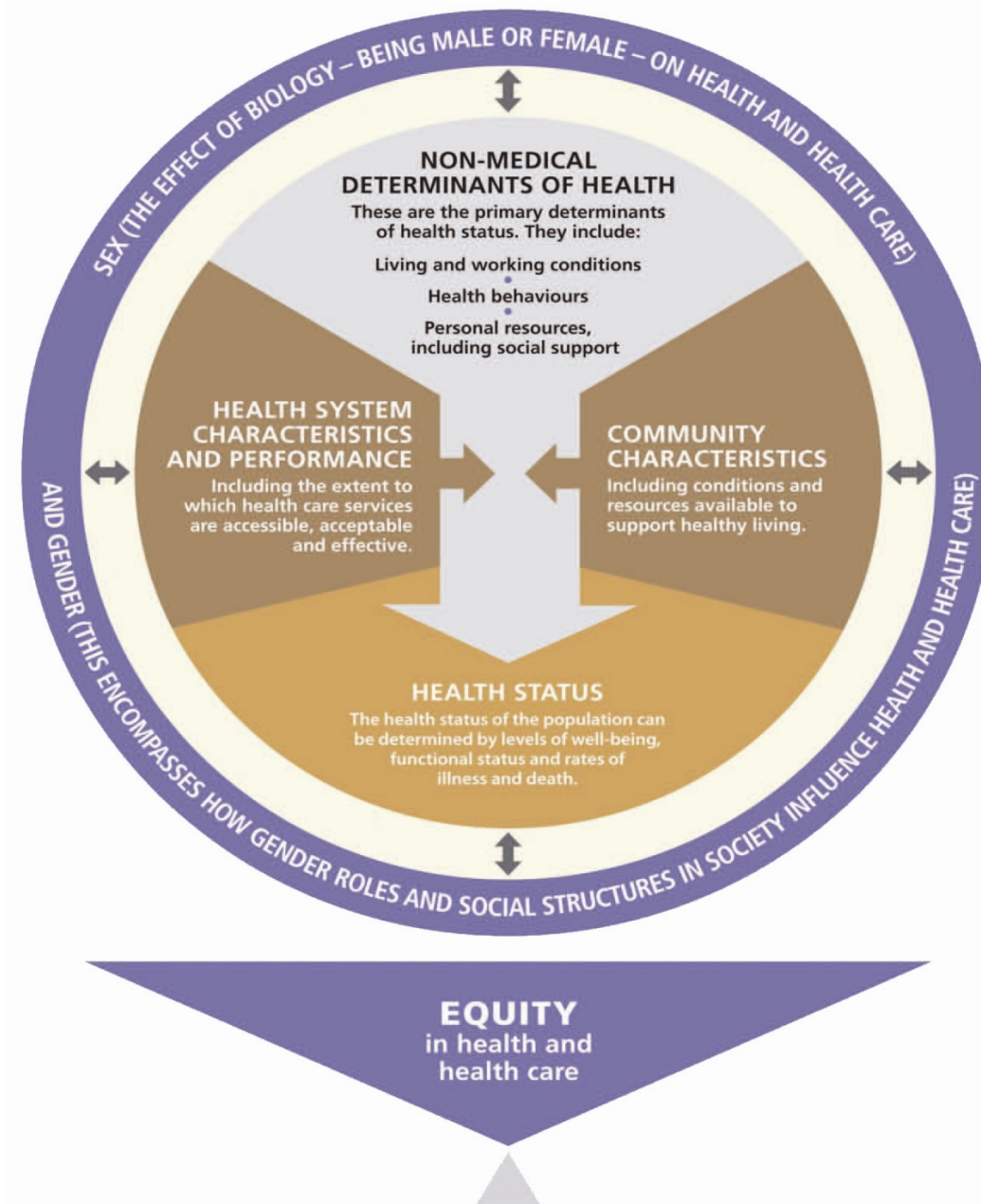
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- POWER Study Roundtables
  - Inform indicator selection and Interpretation
  - Increase uptake of findings
- Consumers: representatives of community based organizations and associations
- Providers: clinicians, hospitals, community health centres (CHCs)
- Policymakers: government, regional health authorities, public health, health data agencies

# Assessing Equity



# POWER Study Gender and Equity Health Indicator Framework



# Diabetes



# Diabetes Indicators

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## ■ Health and Functional Status

–prevalence, morbidity, activity limitations, self-rated health and health behaviours

## ■ Access and Utilization of Care

–access and use of primary and specialty physician care

## ■ Screening, Assessment and Monitoring

–clinical and self-monitoring of blood glucose and foot care as well as clinical monitoring of kidney function and eye examination

## ■ Pharmacological Treatment

–self-reported use of insulin or oral glucose lowering medications; use of medications to treat hypertension and cholesterol in seniors with diabetes

## ■ Health Outcomes

–Hospital visits for diabetes complications including glucose related emergencies, retinopathy, cardiovascular, cerebrovascular and peripheral vascular disease and dialysis for kidney damage

## ■ Diabetes and Pregnancy

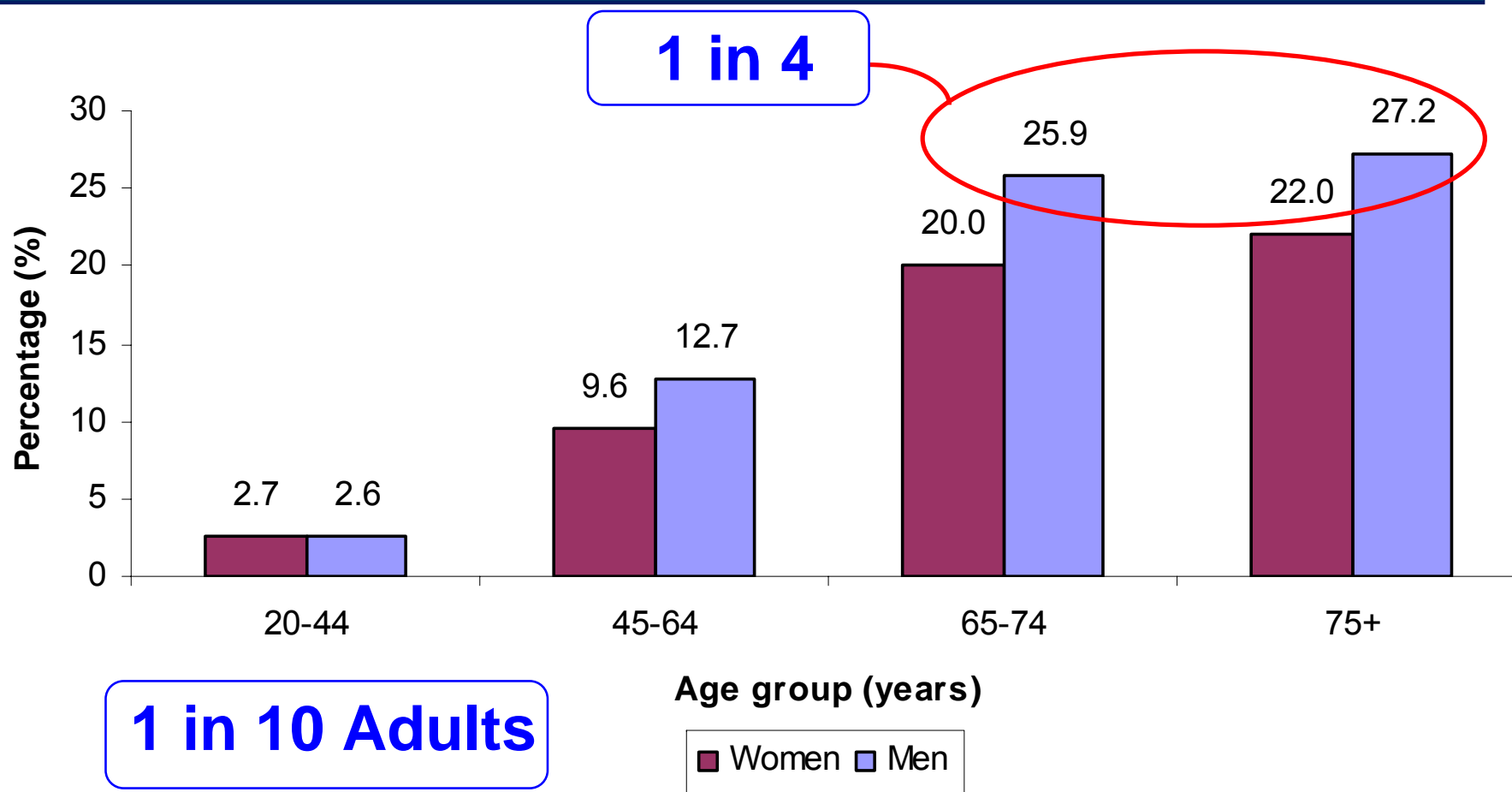
–prenatal care, obstetrical and fetal complications for women with pregestational and gestational diabetes

# Key Findings

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**Diabetes is one of the most common conditions in our society**

# Prevalence of diabetes in adults aged 20 and older, by sex and age group, in Ontario, 2006/07



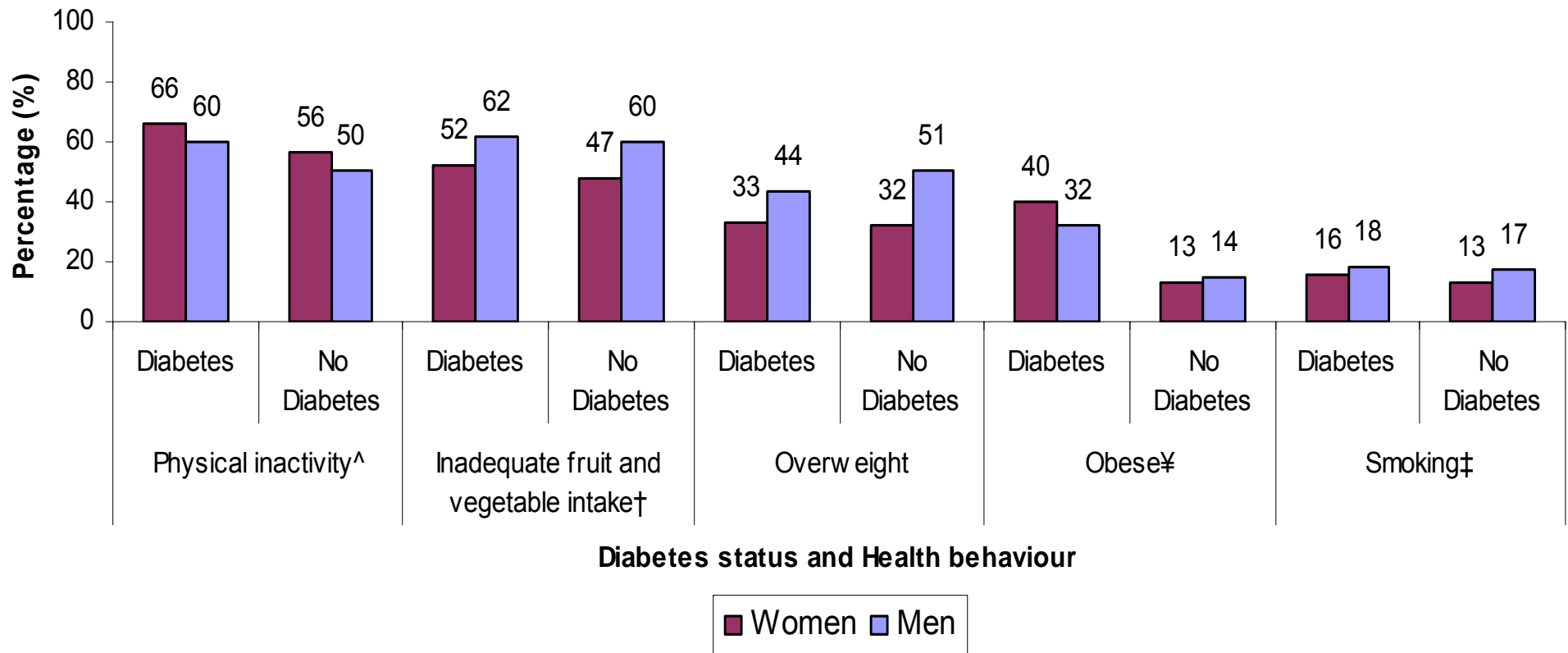
# Key Findings

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## Diabetes rates continue to climb

- Rates doubled in 12 years

# Prevalence of risk factors, by diabetes status in Ontario, 2005 and 2007



**Data source:** Canadian Community Health Survey (CCHS), 2005 (Cycle 3.1) and 2007

<sup>^</sup> Physical Activity Index of < 1.5 kcal/kg/day

<sup>†</sup> Daily consumption of less than five servings of fruits and vegetables

<sup>¥</sup> Overweight refers to a Body Mass Index (BMI)  $\geq 25$  but < 30;

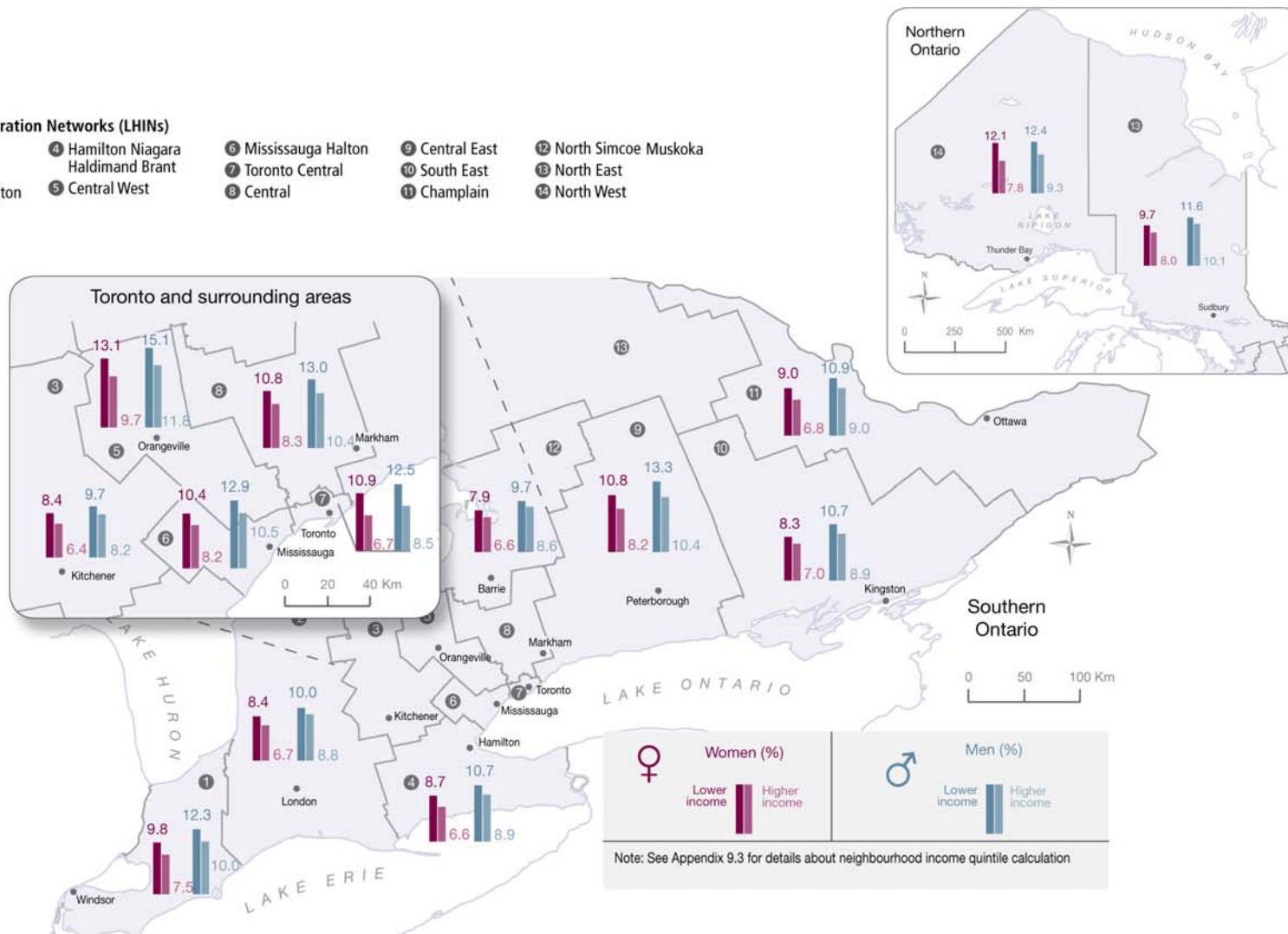
<sup>¥</sup> Obese refers to a BMI  $\geq 30$ ; BMI calculated from self-reported height and weight

<sup>‡</sup> Current smokers (daily or occasional)

# Age-standardized prevalence of diabetes in adults aged 20 and older, by sex, neighbourhood income and LHIN, in Ontario, 2006/07

## Local Health Integration Networks (LHINs)

- ① Erie St. Clair
- ④ Hamilton Niagara Haldimand Brant
- ⑥ Mississauga Halton
- ⑨ Central East
- ⑫ North Simcoe Muskoka
- ② South West
- ⑦ Toronto Central
- ⑩ South East
- ⑬ North East
- ③ Waterloo Wellington
- ⑤ Central West
- ⑧ Central
- ⑪ Champlain
- ⑭ North West

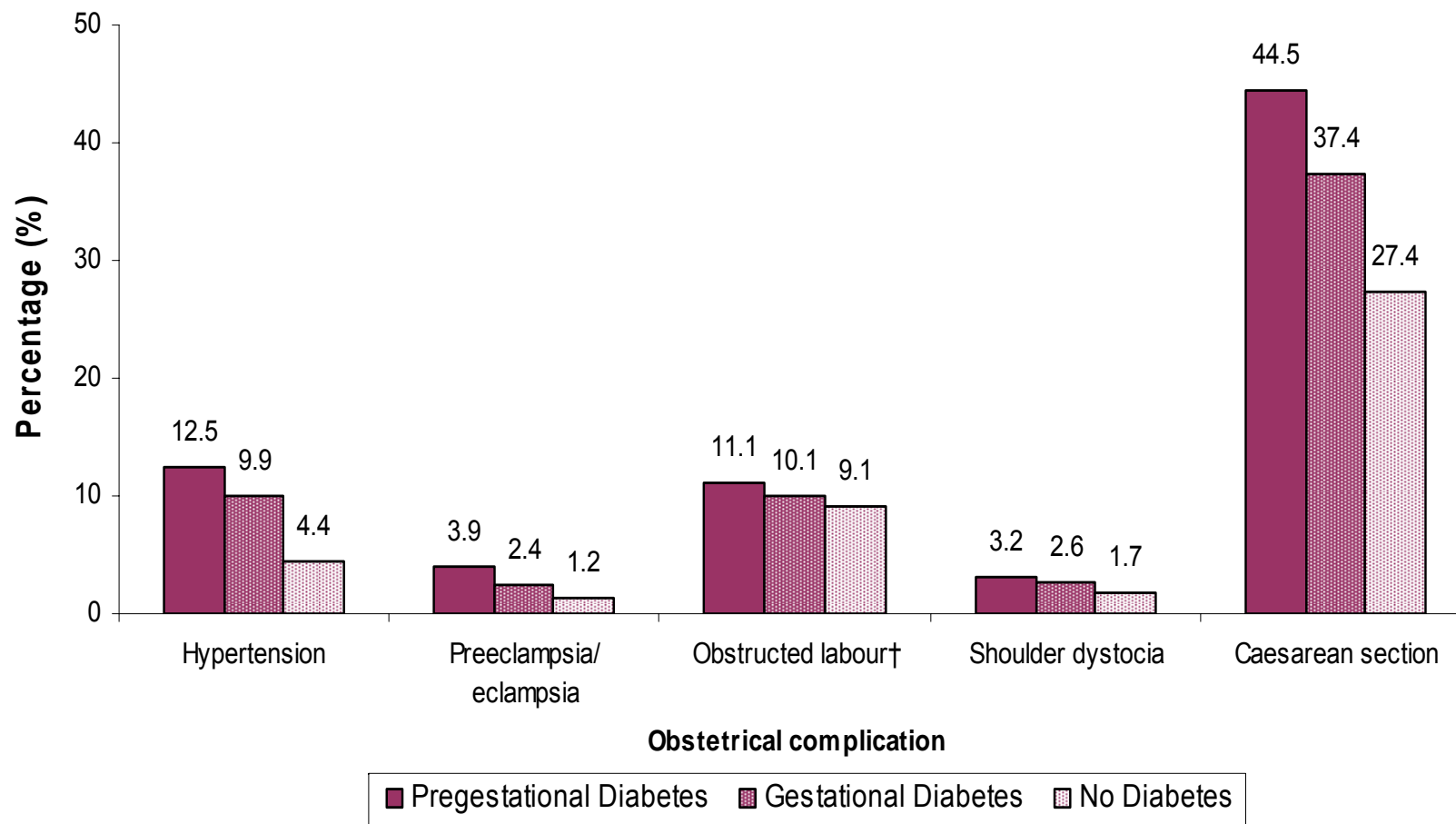


# Key Findings

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**Diabetes in pregnancy is associated with higher rates of complications**

# Age-standardized percentage of pregnant women who had obstetrical complications, by diabetes status, in Ontario, 2002/03-2006/07

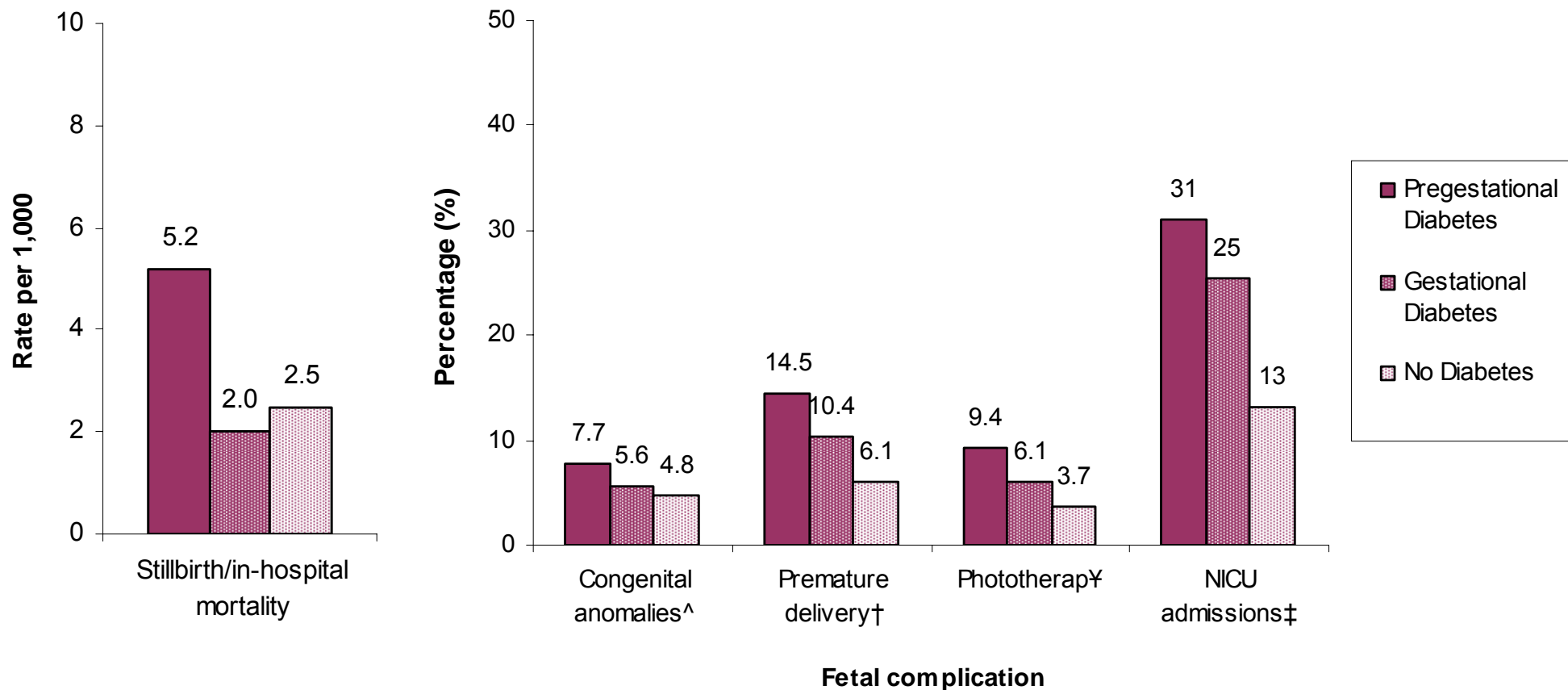


Data sources: Ontario Diabetes Database (ODD); Ontario Health Insurance Plan (OHIP); Canadian Institute for Health Information Discharge Abstract Database (CIHI-DAD)

† Includes shoulder dystocia



# Age-standardized rates of fetal complications, by maternal diabetes status, in Ontario, 2002/03-2006/07



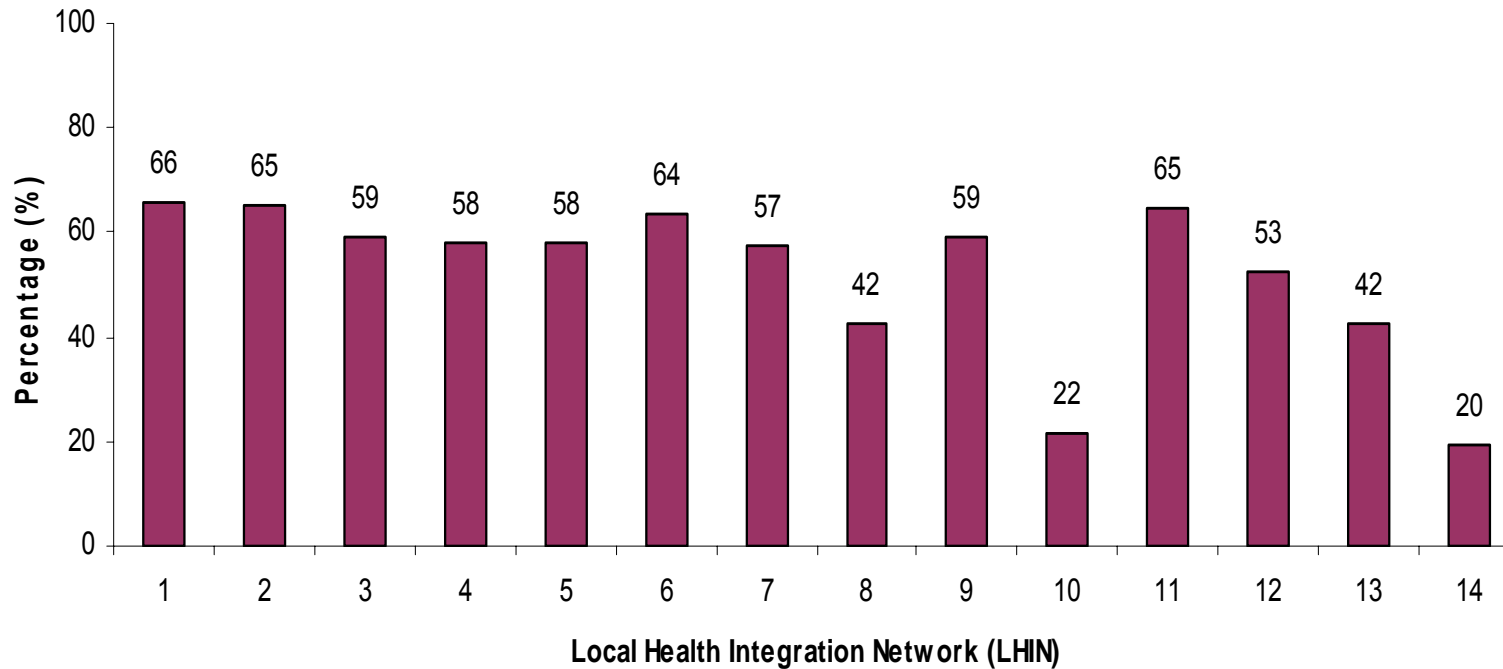
**Data sources:** Ontario Diabetes Database (ODD); Ontario Health Insurance Plan (OHIP); ICES Mother-Baby (MOMBABY) Linked Database

<sup>^</sup> includes major and minor congenital anomalies

<sup>†</sup> delivered before 37 weeks gestation

<sup>‡</sup> Hyperbilirubinemia requiring phototherapy

# Age-standardized percentage of pregnant women with pregestational diabetes who saw an endocrinologist and/or an internist during pregnancy,<sup>^</sup> by Local Health Integration Network (LHIN), in Ontario, 2002/03-2006/07



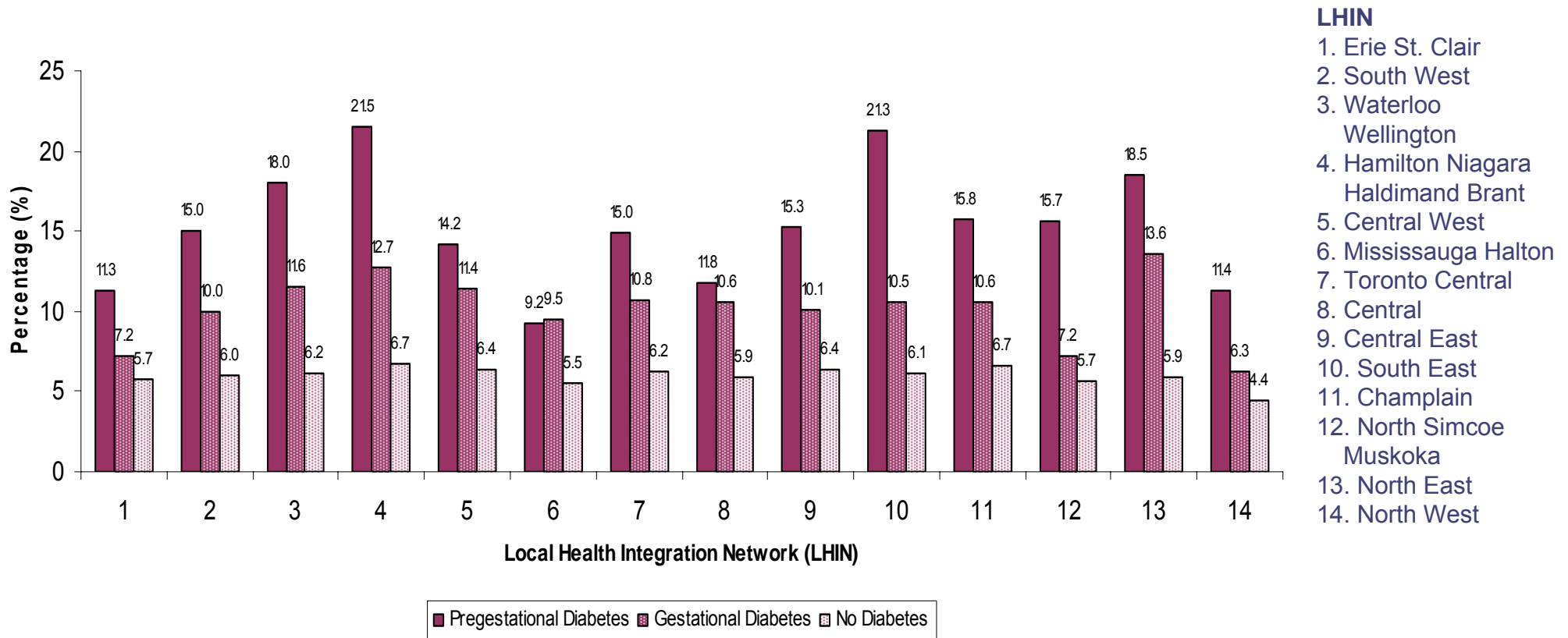
## LHIN

1. Erie St. Clair
2. South West
3. Waterloo Wellington
4. Hamilton Niagara Haldimand Brant
5. Central West
6. Mississauga Halton
7. Toronto Central
8. Central
9. Central East
10. South East
11. Champlain
12. North Simcoe Muskoka
13. North East
14. North West

**Data sources:** Ontario Diabetes Database (ODD); Ontario Health Insurance Plan (OHIP); Canadian Institute for Health Information Discharge Abstract Database (CIHI-DAD); ICES Physician Database (IPDB); Registered Persons Database (RPDB)

<sup>^</sup> within nine months prior to delivery

# Age-standardized percentage of infants who were delivered prematurely,<sup>^</sup> by LHIN and maternal diabetes status, in Ontario, 2002/03-2006/07

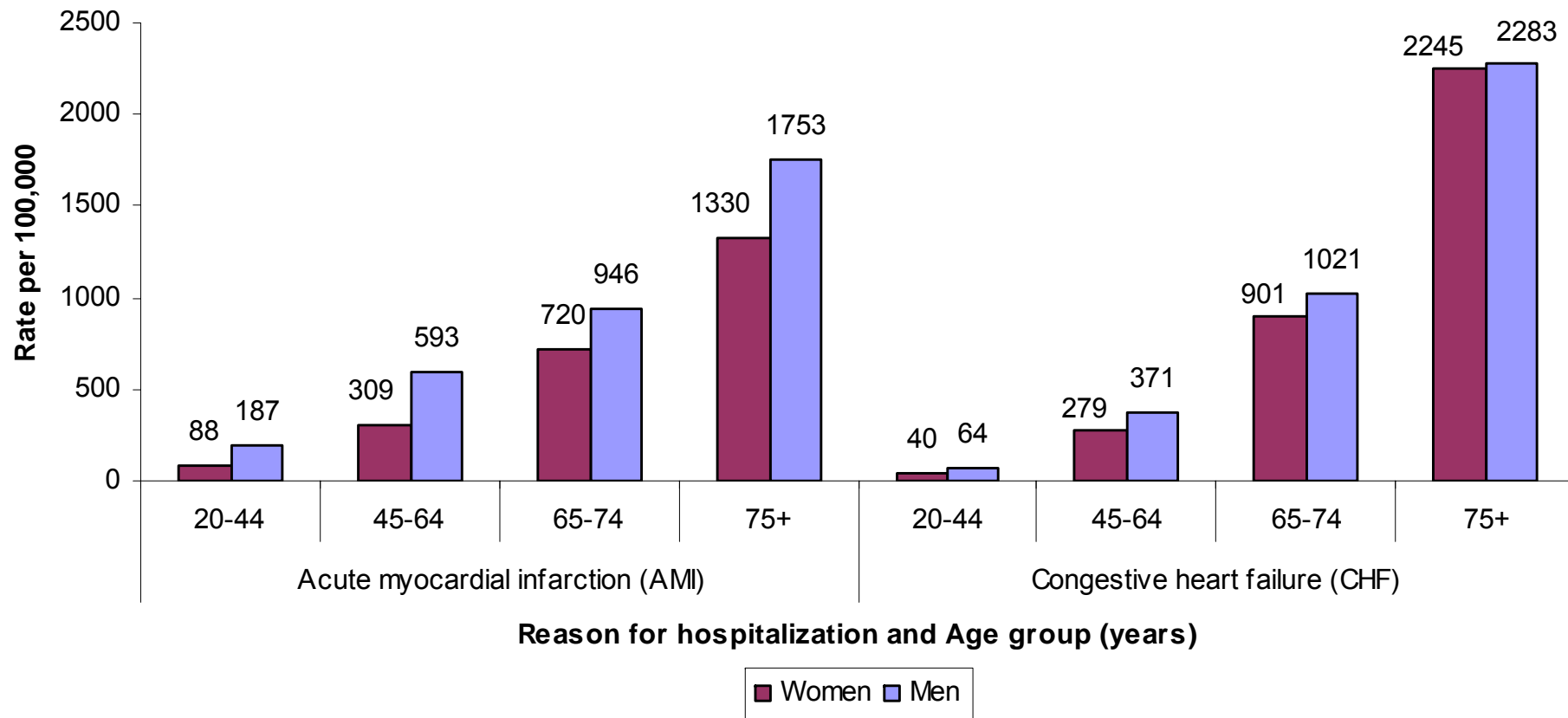


# Key Findings

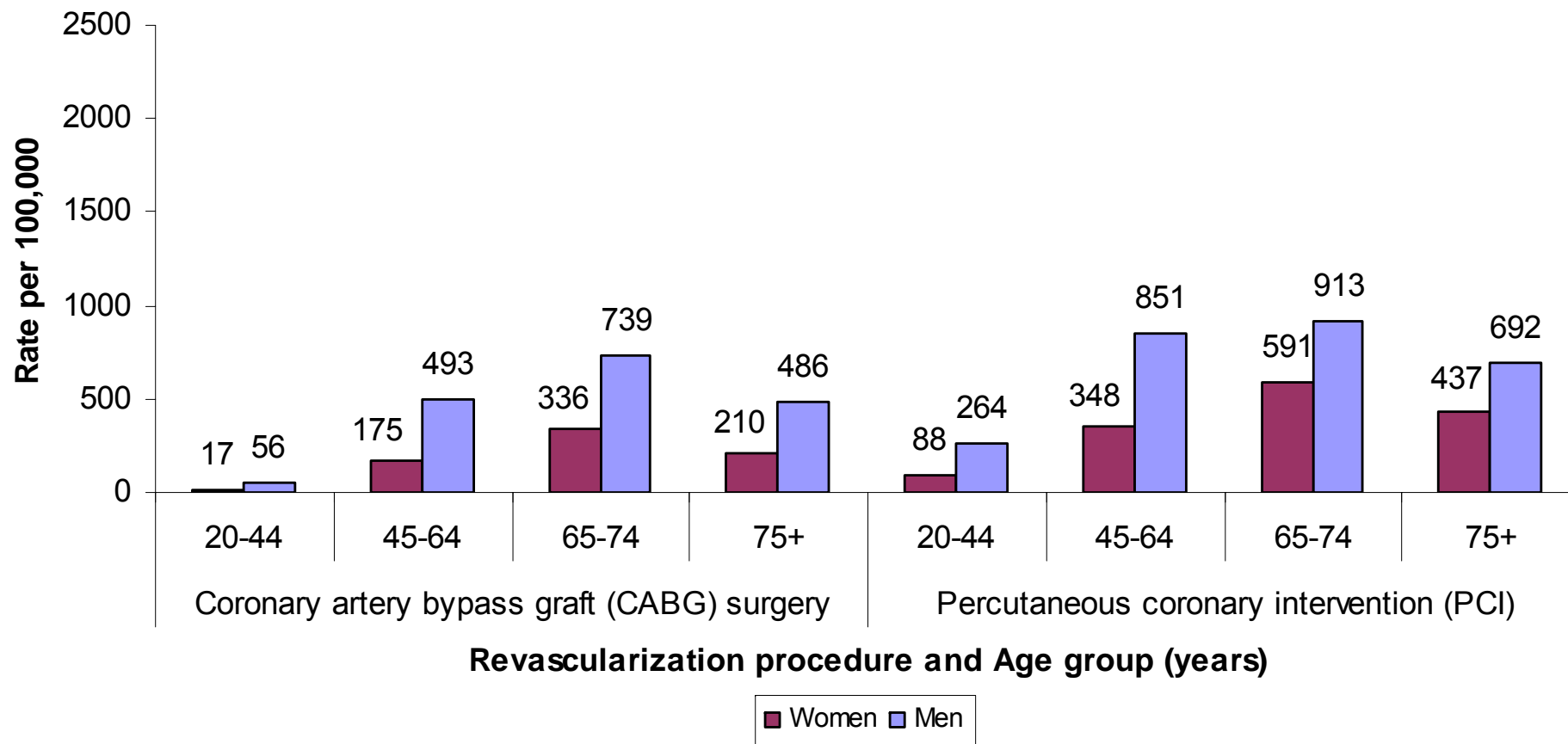
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**Men had higher rates of diabetes complications than women**

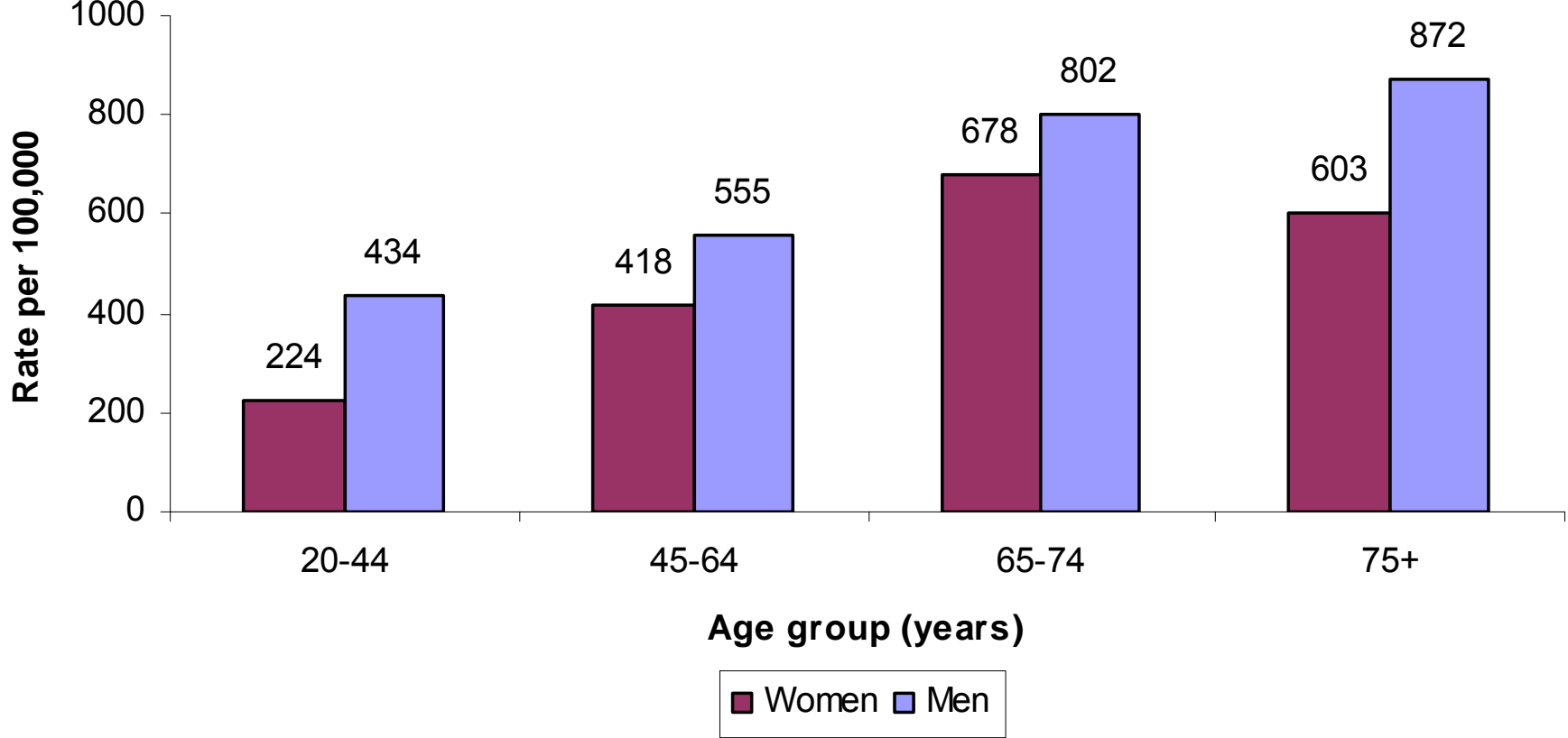
# Rate of hospitalizations for cardiac disease per 100,000 adults aged 20 and older with diabetes, by sex and age group, in Ontario, 2006/07



# Rate of revascularization for cardiac disease per 100,000 adults aged 20 and older with diabetes, by sex and age group, in Ontario, 2006/07



# Chronic dialysis rate per 100,000 adults aged 20 and older with diabetes, by sex and age group, in Ontario, 2006/07



Data Sources: Ontario Diabetes Database (ODD); Ontario Health Insurance Plan (OHIP)

# Key Findings

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**Income matters when it comes to diabetes prevalence and complications**



# Age-standardized rate of hospitalizations for cardiac disease per 100,000 adults aged 20 and older with diabetes, by sex and neighbourhood income quintile, in Ontario, 2006/07



**Data Sources:** Ontario Diabetes Database (ODD); Canadian Institute for Health Information Discharge Abstract Database (CIHI-DAD); Registered Persons Database (RPDB); Statistics Canada 2006 Census  
**Note:** See Appendix 9.3 for details about neighbourhood income quintile calculation

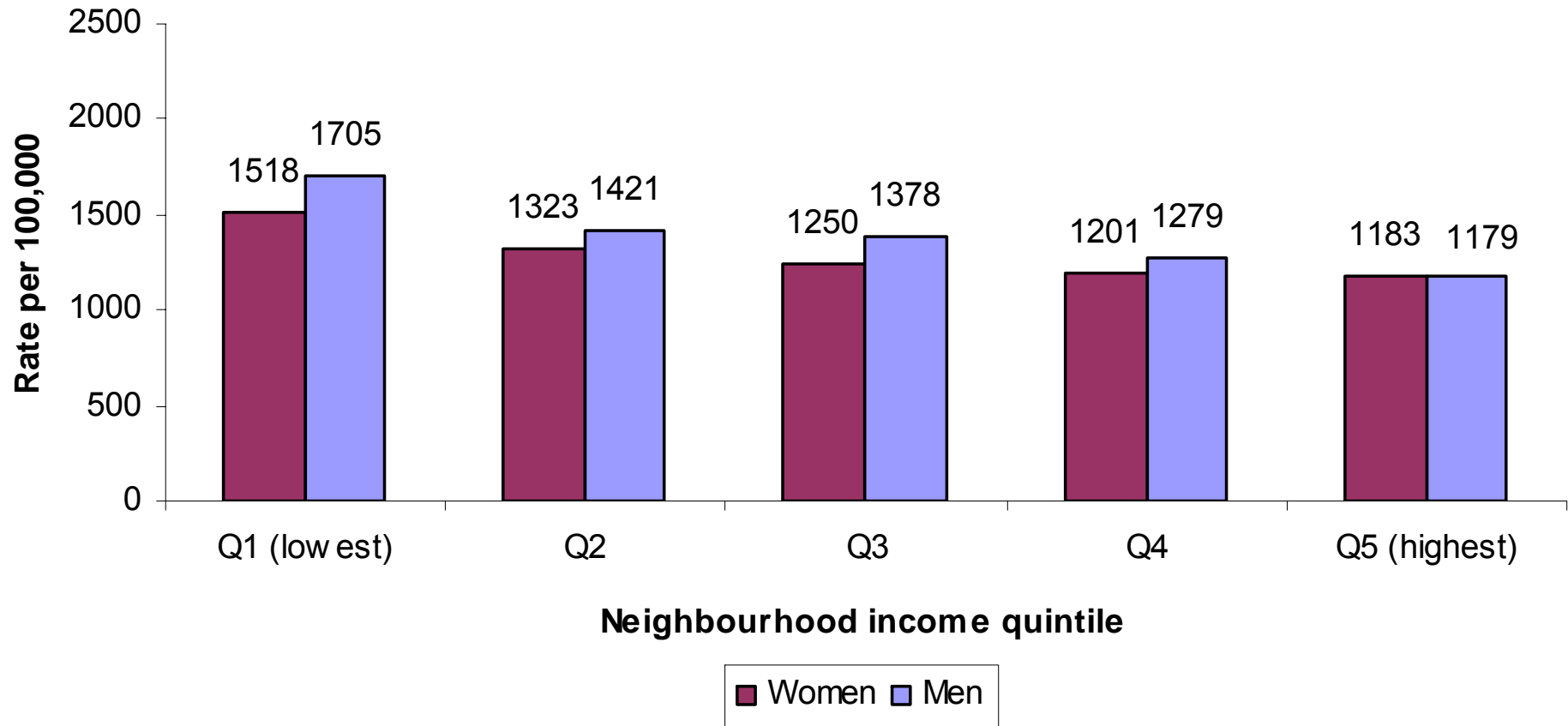
# Age-standardized rate of major amputations per 100,000 adults aged 20 and older with diabetes, by sex and neighbourhood income quintile, in Ontario, 2006/07



**Data Sources:** Ontario Diabetes Database (ODD); Canadian Institute for Health Information Discharge Abstract Database (CIHI-DAD); Registered Persons Database (RPDB); Statistics Canada 2006 Census

**Note:** See Appendix 9.3 for details about neighbourhood income quintile calculation

# Age-standardized rate (per 100,000) of adults aged 20 and older with diabetes who had at least one hospital visit for hyperglycemia or hypoglycemia, by sex and neighbourhood income quintile, in Ontario, 2006/07



**Data Sources:** Ontario Diabetes Database (ODD); Canadian Institute for Health Information Discharge Abstract Database (CIHI-DAD); National Ambulatory Care Reporting System (NACRS); Registered Persons Database (RPDB); Statistics Canada 2006 Census  
**Note:** See Appendix 9.3 for details about neighbourhood income quintile calculation

# Age-standardized percentage of adults aged 20 and older with diabetes who had no visits to a GP/FP or a specialist† over a two-year period, by sex and neighbourhood income quintile, in Ontario, 2005/06-2006/07



**Data Sources:** Ontario Diabetes Database (ODD); Ontario Health Insurance Plan (OHIP); ICES physician Database (IPDB); Statistics Canada 2006 Census

**Note:** See Appendix 9.3 for details about neighbourhood income quintile calculation

**GP/FP:** General Physician/Family Physician

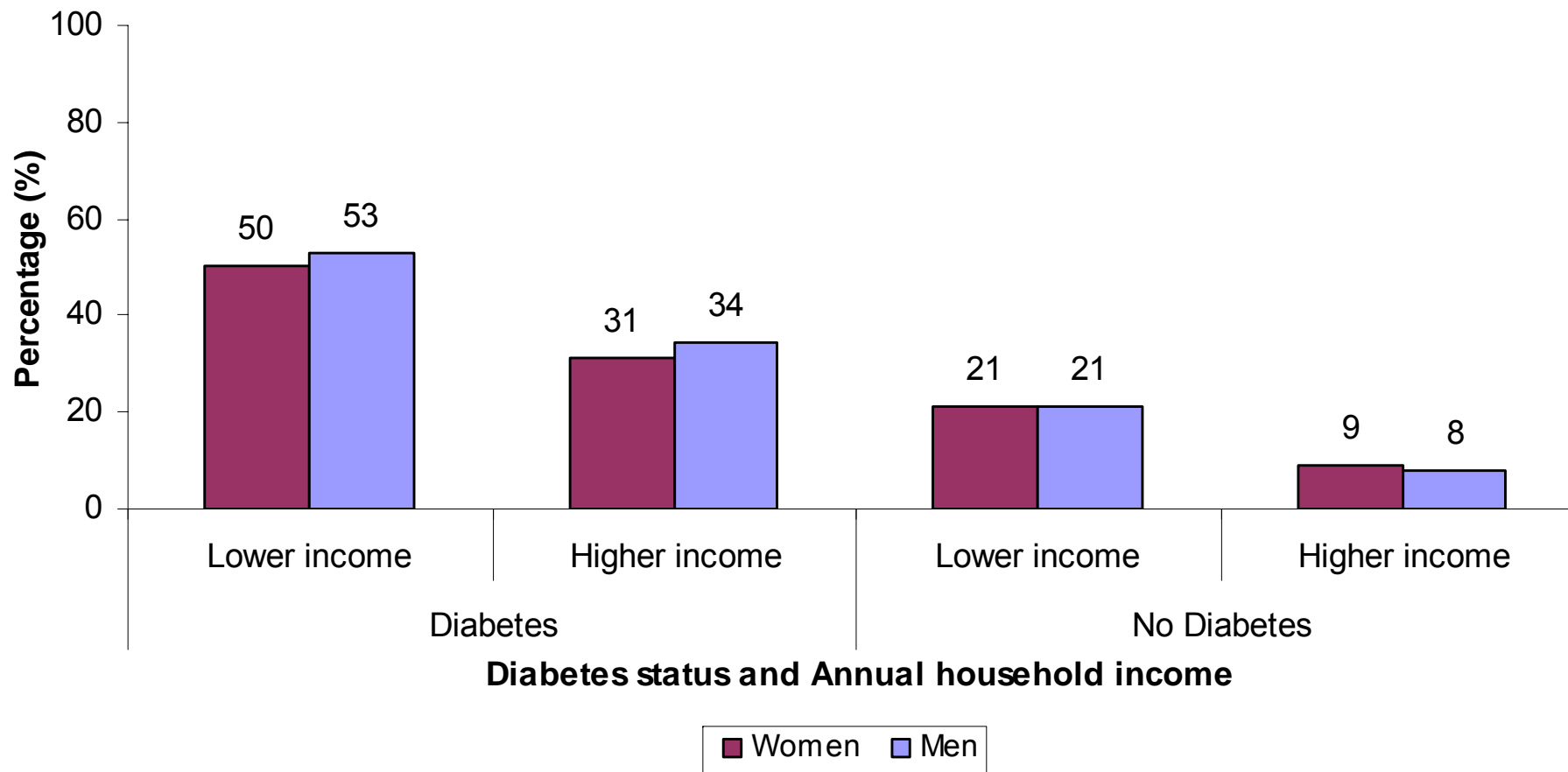
† Includes visits to endocrinologists, general internists or geriatricians

# Key Findings

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**People with diabetes have worse functional status and self-rated health than those without diabetes.**

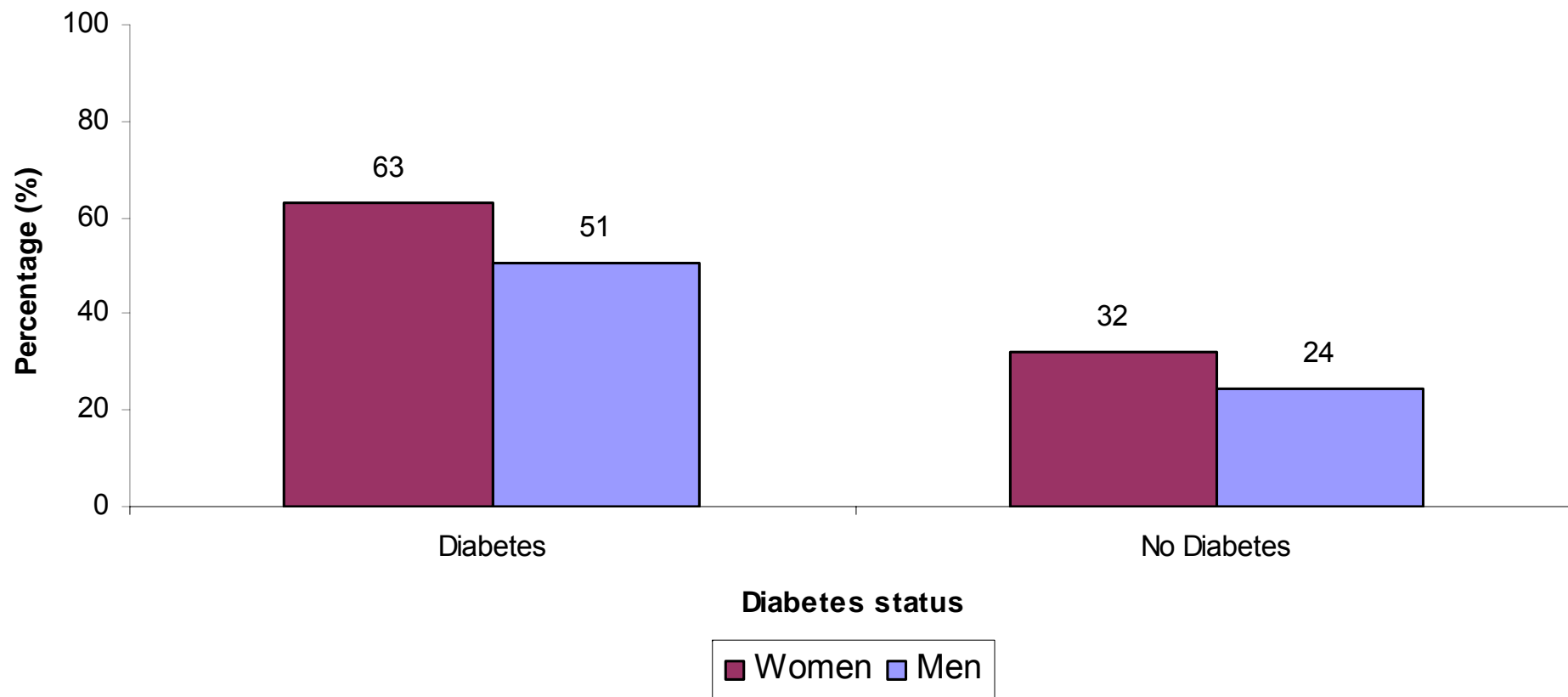
# Age-standardized percentage of adults aged 20 and older who reported having diabetes who rated their own health as fair or poor, by sex, annual household income and diabetes status, in Ontario, 2005 and 2007



Data source: Canadian Community Health Survey (CCHS), 2005 (Cycle 3.1) and 2007

Note: See Appendix 9.3 for definitions of annual household income categories

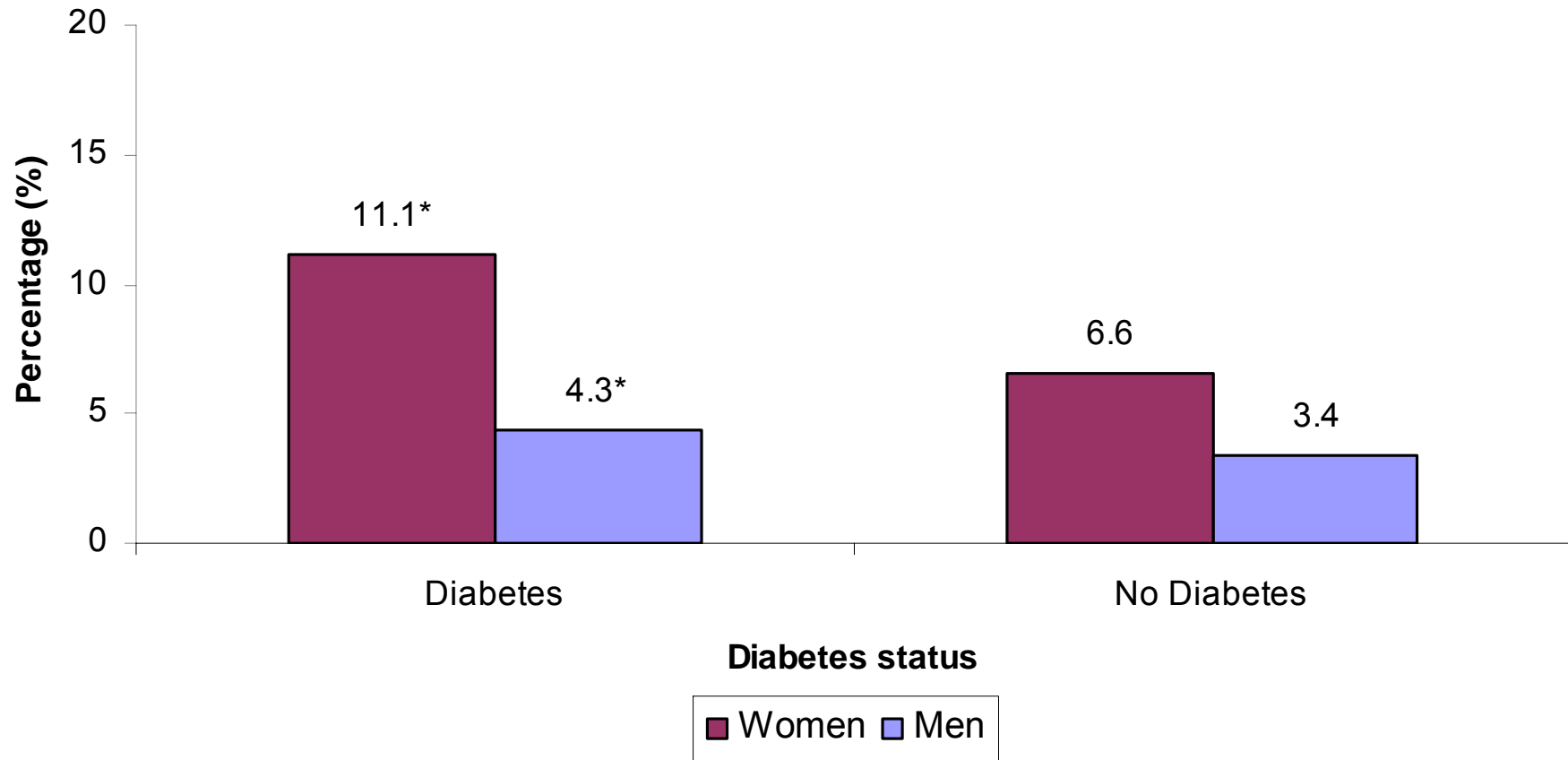
# Age-standardized percentage of adults aged 20 and older who reported having at least two chronic conditions<sup>^</sup> diagnosed by a health professional, by sex and diabetes status, in Ontario, 2005 and 2007



Data source: Canadian Community Health Survey (CCHS), 2005 (Cycle 3.1) and 2007

<sup>^</sup> Among people with diabetes, this refers to at least two chronic conditions in addition to diabetes

# Age-standardized percentage of adults aged 20 and older who had probable depression,<sup>^</sup> by sex and diabetes status, in Ontario, 2000/01



Data source: Canadian Community Health Survey (CCHS), 2000/01(Cycle 1.1)

\* Interpret with caution due to high sampling variability

<sup>^</sup> Composite International Diagnostic Interview-Short Form for Major Depression score of >0.9

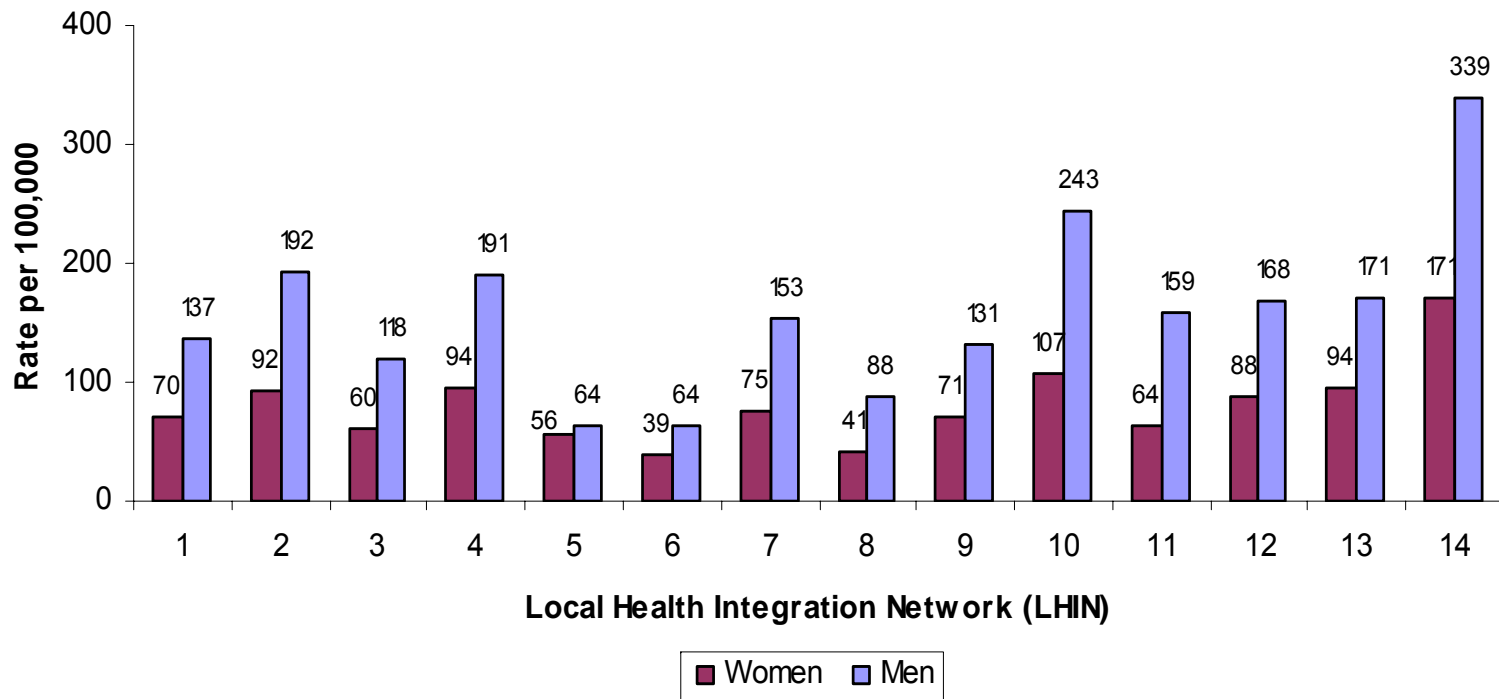


# Key Findings

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**Performance on many measures varied  
across the province**

# Age-standardized rate of major amputations per 100,000 adults aged 20 and older with diabetes, by sex and LHIN, in Ontario, 2006/07

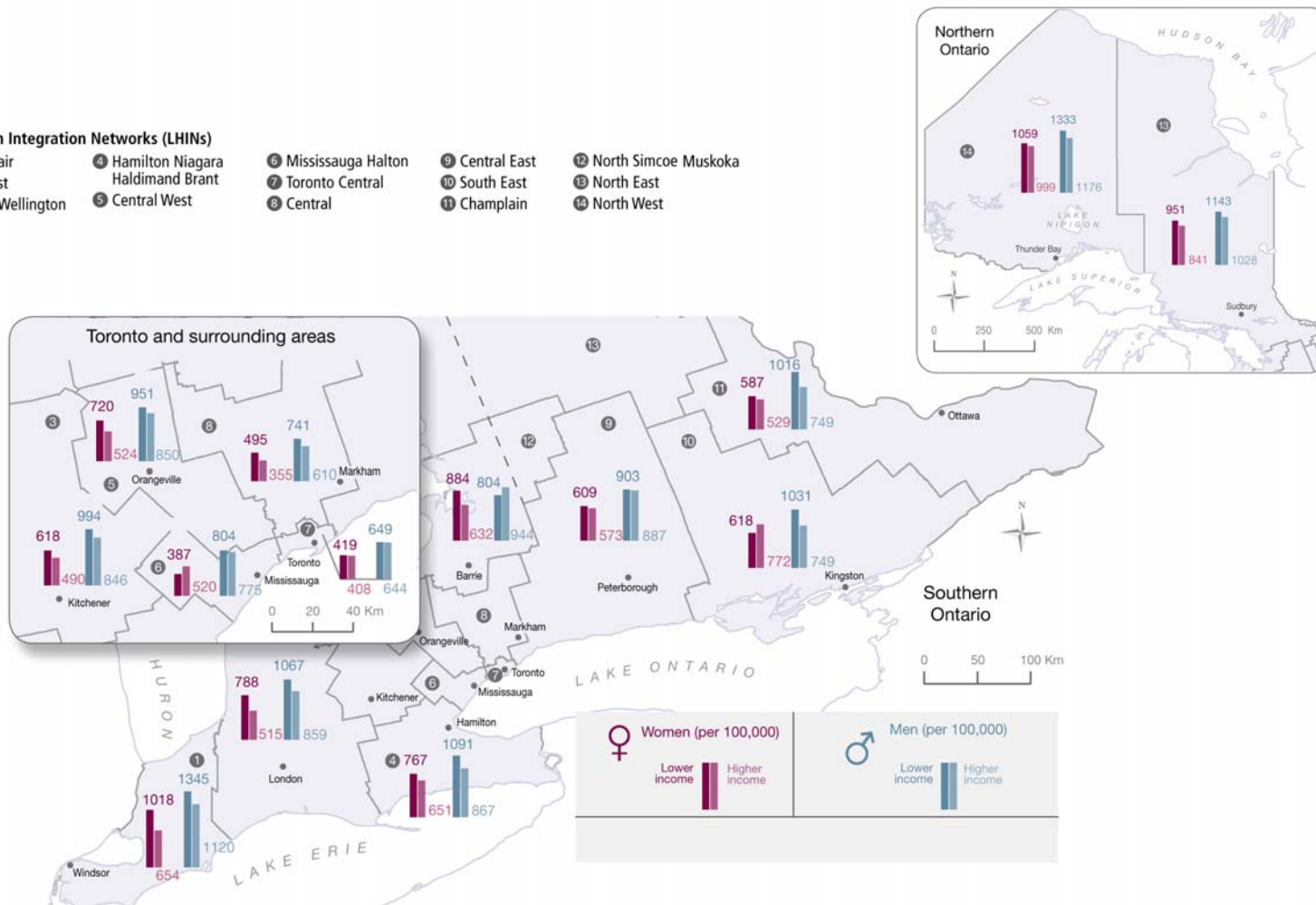


- LHIN**
1. Erie St. Clair
  2. South West
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  5. Central West
  6. Mississauga Halton
  7. Toronto Central
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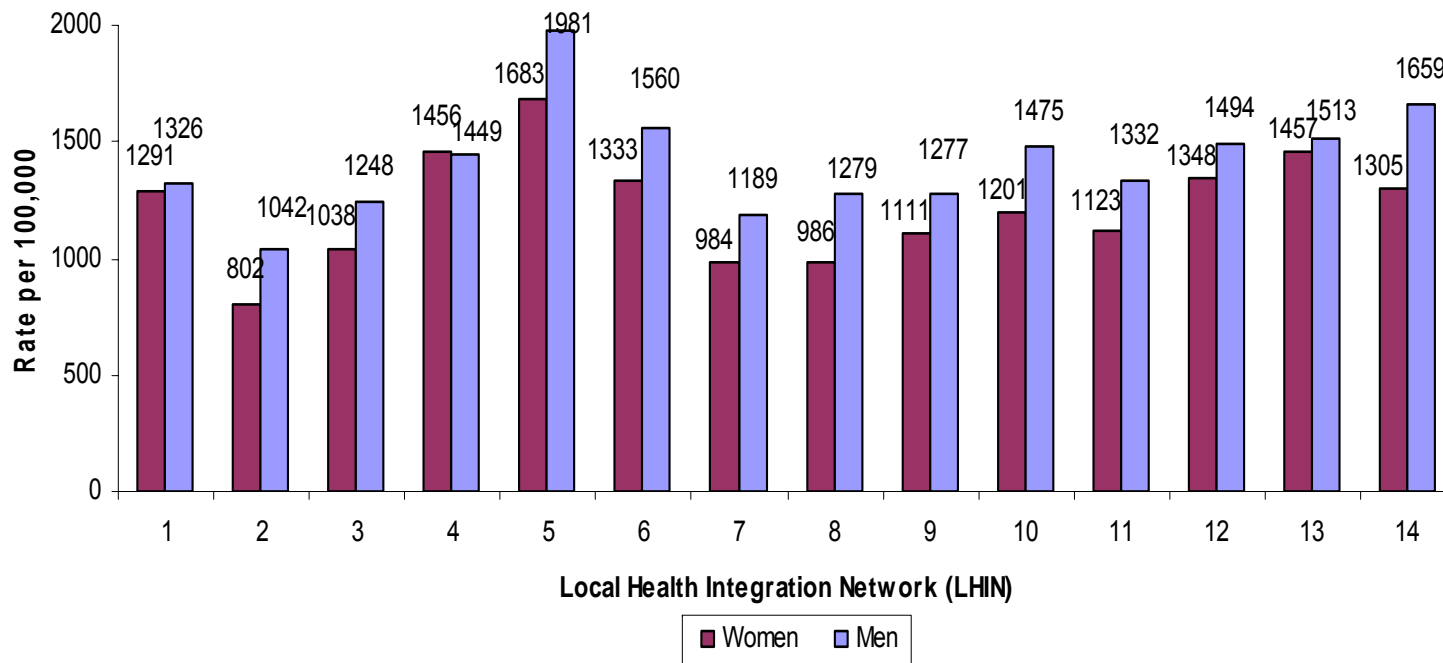
# Age-standardized rate of hospitalization for AMI per 100,000 adults aged 20 and older with diabetes, by neighbourhood income and LHIN, in Ontario, 2006/07

## Local Health Integration Networks (LHINs)

- 1 Erie St. Clair
- 2 South West
- 3 Waterloo Wellington
- 4 Hamilton Niagara Haldimand Brant
- 5 Central West
- 6 Mississauga Halton
- 7 Toronto Central
- 8 Central
- 9 Central East
- 10 South East
- 11 Champlain
- 12 North Simcoe Muskoka
- 13 North East
- 14 North West



# Age-standardized laser photocoagulation rate per 100,000 adults aged 20 and older with diabetes, by sex and LHIN, in Ontario, 2006/07



## LHIN

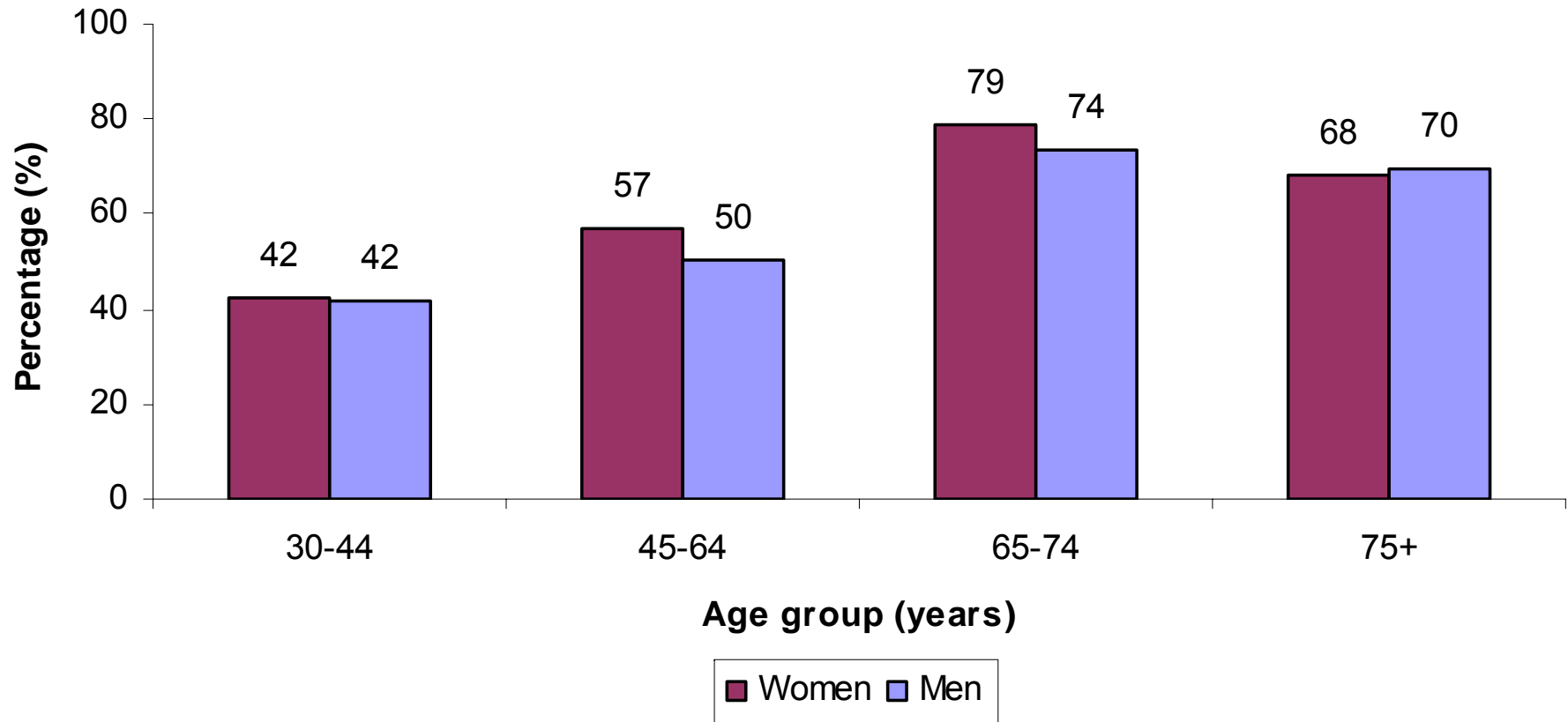
1. Erie St. Clair
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# Key Findings

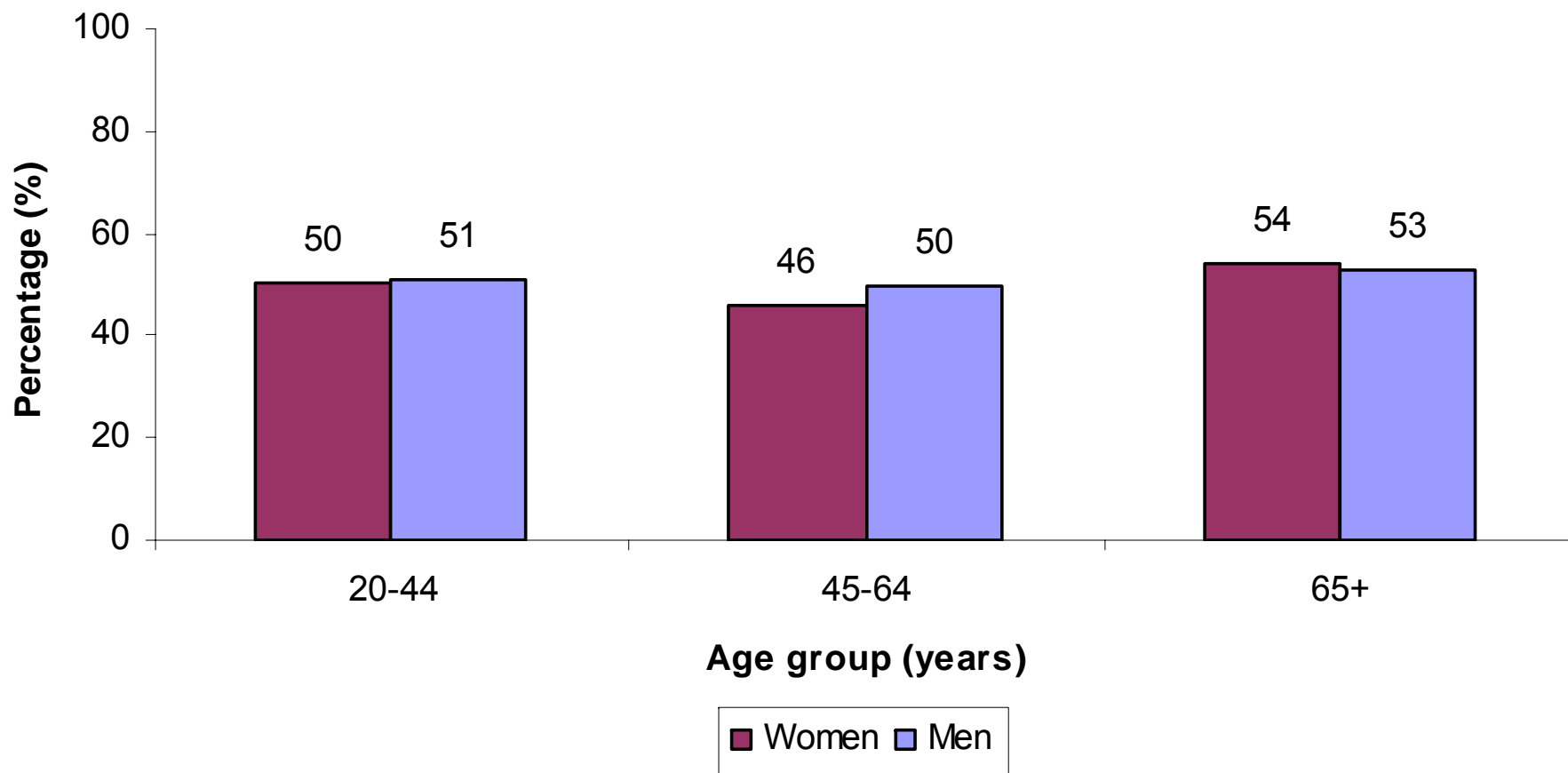
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**Despite growing evidence on best practices for diabetes, gaps in care persist**

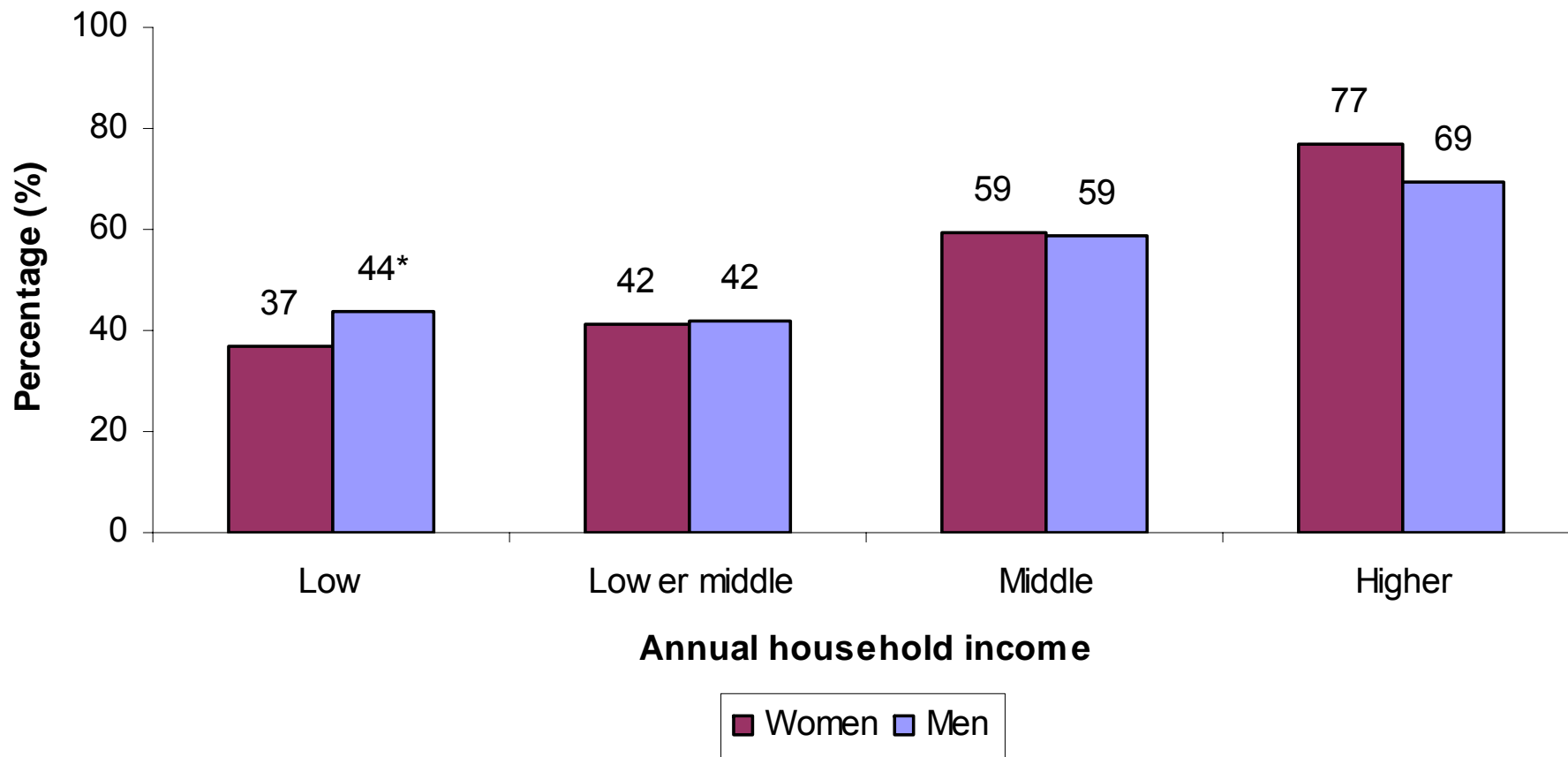
# Percentage of people aged 30 and older who had an eye examination within two years of being diagnosed with diabetes, by sex and age-group, in Ontario, 2003/04-2005/06



## Percentage of adults aged 20 and older who reported having diabetes who reported that a health care professional checked their feet for any sores or irritations within the last year, by sex and age group, 2005 and 2007



# Age-standardized percentage of adults aged 20 and older who reported having diabetes who reported having a dentist visit in the past year, by sex and annual household income, in Ontario, 2005



Data Source: Canadian Community Health Survey (CCHS), 2005 (Cycle 3.1)

\* Interpret with caution due to high sampling variability

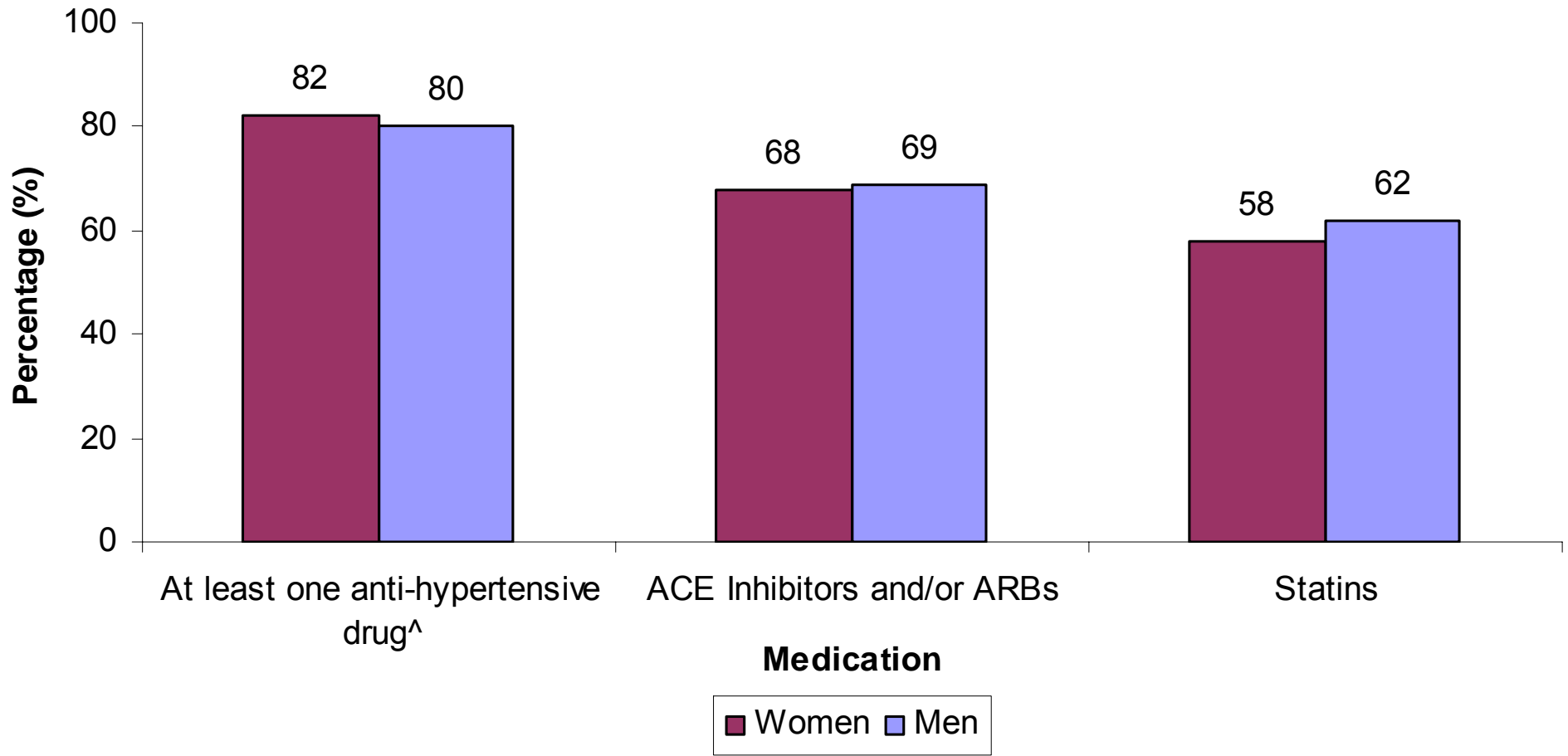


# Key Findings

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**But there was good news as well**

# Age-standardized percentage of adults aged 65 and older with diabetes who were on anti-hypertensive drugs or statins, by sex, 2006/07



Data sources: Ontario Diabetes Database (ODD); Ontario Drug Benefits (ODB) database

<sup>^</sup> Includes ACE Inhibitors and ARBs

ACE inhibitors = Angiotensin converting enzyme inhibitors

ARBs = Angiotensin II receptor blockers

# Study Limitations

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- Administrative data underestimates the true burden of diabetes
- Unable to discriminate between type 1 and type 2 diabetes
- Missing data:
  - Unable to assess appropriateness of care
  - No data on clinical parameters e.g. A1c, blood pressure, cholesterol levels
  - Surrogate measures
- Health care utilization in areas where physicians receive payment through AFPs may be under reported due to incomplete shadow billing

# Key messages

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- Strategies to halt the diabetes epidemic are critically needed in order to minimize future burden on the health care system caused by diabetes and other obesity-related illnesses.
- Comprehensive patient-centred chronic disease management can improve quality and outcomes of care for diabetes.
- Targeted programs are needed to reduce income-related disparities in diabetes outcomes
- Province-wide, integrated, organized models of care delivery can improve health outcomes and reduce inequities in care.
- Improve quality, availability and timeliness of data to assess diabetes outcomes and care delivery in the province.

# For more information, please contact us:

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## POWER Study

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